

Appendix 3

**Transportation Impact Assessment with Appendices**

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HEXAGON TRANSPORTATION CONSULTANTS, INC.



# Willow Village Master Plan

Draft Transportation Impact Analysis



Prepared for:

ICF

August 16, 2022



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Areawide Circulation Plans Corridor Studies Pavement Delineation Plans Traffic Handling Plans Impact Fees Interchange Analysis Parking  
Transportation Planning Traffic Calming Traffic Control Plans Traffic Simulation Traffic Impact Analysis Traffic Signal Design Travel Demand Forecasting

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## Executive Summary

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This report presents the results of the Transportation Impact Analysis (TIA) conducted for the proposed Willow Village Master Plan Project in Menlo Park, California. The Proposed Project would redevelop an approximately 59-acre industrial site plus two parcels north of Willow Road<sup>1</sup> (collectively, the Project Site) as a mixed-use development. The Proposed Project would demolish all existing onsite buildings and landscaping on the 59-acre portion of the Project Site and construct new buildings, provide open space areas, and install infrastructure within a new Residential/Shopping District, Town Square District, and Campus District. In addition, the Proposed Project would alter two parcels (Hamilton Avenue Parcels North and South<sup>2</sup>) to accommodate realignment of Hamilton Avenue at Willow Road for Project Site access.

The Proposed Project would provide up to 1.6 million sf of space for office and accessory use (consisting of up to 1.25 million sf of office uses and the balance (350,000 square if office use is maximized) of accessory uses<sup>3</sup>) and up to 200,000 sf of commercial/retail space. The Proposed Project would also include up to 1,730 multi-family housing units, an up to 193-room hotel, and open spaces, including publicly accessible parks (e.g. 3.5 acre publicly accessible park, elevated linear park, town square, and dog park).

The Project Site would be bisected by a new north–south street (Main Street) and an east–west street, which would provide access to all three districts. It would include a circulation network for vehicles, bicycles, and pedestrians, inclusive of both public rights-of-way and private streets, that would be generally aligned to an east-to-west and a north-to-south grid. The Proposed Project would also alter parcels north of the industrial site, across Willow Road, on both the east and west sides of Hamilton Avenue (Hamilton Avenue Parcels North and South) to support realignment of the Hamilton Avenue right-of-way and provide access to the new elevated park. This would require demolition and reconstruction of an existing service station (Chevron gas station) and potentially an increase in 1,000 sf on Hamilton Avenue Parcel South and enable the potential addition of up to 6,700 sf of retail uses at the existing neighborhood shopping center on the Hamilton Avenue Parcel North. A total of 7,700 sf could be added to the Hamilton Avenue Parcels.

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<sup>1</sup> For transportation analysis, “North/South” is aligned to be parallel to US 101. Hence, Willow Road and University Avenue are considered east-west streets, whereas Hamilton Road and Bayfront Expressway are considered north-south streets.

<sup>2</sup> Hamilton Avenue Parcels North and South consider Hamilton Avenue an east to west street, which differs from the compass directions used for the transportation analysis discussion.

<sup>3</sup> Accessory uses could include the following types of spaces: meeting/collaboration space, orientation space, training space, event space, incubator space, a business partner center, an event building (including pre-function space, collaboration areas, and meeting/event rooms), a visitor center, product demonstration areas, film studio, gathering terraces and private gardens, and space for other Meta accessory uses. Accessory uses could occur in spaces located anywhere throughout the Campus District

## CEQA Vehicle-Miles Travelled Analysis

The most readily available long-range forecast year is the year-2040 conditions, which assumes the buildout of the City of Menlo Park General Plan and any pending General Plan Amendments, the buildout of the pending developments in the City of East Palo Alto (as of December 2020), and regional growth projected by the Association of Bay Area Governments (ABAG), modified by VTA/C/CAG for model land use inputs. Therefore, the project's VMT analysis was conducted under year-2040 conditions.

### Office VMT

According to the City's VMT guidelines, office land use is evaluated based on a daily VMT per employee metric. Using the model, this metric is calculated only for home-based work trips, per OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA. Based on the latest citywide travel demand model, the regional average office VMT is 15.9 per employee. Therefore, City's office VMT impact threshold, at 15% below regional average, would be 13.6 daily VMT per employee. Office land use was evaluated using the model under the year 2040 plus project scenario. For the Campus District, the applicant proposed a daily trip cap of 18,237 trips, which would be 20% below the standard ITE trip generation estimate. The model was adjusted to account for the proposed trip cap. As shown in Table ES-1 below, the project's Campus District land use would generate VMT at the City's VMT impact threshold and would thus not have a VMT impact.

### Residential VMT

According to City VMT guidelines, the evaluation of residential land use is based on a daily VMT per capita metric. Using the model, this metric is calculated only for home-based trips, per OPR's technical advisory. Based on the latest citywide travel demand model, regional average residential VMT is 13.1 per capita. Therefore, the City's residential VMT impact threshold, at 15% below regional average, would be 11.2 daily VMT per capita.

For the residential land use, trip generation was adjusted to account for the Project's expected 2.03 people per unit compared to the ITE average of 2.46 people per unit. The VMT analysis also accounted for the applicant proposed TDM Plan for the mixed-use district. The TDM Plan proposed a 20% trip reduction from gross ITE trip generation through a combination of passive TDM measures and active TDM measures. Passive TDM measures include the project's proximity to complementary land uses, proximity to alternative transportation infrastructure, and the project's mixed-use nature. As discussed in Chapter 3 below, it is estimated that the passive TDM measures would achieve a 17% trip reduction from the gross ITE trip generation. Active TDM measures include TDM programs to be implemented to further promote alternative modes of travel. These TDM measures generally include providing transit, biking, and carpooling information to residents, assisting in ride-matching programs for residents, and could also include transit subsidies and other measures. To represent the applicant proposed 20% trip reduction goal and given that passive TDM measures are assumed to achieve a 17% trip reduction, the balance of 3% (20%-17%) trip reduction due to active TDM measures was assumed for the VMT analysis.

The Project's residential land use would require a 16% reduction in VMT to mitigate the significant VMT impact. The VMT analysis, as discussed above, already assumed 3% trip reduction due to active TDM measures. Therefore, mitigation of the VMT impact would require implementing a TDM Plan for the residential component that achieves at least 19% (3% + 16%) trip reduction via active TDM measures (see Figure 10 in Chapter 3 below) or increases the effectiveness of passive TDM measures. According to the Project's proposed TDM Plan dated July 2021 and attached in Appendix G, the proposed active TDM measures for the residential component could achieve at least a 19% reduction in trips, with an estimated reduction between between 11% and 36%<sup>4</sup>. This range represents the potential low to high range of effectiveness of the proposed TDM measures, as calculated by research data from the California Air Pollution Control Officers Association (CAPCOA). This range depends on how each TDM measure is eventually implemented. Therefore, it is feasible for the Project to mitigate its residential VMT impact by implementing its proposed TDM Plan.

**IMPACT (TRA-2 in Transportation Chapter):** As shown in Table ES-1 below, the Proposed Project's residential land use VMT is estimated to be 13.3 daily miles per capita, which would exceed the VMT threshold and result in a VMT impact. The mitigation measure TRA-2 identified below would fully mitigate this impact.

**MITIGATION MEASURE (TRA 2 in Transportation Chapter):** The residential land use of the Project Site will be required to implement a TDM Plan achieving a 36% reduction from gross ITE trip generation rates (for the Project, this reduction equals 6,023 daily trips). Should a different number of residential units be built, the total daily trips will be adjusted accordingly. The required residential TDM Plan will include annual monitoring and reporting requirements on the effectiveness of the TDM program. The Project applicant submitted a draft residential TDM Plan, which contained specific measures that would meet this trip reduction requirement. The draft TDM Plan is subject to City review and approval. If the annual monitoring finds that the TDM reduction is not met, the TDM coordinator will be required to work with City staff to detail next steps to achieve the TDM reduction. With the implementation of the required residential TDM Plan, the residential VMT impact would be **less than significant with mitigation (LTS/M)**.

**Table ES- 1  
Office and Residential VMT Evaluation**

Land Use	Regional Average	VMT Threshold	Project VMT	VMT Impact	Additional TDM Mitigation needed to eliminate VMT impact
Office <sup>1</sup>	15.9	13.6	13.6	No	-
Residential <sup>2</sup>	13.1	11.2	13.3	Yes	16%

**Notes:**  
\* All data referenced the latest Menlo Park citywide travel demand forecast model.  
1. VMT for office land use is reported in VMT per employee.  
2. VMT for residential land use is reported in VMT per capita.

<sup>4</sup> Willow Village TDM Plan. Prepared for Peninsula Innovation Partners. Fehr & Peers, Inc. July 2021

## Hotel VMT

Based on consultation with the City and applicant, the hotel is expected to have a service area of approximately three (3) miles in radius. This means that most of the destinations of hotel patrons are expected to be within three miles of the hotel. While some trips are expected to be longer than three miles, the majority of the change in VMT is expected to occur within this three-mile radius. The evaluated daily VMT includes the entire length of the trip even when it extends beyond the three-mile radius.

The total daily VMT generated by land uses within a three-mile radius was compared under the “no hotel” and “with project” scenarios. As shown in Table ES-2, the proposed hotel component of the project was shown to slightly reduce the total daily VMT generated by land uses within a three-mile radius of the Project Site. Since the proposed hotel would be located within very close proximity to major employment in the Bayfront area, hotel patrons would enjoy shorter travel distances to their business destinations. It’s location within a mixed-use project, including complementary retail space, also would allow hotel patrons to shop/dine within walking distance.

Because the proposed hotel component of the Project would not cause an increase in total VMT generated within the analysis area, it is concluded that the proposed hotel component of the Project would have a less than significant impact on vehicle miles travelled.

**Table ES- 2**  
**Hotel VMT Evaluation**

	3-Mile Radius Area of Project Site		
	No Hotel Conditions <sup>2</sup>	With Project Conditions <sup>2</sup>	% Change
Total Daily VMT <sup>1</sup>	6,656,914	6,629,443	-0.4%
<u>Notes:</u>			
1. Total daily VMT includes VMT generated by all trips having at least one trip-end in the analysis area, as estimated by the citywide travel demand model.			
2. "No hotel conditions" represent conditions with the Proposed Project <u>except</u> the hotel component. "With project conditions" represent conditions with the Proposed Project including the hotel component.			

## Retail VMT

The project has two areas of retail development. The main Project Site includes up to 200,000 s.f. of retail space within a mixed use development. North of Willow Road, as a result of the proposed Hamilton Avenue realignment, the two retail parcels adjacent to Hamilton Avenue at the intersection with Willow Road (“Hamilton Avenue Parcels”) would be reconfigured. The Project proposes to increase the total retail square footage at the Hamilton Avenue parcels by up to 7,700 s.f. to approximately 23,400 s.f. Because the retail at the Hamilton Avenue Parcels will require a separate use permit and would be operated as a separate retail use from the retail uses at the main Project Site, the Hamilton Avenue Parcels retail is evaluated separately from the retail component of the main Project Site. According to the City’s VMT policy, local serving retail (defined as having total square footage less than 50,000 s.f.) would be exempt from a VMT analysis. The Project’s proposed net 7,700 s.f. of potential retail development at the Hamilton Avenue Parcels would thus be exempt from VMT analysis. The discussion below is focused on the 200,000 s.f. of retail space at the main Project Site.



Based on the types of retail being proposed as well as nearby comparable retail stores, it is expected that the proposed retail would have a service area of approximately five (5) miles in radius. The 5-mile radius service area was selected based on engineering judgement, as it would cover most of Menlo Park, Palo Alto, as well as downtown Redwood City, and would include a mix of retail shops and restaurants comparable to the three cities. Assuming equal services, it is expected that people would patronize the closer store or restaurant. The five-mile radius service area also means that most of the destinations of the Project’s retail patrons are expected to be within five miles of the project. While some trips are expected to be longer than five miles, the majority of the change in VMT is expected to occur within this five-mile radius.

The total daily VMT generated by land uses within a five-mile radius was compared under the “no retail” and “with project” scenarios. As shown in Table ES-3, the proposed retail component of the project was shown to slightly reduce the total daily VMT generated by land uses within a five-mile radius of the Project Site. Since the proposed retail space would be located in close proximity to the Belle Haven neighborhood, a large number of offices and life sciences buildings in the Bayfront area, as well as the project’s proposed residential land uses, the proposed retail component would provide retail stores closer to homes for nearby residents and closer to jobs for nearby workers.

Because the proposed retail component of the Project would not cause an increase in total VMT generated by the analysis area, it is concluded that the proposed retail component of the Project would have a less than significant impact on vehicle miles travelled.

**Table ES- 3**  
**Retail VMT Evaluation**

	5-Mile Radius Area of Project Site		
	No Retail Conditions <sup>2</sup>	With Project Conditions <sup>2</sup>	% Change
Total Daily VMT <sup>1</sup>	14,360,590	14,334,067	-0.2%
<b>Notes:</b>			
1. Total daily VMT includes VMT generated by all trips having at least one trip-end in the analysis area, as estimated by the citywide travel demand model.			
2. "No retail conditions" represent with the Proposed Project <u>except</u> the retail component. "With project conditions" represent with the Proposed Project including the retail component.			

## Non-CEQA Levels of Service Transportation Analysis

Until July 1, 2020, the City’s TIA Guidelines used roadway congestion, commonly referred to as level of service (LOS), as the primary study metric for evaluating transportation impacts under CEQA. LOS is no longer a CEQA threshold of significance; however, the City’s TIA Guidelines require that the TIA also analyze LOS for planning purposes (per General Plan Program Circ-3.A Transportation Impact Metrics):

Supplement Vehicle Miles Traveled (VMT) and greenhouse gas emissions per service population (or other efficiency metric) metrics with Level of Service (LOS) in the transportation impact review process, and utilize LOS for identification of potential operational improvements, such as traffic signal upgrades and coordination, as part of the Transportation Master Plan.

The LOS analysis would determine whether the project traffic would cause an intersection LOS to exceed the City's LOS thresholds or cause either the average delay or average critical delay to exceed the City's intersection delay thresholds under near term and cumulative conditions. The LOS and delay thresholds vary depending on the street classifications as well as whether the intersection is on a State route or not.

The City's TIA Guidelines further require an analysis of the Proposed Project in relation to relevant policies of the Circulation Element and consideration of specific measures to address noncompliance with local policies which may occur as a result of the addition of project traffic. The TIA identifies measures that could be applied as conditions of approval that would bring operations back to pre-Project levels. Although not included in the TIA for purposes of this EIR, an analysis may be prepared separately to determine if there are potential measures that could bring the Proposed Project into conformance with the LOS goals of Circulation Policy 3.4. Implementation of any such measures would require review and approval by City decision makers.

Intersection level of service non-compliance caused by the proposed project under near-term (2025<sup>5</sup>) with project, cumulative (2040) with project, and cumulative (2040) with Dumbarton rail with project conditions were analyzed. Both near-term (year 2025) with project, and cumulative (year 2040) with project scenario forecasts of intersection turning movements were completed using the latest Menlo Park travel demand forecast model. The base model structure was refined for application within Menlo Park to add more detail to the zone structure and transportation network.

The cumulative with Dumbarton Rail scenario assumed that the Dumbarton Rail would be built and there would be a shift in vehicular trips to transit trips near the Project Site<sup>6</sup> as well as along the Dumbarton Rail corridor. Cumulative plus project conditions with Dumbarton Rail were evaluated relative to cumulative conditions with the Dumbarton Rail. This analysis is speculative since there is no current approved plan or financing to provide any Dumbarton transit service and is provided for informational purposes in the transportation analysis.

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<sup>5</sup> 2025 is the earliest year for expected occupancy when this analysis started.

<sup>6</sup> *Dumbarton Rail Corridor Update Public Meeting*, Prepared by Facebook for the San Mateo County Transit District. March 15, 2021

The following intersections were adversely affected under either near term plus project or cumulative plus project scenarios during at least one peak hour (see Table ES-4 and ES-5):

*City of Menlo Park:*

1. Marsh Road and Bayfront Expressway [CMP]
5. Marsh Road and Bohannon Drive/Florence Street
13. Chilco Street and Hamilton Avenue
16. Willow Road and Bayfront Expressway [CMP]
17. Willow Road and Hamilton Avenue
18. Willow Road and Park Street
19. Willow Road and Ivy Drive
21. Willow Road and Newbridge Street
24. Willow Road and Bay Road
25. Willow Road and Hospital Plaza/Durham Street
30. O'Brien Drive and Kavanaugh Drive
32. Adam's Drive and O'Brien Drive

*City of East Palo Alto:*

39. University Avenue and Bay Road
42. University Avenue and Donohoe Street
44. Cooley Avenue and Donohoe Street
46. University Avenue and Woodland Avenue
47. E. Bayshore Road and Donohoe Street
49. Saratoga Avenue and Newbridge Street
50. East Bayshore Road and Euclid Avenue

*Caltrans:*

23. Willow Road and US 101 Southbound Ramps (AM peak hour)
43. US 101 Northbound Off-Ramp and Donohoe Street (AM and PM peak hours)
45. University Avenue and US 101 Southbound Ramps (AM peak hour)

Since the Cumulative with Dumbarton Rail scenario was analyzed for information only, analysis summary is presented only in Chapter 3.

**Table ES- 4  
Intersection Level of Service Summary (City of Menlo Park)**

#	Intersection	Peak Hour	Count	Date	Traffic Control	Existing Conditions		Near-Term (2025) Conditions				Cumulative (2040) Conditions														
						Avg. Delay (sec) <sup>1</sup>	LOS	No Project		Project Conditions		With Improvement		General Plan Conditions		Project Conditions		With Improvement								
								Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Critical Delay					
1	Marsh Road & Bayfront Expressway* Haven Avenue Southbound	AM	4/16/2019	Signal	50.5	D	52.0	D	56.2	E	4.2	5.4	50.2	D	-	68.7	E	65.6	E	<4	<0.8					
		AM			75.0	E	71.2	E	70.6	E	<4	<0.8	71.2	E	73.4	E	<4	<0.8								
		PM	4/16/2019	Signal	31.6	C	34.9	C	38.7	D	<4	4.7	38.9	D	-	65.0	E	77.9	E	12.9	12.5					
2	Marsh Road & US 101 Northbound Off-Ramp	AM	4/16/2019	Signal	15.8	B	23.1	C	39.0	D	15.9	25.1			60.9	E	62.2	E	<4	1.5						
		PM	4/16/2019	Signal	13.3	B	15.8	B	16.8	B	<4	1.6			22.9	C	22.8	C	<4	<0.8						
3	Marsh Road & US 101 Southbound Off-Ramp	AM	4/16/2019	Signal	19.0	B	20.7	C	20.7	C	<4	<0.8			22.8	C	24.4	C	<4	2.0						
		PM	4/16/2019	Signal	17.0	B	17.6	B	17.6	B	<4	<0.8			19.2	B	18.8	B	<4	<0.8						
4	Marsh Road & Scott Drive	AM	4/16/2019	Signal	18.5	B	20.3	C	20.5	C	<4	<0.8			31.8	C	31.8	C	<4	<0.8						
		PM	4/16/2019	Signal	15.3	B	15.9	B	15.9	B	<4	<0.8			17.9	B	18.1	B	<4	<0.8						
5	Marsh Road & Bohannon Drive/Florence Street	AM	3/21/2019	Signal	35.3	D	40.0	D	41.6	D	<4	2.3			58.0	E	60.4	E	<4	4.9	56.7	E	<0.8			
		PM	3/21/2019	Signal	34.6	C	36.3	D	37.3	D	<4	2.2			52.5	D	53.6	D	<4	1.6	48.3	D	<0.8			
6	Marsh Road & Bay Road	AM	3/21/2019	Signal	19.7	B	23.6	C	25.2	C	<4	2.8			64.2	E	64.8	E	<4	<0.8						
		PM	3/21/2019	Signal	18.6	B	18.7	B	19.1	B	<4	<0.8			47.6	D	54.9	D	7.3	14.4						
7	Chrysler Drive & Bayfront Expressway	AM	4/16/2019	Signal	8.4	A	9.1	A	9.4	A	<4	<0.8			13.1	B	12.8	B	<4	6.4						
		PM	4/16/2019	Signal	13.1	B	17.3	B	18.3	B	<4	1.5			39.5	D	36.3	D	<4	<0.8						
8	Chilco Street & Bayfront Expressway Chilco Street Eastbound	AM	4/16/2019	Signal	10.9	B	23.7	C	25.6	C	<4	5.3			44.5	D	49.2	D	4.7	13.5						
		AM			19.0	B	48.7	D	56.8	E	8.1	12.6			112.4	F	108.9	F	<4	<0.8						
		PM	4/16/2019	Signal	13.1	B	34.1	C	35.9	D	<4	4.5			69.6	E	66.9	E	<4	<0.8						
9	MPK 21 Driveway & Bayfront Expressway	AM	4/25/2019	Signal	7.9	A	7.3	A	7.4	A	<4	<0.8			5.7	A	5.6	A	<4	<0.8						
		PM	4/25/2019	Signal	10.2	B	13.7	B	15.0	B	<4	1.4			36.3	D	36.1	D	<4	<0.8						
10	MPK 20 Driveway (east) & Bayfront Expressway	AM	4/25/2019	Signal	10.0	A	7.3	A	7.5	A	<4	<0.8			10.0	B	9.9	A	<4	<0.8						
		PM	4/25/2019	Signal	8.2	A	9.7	A	9.4	A	<4	<0.8			18.7	B	18.8	B	<4	<0.8						
11	Chrysler Drive & Constitution Drive	AM	3/21/2019	Signal	50.6	D	59.8	E	55.1	E	<4	<0.8			>120	F	>120	F	<4	<0.8						
		PM	3/21/2019	Signal	28.0	C	28.5	C	30.4	C	<4	1.6			>120	F	>120	F	<4	<0.8						
12	Chilco Street & Constitution Drive/MPK 22 Driveway[4]	AM	3/21/2019	AWSC/Signal[3]	32.1	D	24.8	C	24.6	C	<4	<0.8			52.9	D	51.1	D	<4	<0.8						
		PM	3/21/2019	AWSC/Signal[3]	32.5	D	42.9	D	54.3	D	11.4	11.5			113.5	F	101.8	F	<4	<0.8						
13	Chilco Street & Hamilton Avenue	AM	1/0/1900	AWSC	9.2	A	10.5	B	10.8	B	<4	<0.8			24.5	C	27.1	D	<4	2.6						
		PM	1/0/1900	AWSC	16.8	C	19.0	C	38.0	E	19.0	19.0			>120	F	>120	F	24.7	24.7						
14	Ravenswood Avenue & Middlefield Road	AM	3/19/2019	Signal	36.1	D	43.1	D	44.9	D	<4	3.0			49.7	D	49.7	D	<4	<0.8						
		PM	3/19/2019	Signal	16.1	B	17.6	B	17.9	B	<4	<0.8			20.2	C	19.5	B	<4	<0.8						
15	Ringwood Avenue & Middlefield Road	AM	3/19/2019	Signal	12.5	B	13.2	B	13.7	B	<4	<0.8			13.2	B	13.2	B	<4	<0.8						
		PM	3/19/2019	Signal	13.7	B	15.2	B	15.4	B	<4	<0.8			21.0	C	21.1	C	<4	<0.8						
16	Willow Road & Bayfront Expressway*[1]	AM	4/23/2019	Signal	>120	F	OVERSAT	F	OVERSAT	F	14.0	6.7			OVERSAT	F	OVERSAT	F	<4	<0.8						
		PM	4/23/2019	Signal	>120	F	OVERSAT	F	OVERSAT	F	<4	<0.8			OVERSAT	F	OVERSAT	F	<4	<0.8						
17	Willow Road & Hamilton Avenue[1][2] Hamilton Avenue Southbound Main Street Northbound	AM	3/21/2019	Signal	73.3	E	OVERSAT	F	OVERSAT	F	44.1	54.0			OVERSAT	F	OVERSAT	F	<4	<0.8						
		AM			64.7	E	64.9	E	>120	F	117.9	<0.8			>120	F	>120	F	<4	<0.8						
		PM	3/21/2019	Signal	82.0	F	83.3	F	113.7	F	30.4	>120			>120	F	>120	F	<4	<0.8						
18	Willow Road & Park Street (future intersection)[1]	AM	--	Signal	>120	F	OVERSAT	F	OVERSAT	F	>120	>120			OVERSAT	F	OVERSAT	F	<4	<0.8						
		PM	--	Signal	94.3	F	>120	F	>120	F	>120	<0.8			>120	F	>120	F	<4	<0.8						
19	Willow Road & Ivy Drive[1] Ivy Drive Southbound	AM	3/21/2019	Signal	75.2	E	OVERSAT	F	OVERSAT	F	20.9	46.6			OVERSAT	F	OVERSAT	F	46.2	98.7	OVERSAT	F				
		AM			88.2	F	88.2	F	75.0	E	<4	<0.8			70.9	E	69.6	E	<4	<0.8	61.2	E	<0.8			
20	Willow Road & O'Brien Drive[1] O'Brien Drive Northbound	AM	3/21/2019	Signal	39.5	D	OVERSAT	F	OVERSAT	F	50.1	70.9			OVERSAT	F	OVERSAT	F	80.8	102.4	OVERSAT	F				
		PM	3/21/2019	Signal	69.7	E	68.4	E	66.1	E	<4	<0.8			68.1	E	71.7	E	<4	3.6	49.0	D	<0.8			
21	Willow Road & Newbridge Street[1] Newbridge Street Southbound Newbridge Street Northbound	AM	3/21/2019	Signal	58.9	E	OVERSAT	F	OVERSAT	F	<4	<0.8			OVERSAT	F	OVERSAT	F	<4	<0.8						
		AM			66.4	E	72.6	E	66.4	E	<4	<0.8			>120	F	80.4	F	<4	<0.8						
22	Willow Road & US 101 Northbound Ramps[1]	AM	3/21/2019	Signal	>120	F	OVERSAT	F	OVERSAT	F	<4	<0.8			OVERSAT	F	OVERSAT	F	<4	<0.8						
		PM	3/21/2019	Signal	>120	F	>120	F	>120	F	<4	<0.8			>120	F	>120	F	<4	<0.8						
		AM	3/21/2019	Signal	93.4	F	OVERSAT	F	OVERSAT	F	40.3	49.7			OVERSAT	F	OVERSAT	F	25.9	74.2	OVERSAT	F				
23	Willow Road & US 101 Southbound Ramps[1]	AM	3/13/2019	Signal	62.9	E	69.3	E	104.2	F	34.9	43.0			79.6	F	9.0	>120	F	108.8	F	<4	<0.8	>120	F	67.3
		AM			>120	F	>120	F	>120	F	4.4	64.0			42.1	D	<0.8	>120	F	>120	F	101.4	>120	73.5	E	<0.8
		PM	3/21/2019	Signal	>120	F	OVERSAT	F	OVERSAT	F	<4	<0.8			OVERSAT	F	OVERSAT	F	<4	<0.8						
23	Willow Road & US 101 Southbound Ramps[1]	AM	3/13/2019	Signal	38.5	D	OVERSAT	F	OVERSAT	F	18.3	<0.8			OVERSAT	F	OVERSAT	F	<4	<0.8						
		PM	3/13/2019	Signal	98.9	F	OVERSAT	F	OVERSAT	F	<4	<0.8			OVERSAT	F	OVERSAT	F	<4	<0.8						

**Table ES-4 (Continued)**  
**Intersection Level of Service Summary (City of Menlo Park)**

#	Intersection	Peak Hour	Count	Date	Traffic Control	Existing Conditions		Near-Term (2025) Conditions						Cumulative (2040) Conditions										
						Avg. Delay (sec) <sup>1</sup>	LOS	No Project		Project Conditions		With Improvement		General Plan Conditions		Project Conditions		With Improvement						
								Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Critical Delay			
24	Willow Road & Bay Road[1] Bay Road Southbound	AM	4/23/2019	Signal	45.3	D	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<4	38.3	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<4	5.4	<b>OVERSAT</b>	F		
		PM	4/23/2019	Signal	<b>60.1</b>	<b>E</b>	<b>104.3</b>	F	>120	F	31.7	31.7	27.0	C	<0.8	>120	F	>120	F	30.3	30.3	27.8	C	<0.8
		PM	4/23/2019	Signal	113.5	F	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	6.6	6.7	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<4	<0.8	<b>OVERSAT</b>	F		
		PM		Signal	29.0	C	49.2	D	53.5	D	4.3	4.3	23.9	C	<0.8	75.6	E	82.7	F	7.0	7.0	26.5	C	<0.8
25	Willow Road & Hospital Plaza/Durham Street[1] VA Medical Center Southbound	AM	4/16/2019	Signal	43.6	D	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<4	<0.8	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<4	11.0	<b>OVERSAT</b>	F				
		AM		Signal	<b>65.5</b>	<b>E</b>	<b>73.2</b>	<b>E</b>	<b>69.5</b>	<b>E</b>	<4	<0.8	<b>74.8</b>	<b>E</b>	<b>74.7</b>	<b>E</b>	<4	<0.8	<b>74.7</b>	<b>E</b>	<4	<0.8		
		AM		Signal	<b>73.9</b>	<b>E</b>	<b>93.6</b>	<b>F</b>	<b>79.6</b>	<b>E</b>	<4	<0.8	>120	F	>120	F	6.0	5.4	>120	F	<0.8	<0.8		
		PM	4/16/2019	Signal	>120	F	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<4	<0.8	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<4	1.3	<b>OVERSAT</b>	F				
		PM		Signal	<b>67.6</b>	<b>E</b>	<b>72.2</b>	<b>E</b>	<b>70.2</b>	<b>E</b>	<4	<0.8	<b>74.2</b>	<b>E</b>	<b>74.5</b>	<b>E</b>	<4	<0.8	<b>69.4</b>	<b>E</b>	<0.8	<0.8		
		PM		Signal	<b>73.5</b>	<b>E</b>	<b>84.6</b>	<b>F</b>	<b>79.8</b>	<b>E</b>	<4	<0.8	<b>88.1</b>	<b>F</b>	<b>90.3</b>	<b>F</b>	<4	2.8	<b>59.9</b>	<b>E</b>	<0.8	<0.8		
26	Willow Road & Coleman Avenue	AM	3/19/2019	Signal	18.6	B	25.1	C	23.9	C	<4	<0.8	34.9	C	34.3	C	<4	<0.8						
		PM	3/19/2019	Signal	9.2	A	11.0	B	10.8	B	<4	<0.8	13.1	B	13.2	B	<4	<0.8						
27	Willow Road & Gilbert Avenue	AM	3/19/2019	Signal	19.7	B	20.0	C	19.9	B	<4	<0.8	24.4	C	23.9	C	<4	<0.8						
		PM	3/19/2019	Signal	10.3	B	13.0	B	12.4	B	<4	<0.8	14.2	B	14.1	B	<4	<0.8						
28	Willow Road & Middlefield Road Middlefield Road Southbound	AM	3/19/2019	Signal	<b>61.6</b>	<b>E</b>	<b>62.3</b>	<b>E</b>	<b>62.5</b>	<b>E</b>	<4	<0.8	<b>64.5</b>	<b>E</b>	<b>65.0</b>	<b>E</b>	<4	<0.8						
		AM		Signal	<b>67.9</b>	<b>E</b>	<b>69.8</b>	<b>E</b>	<b>70.1</b>	<b>E</b>	<4	<0.8	<b>69.9</b>	<b>E</b>	<b>70.4</b>	<b>E</b>	<4	<0.8						
		AM		Signal	<b>67.3</b>	<b>E</b>	<b>67.7</b>	<b>E</b>	<b>67.7</b>	<b>E</b>	<4	<0.8	<b>67.4</b>	<b>E</b>	<b>67.2</b>	<b>E</b>	<4	<0.8						
		PM	3/19/2019	Signal	31.5	C	34.5	C	34.7	C	<4	<0.8	42.5	D	42.4	D	<4	<0.8						
		PM		Signal	31.7	C	34.5	C	34.7	C	<4	<0.8	42.1	D	42.2	D	<4	<0.8						
		PM		Signal	31.2	C	34.3	C	34.7	C	<4	<0.8	40.6	D	40.8	D	<4	<0.8						
29	O'Brien Drive/Loop Road & Main Street/O'Brien Drive (future intersection)	AM	--	Roundabout	Project	Project	7.4	A	7.4	A	7.4	7.4	Project	Project	8.8	A	8.8	8.8						
		PM	--	Roundabout	Intersection	Intersection	9.2	A	9.2	A	9.2	9.2	Intersection	Intersection	11.0	B	11.0	11.0						
30	O'Brien Drive & Kavanaugh Drive	AM	4/25/2019	AWSC	11.8	B	12.7	B	<b>107.7</b>	<b>F</b>	<b>95.0</b>	<b>95.0</b>	Traffic signal potentially feasible	>120	F	>120	F	<b>105.8</b>	<b>105.8</b>	Traffic signal potentially feasible				
		PM	4/25/2019	AWSC	15.2	C	29.6	D	<b>73.7</b>	<b>F</b>	<b>44.1</b>	<b>44.1</b>	Traffic signal potentially feasible	>120	F	>120	F	<4	<0.8					
31	Adams Drive & Adams Court	AM	4/25/2019	TWSC	11.5	B	11.5	B	11.6	B	<4	<0.8	20.1	C	17.8	C	<4	<0.8						
		PM	4/25/2019	TWSC	11.9	B	11.9	B	11.9	B	<4	<0.8	16.4	C	12.7	B	<4	<0.8						
32	Adams Drive & O'Brien Drive	AM	4/25/2019	TWSC	17.3	C	17.6	C	<b>62.5</b>	<b>F</b>	<b>44.9</b>	<b>44.9</b>	Traffic signal potentially feasible	<b>62.4</b>	<b>F</b>	>120	F	>120	>120	Traffic signal potentially feasible				
		PM	4/25/2019	TWSC	<b>27.6</b>	<b>D</b>	34.0	D	>120	F	>120	>120	Traffic signal potentially feasible	>120	F	>120	F	>120	>120	Traffic signal potentially feasible				
33	University Avenue & Bayfront Expressway*	AM	4/25/2019	Signal	11.4	B	13.9	B	12.1	B	<4	<0.8	14.8	B	13.3	B	<4	<0.8						
		PM	4/25/2019	Signal	<b>94.1</b>	<b>F</b>	<b>105.8</b>	<b>F</b>	<b>108.7</b>	<b>F</b>	<4	2.9	>120	F	>120	F	<4	3.1						

Notes:  
 \* Denotes CMP Intersection  
 AWSC - All Way Stop Control; TWSC - Two Way Stop Control  
<sup>1</sup> Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported  
 \*OVERSAT\* indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.  
 [1] Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in average delay and critical delay calculated using Vistro.  
 [2] The intersection is not considered as non-compliant under cumulative plus project conditions because the critical movement of the local approach shifts with the addition of project traffic.  
 [3] Intersection operates as an AWSC under existing conditions. It would operate as signalized under background conditions.  
 [4] The intersection is not considered as non-compliant under background plus project and cumulative plus project conditions because the critical movement of the local approach shifts with the addition of project traffic.  
**Bold** indicates substandard level of service  
**Bold** indicates noncompliance. The project exceeds thresholds in the City of Menlo Park's TIA Guidelines.



### Adverse Effects and Recommended Improvements

Improvement options were studied for each intersection that were found to be non-compliant under the near term plus project conditions, and cumulative plus project conditions, were compared to near term no project, and cumulative no project conditions, respectively. Potential improvement strategies are shown in Table ES-6.

**Table ES- 6  
Recommended Improvements**

#	Intersection	Potential Improvement	Notes
1	Marsh Road & Bayfront Expressway	Modify the southbound approach to include a shared left-through lane, shared through-right lane, and a right turn only lane.	This improvement is in Menlo Park’s traffic impact fee (TIF) program. With implementation of these intersection modifications, the intersection would be in compliance with the TIA Guidelines and address the Proposed Project’s share of the non-compliant operation.
5	Marsh Road & Bohannon Drive/Florence Street	Physical improvements at this intersection are considered infeasible due to right-of-way constraints and/or adverse effects on pedestrian and bicycle travel.	The City’s TIF program includes multi-modal improvements along the Marsh Road corridor such as Class II buffered bike lanes along Marsh Road from Bay Road to Scott Road, and installing sidewalks along the north-side of Marsh Road between Page Street and Bohannon Drive/Florence Street. Implementing recommended multi-modal facilities along the corridor (from the City’s TIF program) could shift some motor vehicle traffic to alternative modes of travel and reduce congestion. With implementation of these multi-modal improvements, the intersection deficiencies could be further reduced and partially address the Proposed Project’s share of the non-compliant operations at this intersection.
13	Chilco Street & Hamilton Avenue	A traffic signal is not recommended until signal warrants conducted with a future year’s actual counts have been met	The recommended improvement includes conducting a signal warrant analyses for a period of five years after full Project completion to determine if a signal would be warranted and if warranted, install a new signal. This improvement is included in the City’s TIF program. With implementation of the intersection modifications, the intersection would be in compliance with the TIA Guidelines which would address the Proposed Project’s share of the non-compliant operation.
16 17 18 23	Willow Road & Bayfront Expressway; Willow Road & Hamilton Avenue; Willow Road & Park Street; Willow Road & US 101 southbound ramps	Physical improvements at these intersection are considered infeasible due to right-of-way constraints and/or adverse effects on pedestrian and bicycle travel.	The TIF program also proposes multimodal improvements along this section of Willow Road. Implementing recommended multi-modal facilities along the corridor (from the City’s TIF program) could shift some motor vehicle traffic to alternative modes of travel and reduce congestion. With implementation of these multi-modal improvements, the intersection deficiencies could be further reduced and partially address the Proposed Project’s share of the non-compliant operations along Willow Road.
19	Willow Road & Ivy Drive	The Menlo Park TIF proposes to install a right-turn overlap phase on southbound Ivy Drive and restrict eastbound Willow Road U-turns.	This would improve the critical movement delay of the local approach to better than cumulative no project conditions. The Project is required to pay traffic impact fees according to the City’s current TIF schedule.

**Table ES-6 (Continued)  
Recommended Improvements**

#	Intersection	Potential Improvement	Notes
21	Willow Road & Newbridge Street	The TIF program proposes to modify the signal timing to a protected left-turn phasing operation on Newbridge Street, provide a leading left-turn phase on the southbound movement and a lagging left-turn phase on the northbound movement, and optimize signal timing.	With implementation of these intersection modifications under project conditions, the critical movement delay would be reduced for the northbound movement to lower than no project conditions. However, the improvement would not address the southbound deficiency. Further improvements to address the southbound deficiency are not feasible.
24	Willow Road & Bay Road	The TIF program proposes to modify the southbound approach at this intersection to two left-turn lanes and one right-turn lane and to modify the westbound approach to add a right-turn lane. With these improvements under project conditions, the critical movement delay at the local approach would be reduced to lower than no project conditions.	This improvement would address the adverse effect on the intersection due to Project traffic. With implementation of these intersection modifications, the Willow Road and Bay Road intersection would be in compliance with the TIA Guidelines which would address the Proposed Project's share of the non-compliant operation. With implementation of the recommended improvements from the TIF program for the Willow Road and Bay Road intersection the deficiency attributable to the Proposed Project would be addressed.
25	Willow Road & Hospital Plaza/Durham Street	The recommended improvement measure for this intersection is restriping northbound Durham Street as a shared left-through lane and right-turn lane, and adding a northbound right turn overlap phase.	With this improvement, the critical movement delay of the local approach would improve to better than cumulative no project conditions in the AM peak hour. The PM peak hour would continue to be non-compliant. If this recommended improvement measure is implemented, the Project should contribute its fair share (25%) towards the improvement. Fair share is calculated as the percentage of net project traffic generated of the overall cumulative traffic growth at this intersection.
30	O'Brien Drive & Kavanaugh Drive	The recommended improvement to bring this intersection back to pre-Project conditions is the installation of the new traffic signal and appropriate pedestrian and bicycle accommodation. Alternatively, traffic calming measures could be installed to discourage the use of Kavanaugh Drive, which is a residential street, and encourage vehicles to use O'Brien Drive and Adam's Drive instead. Other measures such as peak period turning movement restrictions could be considered to discourage traffic from using Kavanaugh Drive and improve intersection operations.	Monitoring of traffic operations at this intersection for a period of five years after full Project completion should be conducted to determine if signalization or alternative improvements are needed. If warranted, implementation of the new traffic signal would address the Proposed Project's share of the non-compliant operation and bring the intersection into compliance with the TIA Guidelines. If the alternative measures are implemented, the intersection may or may not be brought into compliance with the TIA Guidelines and address the Proposed Project's share of the non-compliant operation.
32	Adams Drive & O'Brien Drive	The recommended improvement to bring this intersection back to pre-Project conditions is the installation of the new traffic signal and appropriate pedestrian and bicycle accommodations at this intersection and within the vicinity.  The expected intersection operational issues would be due to the increased through traffic on O'Brien Drive between the Project Site and University Avenue. Menlo Park's TIF program identifies an improvement to signalize the nearby intersection at University Avenue and Adams Drive in East Palo Alto. This improvement may provide an alternative route for Project vehicles to access the Project Site via University Avenue.	Monitoring of traffic operations at this intersection for a period of five years after full Project completion should be conducted to determine if signalization or alternative improvements are needed. If warranted, implementation of the new traffic signal would address the Proposed Project's share of the non-compliant operation and bring the intersection into compliance with the TIA Guidelines. If the alternative measures are implemented, the intersection may or may not be brought into compliance with the TIA Guidelines and address the Proposed Project's share of the non-compliant operation.



**Table ES-6 (Continued)  
Recommended Improvements**

#	Intersection	Potential Improvement	Notes
39	University Avenue & Bay Road	Potential modification to bring the intersection to pre-Project conditions would be to add an exclusive eastbound right-turn lane and a second eastbound left-turn lane on University Avenue, add a second northbound left-turn lane on Bay Road, add a second westbound left-turn lane on University Avenue, and modify signal phasing.	Since this intersection is located within the City of East Palo Alto, the recommended measure to bring the intersection back to pre-Project conditions and address the Project's share of the non-compliant operation would be to make a fair share (34%) contribution towards this improvement. Fair share is calculated as the percentage of net project traffic generated divided by the overall cumulative traffic growth at this intersection. The Menlo Park TIF includes improvements at the University Avenue and Bay Road intersection, but not sufficient improvements to bring the intersection back to pre-Project conditions, as described above. However, the Project's fair share contribution towards this intersection would be calculated considering credit from its TIF payment.
42 43 44 45 46 47 50	University Avenue & Donohoe Street; US 101 Northbound Off-ramp & Donohoe Street; Cooley Avenue & Donohoe Street; University Avenue & US 101 Southbound Ramps; University Avenue & Woodland Avenue; E. Bayshore Road & Donohoe Street; Donohoe Street & Euclid Avenue	East Palo Alto plans to widen the northbound approach on Donohoe Street at the US 101 northbound off-ramp to accommodate four through lanes to improve the vehicular throughput at this intersection. This improvement will require median modifications and narrowing the southbound Donohoe Street approach to Cooley Avenue to include two through lanes and a full length left-turn lane. In addition, the traffic signals will be coordinated with adjacent traffic signals on Donohoe Street.  East Palo Alto also plans to install a new traffic signal at the US 101 northbound on-ramp and Donohoe Street and Bayshore Road and Euclid Avenue to coordinate with other closely spaced traffic signals along Donohoe Street. Along with new traffic signals, appropriate pedestrian and bicycle accommodation will be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. In order to align with the proposed driveway for the University Plaza Phase II site on the north side of Donohoe Street, the US 101 on-ramp will be shifted approximately 30 feet to the south. In addition, the northbound approach on Donohoe Street will be restriped to accommodate a short exclusive left-turn pocket (approximately 60 feet in length), a shared left-through lane, and a shared through-right lane. These improvements would require widening of the US 101 northbound on-ramp to accommodate two lanes that taper down to a single lane before this ramp connects with the loop on-ramp from eastbound University Avenue. A northbound right turn only will also be added to Bayshore Road and Euclid Avenue.	Because the improvements in this corridor are all interconnected and dependent on each other to work, the recommended improvement measure would be for the Project sponsor to contribute its fair share to improvements at all six intersections in this corridor. Fair share is calculated as the percentage of net project traffic generated of the overall cumulative traffic growth at this intersection.  • Donohoe Street & Cooley Avenue: 10% fair share • Donohoe Street & US 101 Northbound Off-Ramp: 24% fair share • Donohoe Street & University Avenue: 31% fair share • Donohoe Street & US 101 Northbound On-Ramp: 8% fair share • Donohoe Street/Bayshore Road & Euclid Avenue: 2% fair share • US 101 Southbound Ramps & University Avenue: 33% fair share  The Menlo Park TIF includes improvements at the University Avenue and Donohoe Street and University Avenue and US 101 southbound ramps intersections, which funding would go toward the planned coordinated system of intersections. The Project's fair share contribution towards these two intersections would be calculated considering credit from its TIF payment.
49	Saratoga Avenue & Newbridge Street	Physical improvements at this intersection are considered infeasible due to proximity to Willow Road.	

## Intersection Queuing Analysis

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis for intersection left-turning movements where the proposed project would add significant trips per lane in the vicinity of the Project Site and affect intersection operations. Locations where the estimated 95th percentile queues would exceed the available storage capacity for the movement are discussed below. Queuing issues are operational issues resulting from signal timing and queue storage provisions. Queuing issues are not considered a CEQA issue related to hazards.

### **Eastbound Left-turn at Willow Road and Bayfront Expressway (#16)**

Under near-term conditions, the 95th percentile queue would exceed the storage length of the turn pocket by 15 vehicles during the AM peak hour and four vehicles during the PM peak hour. The Proposed Project would add three vehicles to the 95th percentile queue during the AM peak hour and PM peak hour. There is no room to extend the left turn pocket due to the emergency vehicle only lane cut in the median.

### **Eastbound Left-turn at Willow Road and Ivy Drive (#19)**

Under near-term conditions, the 95th percentile queue exceeds the storage length of the turn pocket by three vehicles during the AM peak hour. The Proposed Project would add one vehicle to the 95th percentile queue during the AM peak hour and one vehicle during the PM peak hour. There is no room to further extend this left-turn.

### **Southbound Left-turn at Willow Road and Bay Road (#24)**

Under near-term conditions, the 95th percentile queue exceeds the storage length of the turn pocket by 13 vehicles during the AM peak hour and one vehicle during the PM peak hour. The Proposed Project would add six vehicles to the 95th percentile queue during the AM peak hour and three vehicles during the PM peak hour. Menlo Park's TIF has a project to add a second left-turn lane to this intersection, which would add additional storage for left-turning vehicles. The exact length of the addition will be determined during the design phase for the intersection improvement. Construction of the recommended improvement would reduce the queuing deficiency created by the Proposed Project.

### **Eastbound Left-turn and Southbound left-turn at University Avenue and O'Brien Drive (#36)**

The existing vehicle storage for the eastbound left turn pocket on University Avenue at O'Brien Drive is 125 feet, which provides enough spaces for about 5 vehicles. Under existing conditions, the 95th percentile queue exceeds the storage length of the turn pocket by 3 vehicles during the AM peak hour. The Proposed Project would add 22 vehicles to the 95th percentile queue during the AM peak hour. There is no room to lengthen the eastbound left turn pocket.

The existing vehicle storage for the southbound left turn pocket on O'Brien Drive at University Avenue is 60 feet, which provides enough spaces for 2 vehicles. Under existing conditions, the 95th percentile queue exceeds the storage length of the turn pocket by one vehicle during the AM peak hour and 11 vehicles during the PM peak hour. The Project would add one vehicle to the 95th percentile queue during the AM peak hour. There would be no increase to the 95th percentile queue length during the PM peak hour. There is room to extend the left turn pocket to accommodate the estimated 95<sup>th</sup> percentile queue of 325 feet.

Menlo Park's Traffic Impact Fee (TIF) program identifies an improvement to signalize the nearby intersection at University Avenue and Adams Drive in East Palo Alto. This improvement may provide an alternative route for Project vehicles to access the Project Site via University Avenue, and alleviate potential queuing issues at this intersection.

## Freeway Facilities Analysis

To determine the Proposed Project's potential freeway adverse effects, a select-zone analysis within the Menlo Park model was performed to estimate the increase in project traffic volume between existing conditions and near term with project conditions. Freeway segments that would experience a freeway adverse effect generated by the Proposed Project are identified below.

### San Mateo County

The proposed project would add traffic greater than 1% capacity to the following study freeway segments operating below its LOS standard:

- SR 84 – from Willow Road to Alameda County Line – PM Peak Hour
- SR 84 – from Alameda County Line to Willow Road – AM Peak Hour
- US 101 – between Santa Clara County Line and Whipple Avenue – AM & PM Peak Hours
- US 101 – from Whipple Avenue to SR 92 – PM Peak Hour
- US 101 – from SR 92 to Whipple Avenue – AM Peak Hour

### Santa Clara County

The proposed project would add traffic greater than 1% capacity to the following mixed-flow freeway segments operating below its LOS standard:

- US 101 – from SR 85 to Embarcadero Road – AM & PM Peak Hours
- US 101 – from Embarcadero Road to SR 85 – PM Peak hour

The proposed project would add traffic greater than 1% capacity to the following HOV freeway segment operating below its LOS standard:

- US 101 – from Oregon Expressway to Embarcadero Road – AM Peak Hour

## Freeway Improvements

It should be noted that the near term plus project conditions model run assumed the US 101 express lane project in San Mateo County. Improvements to eliminate the adverse freeway effects on US 101 and on SR 84 within San Mateo County would require additional capacity improvements and/or additional TDM measures that would reduce peak-hour vehicle trip-making by more than 70%. San Mateo County currently has no plans to further improve US 101 beyond the identified express lane projects. There are also no identified plans to improve the Bayfront Expressway (SR 84) corridor. Such an aggressive TDM plan would also not be feasible.

Within Santa Clara County, Valley Transportation Authority's Valley Transportation Plan 2040 identifies freeway express lane projects along US 101 that would convert the existing HOV lanes to express lanes and add a second express lane in each direction. This improvement would increase the capacity of the freeway and would adequately address the freeway impacts.

The potential Dumbarton Rail corridor would slightly reduce the Project contribution to the identified adverse effects but would not eliminate any. Therefore, the Project's adverse effects on US 101 and on SR 84 freeway segments in San Mateo County would remain.

## Freeway Ramp Analysis

A freeway ramp analysis is conducted under near term plus project conditions to determine whether freeway ramps would continue to have sufficient capacity to serve the forecasted traffic demand. Under near term plus project conditions, all study freeway ramps would continue to have sufficient capacity to serve the anticipated demand.

## Roadway ADT Analysis

The roadway ADT analysis was conducted under cumulative with project conditions. To determine net Project added traffic, a select zone analysis was conducted using the Menlo Park model under cumulative with project conditions and existing conditions. The proposed project would generate non-compliance at the following roadway segments:

- Willow Road, east of Durham Street
- Willow Road, east of Blackburn Avenue
- Middlefield Road, south of Willow Road
- Marsh Road, east of Bohannon Drive
- O'Brien Drive, south of Willow Road
- O'Brien Drive, north of University Avenue
- Bay Road, north of Willow Road

## Internal Site Access, Circulation, and Parking

Appendix H includes the analysis of the main Willow Village site as well as the Hamilton parcels. The site plan review evaluated the internal site's intersection operations, potential queuing issues, and general site access and circulation for the proposed seven new internal streets, 14 parking garage driveways, and 20 new intersections. The results of the level of service analysis show that the intersection of Driveway B & East Loop Road would operate at LOS D during the AM peak hour. Vehicles turning left out of Driveway B would be expected to experience an average delay of 31 seconds while waiting for a sufficient opening on East Loop Road. During the AM peak hour, approximately 101 vehicles (16 heading eastbound and 85 heading westbound) would be expected to exit the garage, which would be one to two vehicles per minute. Therefore, although exiting drivers would experience some wait time, operations at Driveway B are expected to be adequate. The results of the queuing analysis show that the intersection of Hamilton Avenue/Main Street & Willow Road is expected to have insufficient turn lane storage to accommodate the anticipated traffic volumes under near-term plus project conditions. However, it is assumed that vehicles would choose to instead enter the project site via Park Street. Hexagon recommends the following regarding the internal project circulation:

### Circulation Related Recommendations

- To prevent southbound queues from spilling back onto Willow Road on Park Street and Main Street, Hexagon recommends coordinating the adjacent signals.

### Sight Distance Related Recommendations

- As discussed under Mitigation Measure TRA-2 (see Transportation Chapter of the draft EIR), prior to issuance of the building permit for the North Garage, the applicant shall revise the access design to provide adequate sight distance for the eastern driveway or other design solutions to reduce hazards to a less than significant level, to the satisfaction of the Public Works Director. Potential solutions that would reduce hazards to a less than significant level include restricting the eastern driveway to inbound vehicles only or prohibiting exiting left turns, modifying landscaping or relocating the driveway to the west to allow for adequate sight distance for exiting vehicles, or installing an all-way stop or signal. If driveway A were restricted to inbound vehicles only, all outbound vehicles would use Driveway B, which would provide adequate sight distance for vehicles exiting the north office garage. Driveway B might need multiple exiting lanes to limit queuing inside the garage for exiting vehicles. Alternatively, Driveway A could be moved farther west on East Loop Road so that adequate sight distance could be provided.

- Prior to final design, the project applicant should ensure that landscaping and vegetation would not obstruct visibility at the parking garage driveways.
- Hexagon recommends including 30 feet of red curb on both sides of all garage driveways to prevent vehicles from parking and obstructing the vision of exiting drivers.
- If vehicles exiting the garages cannot see oncoming pedestrians on the sidewalk, Hexagon recommends installing warning signs to alert pedestrians when vehicles are exiting the garages.
- If any driveways are moved from their position on the current site plan, sight distance should be reevaluated.

### **Parking Garage Circulation Related Recommendations**

- Prior to final design, it is recommended that all driveway widths meet the City's requirements.
- At garage driveways where gates and garage doors are proposed, Hexagon recommends conducting an operational analysis to ensure that gate opening and closing times would not create queuing issues or cause vehicles to spill onto the roadway network.
- Prior to final design, the residential parking on level P1 of building RS2 should be shown to be gated and separated from the retail parking on levels 1 and 2. In addition, the roll-up gate in building RS3 should be clearly shown to separate the retail parking in level B1 and the residential parking in level B2.
- It is recommended that all drive aisle and parking stall widths meet the City's requirements.
- It is recommended that adequate turnaround space is provided at all dead-end drive aisles.

### **Parking Related Recommendations**

- If individual vehicles are not able to be retrieved in the tandem puzzle parking, the tandem spaces should be assigned to one residential unit.
- Prior to final design, Hexagon recommends that the required number of ADA and EV parking spaces be provided in all parking garages.

### **Pedestrian Related Recommendations**

- Hexagon recommends that a crosswalk is provided at the intersection of Center Street & East Street and that midblock crosswalks are provided on Center Street and Park Street to reduce block size and improve pedestrian convenience.

### **Hamilton Parcels Recommendations**

- The Hamilton Avenue Parcels are located within the C-2-S zoning district, which per Menlo Park Municipal Code Section 16.37(7), will have parking requirements established by the planning commission for each development. The Hamilton Avenue Parcel North proposes total potential development up to 22,402 square feet and 93 spaces. The Hamilton Avenue Parcel South proposes total development of 5,760 s.f. and 13 spaces. It is recommended that the project applicant confirm that sufficient parking is provided for the proposed total development as part of future architectural control and use permit applications with the City.

# 1. Introduction

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This report presents the results of the Transportation Impact Analysis (TIA) conducted for the proposed Willow Village Master Plan Project in Menlo Park, California. Proposed Project would redevelop an approximately 59-acre industrial site plus two parcels north of Willow Road<sup>7</sup> (collectively, the Project Site) as a mixed-use development (Figure 1). The Proposed Project would demolish all existing onsite buildings and landscaping on the 59-acre portion of the Project Site and construct new buildings, provide open space areas, and install infrastructure within a new Residential/Shopping District, Town Square District, and Campus District. In addition, the Proposed Project would alter two parcels (Hamilton Avenue Parcels North and South<sup>8</sup>) to accommodate realignment of Hamilton Avenue at Willow Road for Project Site access.

The Proposed Project would provide up to 1.6 million sf of space for office and accessory use (consisting of up to 1.25 million sf of office uses and the balance (350,000 square if office use is maximized) of accessory uses<sup>9</sup>) and up to 200,000 sf of commercial/retail space. The Proposed Project would also include up to 1,730 multi-family housing units, an up to 193-room hotel, and open spaces, including publicly accessible parks (e.g. 3.5 acre publicly accessible park, elevated linear park, town square, and dog park).

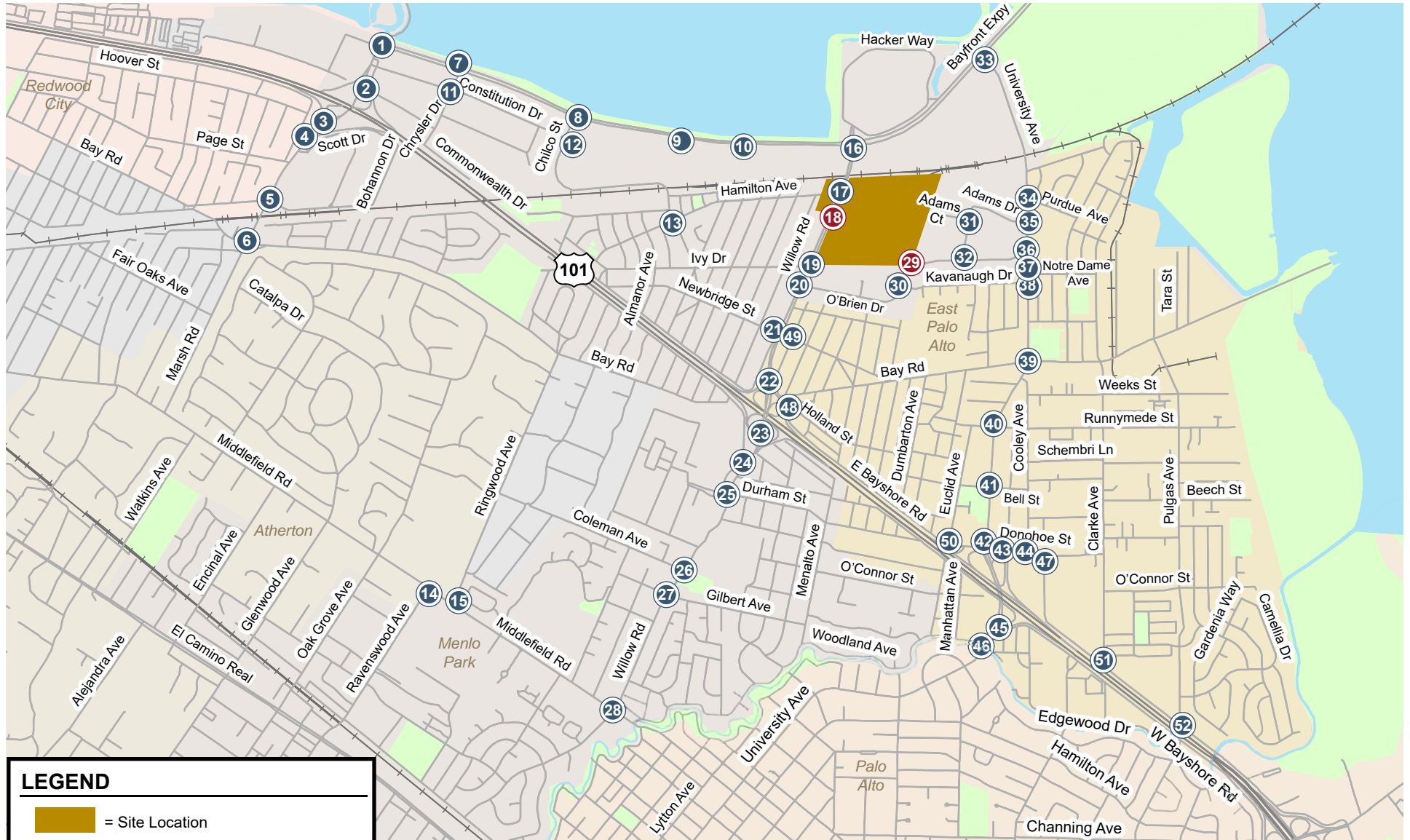
The Project Site would be bisected by a new north–south street (Main Street) and an east–west street, which would provide access to all three districts. It would include a circulation network for vehicles, bicycles, and pedestrians, inclusive of both public rights-of-way and private streets, that would be generally aligned to an east-to-west and a north-to-south grid (Figure 2). The Proposed Project would also alter parcels north of the industrial site, across Willow Road, on both the east and west sides of Hamilton Avenue (Hamilton Avenue Parcels North and South) to support realignment of the Hamilton Avenue right-of-way and provide access to the new elevated park. This would require demolition and reconstruction of an existing service station (Chevron gas station) and potentially an increase in 1,000 sf on Hamilton Avenue Parcel South and enable the potential addition of up to 6,700 sf of retail uses at the existing neighborhood shopping center on the Hamilton Avenue Parcel North. A total of 7,700 sf could be added to the Hamilton Avenue Parcels (Figure 3).

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<sup>7</sup> For transportation analysis, “North/South” is aligned to be parallel to US 101. Hence, Willow Road and University Avenue are considered east-west streets, whereas Hamilton Avenue and Bayfront Expressway are considered north-south streets.

<sup>8</sup> Hamilton Avenue Parcels North and South consider Hamilton Avenue an east to west street, which differs from the compass directions used for the transportation analysis discussion.

<sup>9</sup> Accessory uses could include the following types of spaces: meeting/collaboration space, orientation space, training space, event space, incubator space, a business partner center, an event building (including pre-function space, collaboration areas, and meeting/event rooms), a visitor center, product demonstration areas, film studio, gathering terraces and private gardens, and space for other Meta accessory uses. Accessory uses could occur in spaces located anywhere throughout the Campus District



**LEGEND**

- = Site Location
- X = Study Intersection
- X = Future Intersection

**Figure 1**  
**Site Location and Study Intersections**



LEGEND	
1	Town Square
2	Grocery Store on Ground Level
3	Publicly Accessible Park
4	Publicly Accessible Dog Park
5	Elevated Park Access (Elevator and Stairs)
6	Elevated Park
7	Hotel
8	Mixed-Use Block
9	Residential Block
10a	Office Campus
10b	Meeting & Collaboration Space
11	Parking Garage with Transit Hub on Ground Level
12	Proposed Multi-use Pathway
13	Willow Road Tunnel
14	Realigned Hamilton Avenue

Figure 2  
Site Plan





Figure 3  
Hamilton Avenue Parcels Site Plan

## Scope of Study

The purpose of the transportation study is to identify any transportation operational issues in accordance with City of Menlo Park standards and procedures. This report includes a CEQA VMT analysis, non-CEQA level of service (LOS) analysis (or roadway congestion analysis) and on-site access and circulation review to inform local planning efforts per the City's TIA Guidelines.

## CEQA VMT Analysis

Per the City of Menlo Park VMT guidelines adopted in July 2020 and updated in January 2022, mixed-use projects will have each component analyzed independently against the appropriate thresholds. The Project proposes office, residential, hotel and retail land uses. OPR's *Technical Advisory on Evaluating Transportation Impacts in CEQA* recommends that VMT analysis for a mixed-use project should account for internal capture. Internal capture is defined as walking, bicycling, and tram trips between the various types of land use within the Project. By reducing external vehicle trips, internal capture reduces VMT for a mixed-use project in comparison to single-use developments. The project proposes office, residential, hotel and retail land uses. Each of the Project's land uses' VMT threshold of significance is listed below:

- An office project is considered to have a significant impact on VMT if the project's VMT exceeds a threshold of 15 percent below the regional average VMT per employee.
- A residential project is considered to have a significant impact on VMT if the project's VMT exceeds a threshold of 15 percent below the regional average VMT per capita.
- Hotel and retail projects are considered to have a significant impact on VMT if the project results in a net increase in total City VMT.

It should be noted that the City's VMT guidelines exempt local serving retail projects (defined as 50,000 square feet or less) from carrying out a VMT analysis. However, this project exceeds that size.<sup>10</sup>

## Non-CEQA Level of Service (Roadway Congestion Analysis)

An LOS analysis was conducted to identify whether the proposed project would comply with local policies.

The traffic analysis is based on the AM and PM peak-hour level of service for 42 signalized intersections and 10 unsignalized intersections in the vicinity of the Project Site as illustrated in Figure 1. Traffic conditions at the study intersections were analyzed for the weekday AM and PM peak hours of adjacent street traffic. The AM peak hour is expected to occur between 7:00 AM and 10:00 AM, and the PM peak hour between 4:00 PM and 7:00 PM on a typical weekday. These are the hours during which most traffic congestion occurs on the roadways. Intersections within the City of East Palo Alto are also studied due to Menlo Park's settlement agreement with the City of East Palo Alto.

The proposed project would generate greater than 100 peak-hour trips. The San Mateo County City/County Association of Governments (C/CAG) administers the CMP. Therefore, an analysis in accordance with the C/CAG CMP guidelines is included.

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<sup>10</sup> The VMT for the main Project Site was evaluated. The reconstruction of the service station would not increase VMT, and the modest increase in retail square footage at Hamilton Avenue Parcel North would be operated as a separate project and would be substantially below the City's threshold. Therefore, VMT was not studied for the reconstruction of the service station and the potential increase in square footage at Hamilton Parcel North.

## Study Intersections

1. Marsh Road and Bayfront Expressway [Menlo Park]\*
2. Marsh Road and US 101 Northbound Off-Ramp [Caltrans]
3. Marsh Road and US 101 Southbound Off-Ramp [Caltrans]
4. Marsh Road and Scott Drive [Menlo Park]
5. Marsh Road and Bohannon Drive/Florence Street [Menlo Park]
6. Marsh Road and Bay Road [Menlo Park]
7. Chrysler Drive and Bayfront Expressway [Menlo Park]
8. Chilco Street and Bayfront Expressway [Menlo Park]
9. MPK 21 Driveway and Bayfront Expressway [Menlo Park]
10. MPK 20 Driveway and Bayfront Expressway [Menlo Park]
11. Chrysler Drive and Constitution Drive [Menlo Park]
12. Chilco Street and Constitution Drive/MPK 22 Driveway (unsignalized) [Menlo Park]
13. Chilco Street and Hamilton Avenue (unsignalized) [Menlo Park]
14. Ravenswood Avenue and Middlefield Road [Menlo Park]
15. Ringwood Avenue and Middlefield Road [Menlo Park]
16. Willow Road and Bayfront Expressway [Menlo Park]\*
17. Willow Road and Hamilton Avenue [Menlo Park]
18. Willow Road and Park Street (future intersection) [Menlo Park]
19. Willow Road and Ivy Drive [Menlo Park]
20. Willow Road and O'Brien Drive [Menlo Park]
21. Willow Road and Newbridge Street [Menlo Park]
22. Willow Road and US 101 Northbound Ramps [Caltrans]
23. Willow Road and US 101 Southbound Ramps [Caltrans]
24. Willow Road and Bay Road [Menlo Park]
25. Willow Road and Hospital Plaza/Durham Street [Menlo Park]
26. Willow Road and Coleman Avenue [Menlo Park]
27. Willow Road and Gilbert Avenue [Menlo Park]
28. Willow Road and Middlefield Road [Menlo Park]
29. O'Brien Drive/Loop Road and Main Street/O'Brien Drive (future intersection) [Menlo Park]
30. O'Brien Drive and Kavanaugh Drive (unsignalized) [Menlo Park]
31. Adams Drive and Adams Court (unsignalized) [Menlo Park]
32. Adams Drive and O'Brien Drive (unsignalized) [Menlo Park]
33. University Avenue and Bayfront Expressway [Menlo Park]\*
34. University Avenue and Purdue Avenue (unsignalized) [East Palo Alto]
35. University Avenue and Adams Drive (unsignalized) [East Palo Alto]
36. University Avenue and O'Brien Drive [East Palo Alto]
37. University Avenue and Notre Dame Avenue [East Palo Alto]
38. University Avenue and Kavanaugh Drive [East Palo Alto]
39. University Avenue and Bay Road [East Palo Alto]
40. University Avenue and Runnymede Street [East Palo Alto]
41. University Avenue and Bell Street [East Palo Alto]
42. University Avenue and Donohoe Street [East Palo Alto]
43. US 101 Northbound Off-Ramp and Donohoe Street [Caltrans]
44. Cooley Avenue and Donohoe Street [East Palo Alto]
45. University Avenue and US 101 Southbound Ramps [Caltrans]
46. University Avenue and Woodland Avenue [East Palo Alto]
47. East Bayshore Road and Donohoe Street [East Palo Alto]
48. East Bayshore Road and Holland Street (unsignalized) [East Palo Alto]
49. Saratoga Avenue and Newbridge Street (unsignalized) [East Palo Alto]

50. East Bayshore Road and Euclid Avenue (unsignalized) [East Palo Alto]
51. Clarke Avenue and East Bayshore Road [East Palo Alto]
52. Puglas Avenue and East Bayshore Road [East Palo Alto]

\*Denotes CMP facilities

## Freeway Segments

### San Mateo County

- SR 84 – between US 101 and Alameda County Line
- US 101 – between Santa Clara County Line and SR 92
- SR 109 (University Avenue) – between Kavanaugh Drive and SR 84
- SR 114 (Willow Road) – between US 101 and SR 84

### Santa Clara County

- US 101 – between SR 85 and Embarcadero Road

### Alameda County

- SR 84 – between San Mateo County Line and I-880

## Freeway Ramps

### US 101 & Marsh Road Interchange

- Southbound off-ramp to Marsh Road
- Northbound on-ramp from westbound Marsh Road

### US 101 & Willow Road Interchange

- Northbound off-ramp to Willow Road
- Northbound on-ramp from westbound Willow Road
- Southbound on-ramp from westbound Willow Road
- Southbound off-ramp to Willow Road

### US 101 & University Avenue Interchange

- Northbound off-ramp to Donohoe Street
- Southbound on-ramp from University Avenue

Traffic conditions were evaluated for the following scenarios:

**Scenario 1:** *Existing Conditions.* Existing traffic volumes at the study intersections are based on traffic counts obtained from the City of Menlo Park and/or previous studies for other nearby developments.

**Scenario 2:** *Near-term (2025) Conditions.* The near-term scenario assumed a year 2025 horizon<sup>11</sup> and was analyzed using the model. Traffic volumes were obtained from the Menlo Park Travel Demand Model and adjusted based on existing counts and model results. In addition, traffic and roadway improvements associated with the approved developments were assumed as directed by City Staff.

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<sup>11</sup> 2025 is the earliest year for expected occupancy when this analysis started.

- Scenario 3:** *Near-term (2025) plus Project Conditions.* The near term plus project scenario was analyzed using the model. Traffic volumes were obtained from the Menlo Park Travel Demand Model and adjusted based on existing counts and model results. The near-term plus project scenario was evaluated relative to the near-term scenario.
- Scenario 4:** *Cumulative (2040) Conditions.* The cumulative scenario assumed a year 2040 horizon and represented the buildout of the adopted General Plan for the City of Menlo Park, including a pending General Plan Amendment for 123 Independence Drive. This scenario was analyzed using the model. Traffic volumes were obtained from the Menlo Park Travel Demand Model and adjusted based on existing counts and model results. In addition, traffic and roadway improvements associated with the approved developments were assumed as directed by City Staff.
- Scenario 5:** *Cumulative (2040) Plus Project Conditions.* The cumulative plus project scenario was analyzed using the model. Traffic volumes were obtained from the Menlo Park Travel Demand Model and adjusted based on existing counts and model results. The cumulative plus project scenario was evaluated relative to the cumulative scenario.
- Scenario 6:** *Cumulative (2040) with Dumbarton Rail.* The cumulative with Dumbarton Rail scenario assumed that the Dumbarton Rail would be built and there would be a shift in vehicular trips to transit trips near the Project Site<sup>12</sup> as well as along the Dumbarton Rail corridor. Cumulative plus project conditions with Dumbarton Rail were evaluated relative to cumulative conditions with the Dumbarton Rail. This analysis is speculative since there is no current approved plan or financing to provide any Dumbarton transit service and is provided for informational purposes in the transportation analysis.

## Methodology

This section presents the methods used to determine the traffic conditions at study intersections for each scenario described above. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards and criteria used to determine if a project is compliant with local policies.

### Data Requirements

The data required for the analysis were obtained from the City of Menlo Park, field observations, and previous studies. The following data were obtained from these sources:

- existing peak-hour intersection turning-movement volumes,
- existing lane configurations,
- signal timing and phasing, and
- list of approved projects.

Existing counts and field observations were conducted prior to the COVID19 pandemic. No adjustments to the data were made based on pandemic conditions.

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<sup>12</sup> *Dumbarton Rail Corridor Update Public Meeting*, Prepared by Facebook for the San Mateo County Transit District. March 15, 2021

### **Intersection Level of Service Methodologies**

Traffic conditions were evaluated using level of service (LOS). Level of service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or forced-flow conditions with extreme delays.

As stated above, LOS is no longer a CEQA threshold. However, the General Plan and City's TIA Guidelines require that the TIA also analyze LOS for local planning purposes (per General Plan Program Circ-3.A Transportation Impact Metrics):

Supplement Vehicle Miles Traveled (VMT) and greenhouse gas emissions per service population (or other efficiency metric) metrics with Level of Service (LOS) in the transportation impact review process, and utilize LOS for identification of potential operational improvements, such as traffic signal upgrades and coordination, as part of the Transportation Master Plan.

The LOS analysis would determine whether the project traffic would cause an intersection LOS to exceed the City's LOS thresholds or cause either the average delay or average critical delay to exceed the City's intersection delay thresholds under near term and cumulative conditions. The LOS and delay thresholds vary depending on the street classifications as well as whether the intersection is on a State route or not.

The City's TIA Guidelines further require an analysis of the Proposed Project in relation to relevant policies of the Circulation Element and consideration of specific measures to address noncompliance with local policies which may occur as a result of the addition of project traffic. The TIA identifies measures that could be applied as conditions of approval that would bring operations back to pre-Project levels. Although not included in the TIA for purposes of this EIR, an analysis may be prepared separately to determine if there are potential measures that could bring the Proposed Project into conformance with the LOS goals of Circulation Policy 3.4. Implementation of any such measures would require review and approval by City decision makers.

The level of service standard for the City of East Palo Alto at the study intersections is LOS D or better.

### **Microscopic Simulation of Study Intersections**

Due to the close proximity of selected study intersections, six study intersections in the vicinity of the US 101/University Avenue interchange, and ten intersections along Willow Road, were analyzed using the Synchro/SimTraffic 9 software. Unlike macroscopic models of isolated intersection operations such as the Highway Capacity Manual methodology, SimTraffic is a microscopic model that measures the full impact of queuing and blocking of intersections. This software also provides a visual animation of the traffic operations. Simulated delay values were correlated to the level of service definitions set forth in the 2000 Highway Capacity Manual (HCM) methodology.

### **Macroscopic Analysis of Signalized Intersections**

Traffic operations at the signalized study intersections in the City of Menlo Park were evaluated using the VISTRO software based on the level of service method described in the Highway Capacity Manual (HCM) 6th Edition. The study intersections in the City of East Palo Alto and the City of Palo Alto were evaluated using the TRAFFIX software based on the 2000 HCM methodology. The study intersections in Atherton were evaluated using the SYNCHRO software based on the HCM 6<sup>th</sup> Edition methodology. The 2000 HCM and HCM 6th Edition evaluate signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. Table 1 shows the level of service definitions for signalized intersections.

### Unsignalized Intersections

Peak-hour levels of motor vehicle delay at the unsignalized study intersections in the City of Menlo Park were evaluated using the VISTRO software based on the HCM 6th Edition. The study intersections in the City of East Palo Alto were evaluated using the TRAFFIX software based on the 2000 HCM methodology. With these methods, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. At side-street controlled intersections (two-way or one-way stop control), the control delay (and LOS) is reported for the approach with the highest delay. For all-way stop-controlled intersections, the average delay (and LOS) for all movements is reported. Table 2 summarizes the relationship between average control delay per vehicle and LOS for unsignalized intersections.

**Table 1**  
**Signalized Intersection Level of Service Definitions Based on Control Delay**

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though some vehicles may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	greater than 80.0

Source: Transportation Research Board, *Highway Capacity Manual 6th Edition* (Washington, D.C., 2016), p.16-19.

**Table 2**  
**Unsignalized Intersection Level of Service Definition Based on Average Delay**

Level of Service	Description	Average Delay Per Vehicle (Sec.)
A	Little or no traffic delay	10.0 or less
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	greater than 50.0

Source: Transportation Research Board, *Highway Capacity Manual 6th Edition* (Washington D.C., 2016).

### **Freeway Segments**

Freeway segments within the County of San Mateo are evaluated by using the volume-to-capacity (V/C) ratio method according to the City/County Association of Governments (C/CAG) CMP guidelines. The CMP specifies varying capacities be used based on the number of lanes and the free-flow travel speed. The County of San Mateo freeway segment V/C ratio is correlated to level of service as shown in Table 3.

Within Santa Clara County, freeway segments are analyzed as prescribed in the Santa Clara County CMP technical guidelines. The level of service for freeway segments is estimated based on vehicle density. Vehicle density on a segment is correlated to level of service as shown in Table 3. The CMP requires that mixed-flow lanes and auxiliary lanes be analyzed separately from high-occupancy vehicle (HOV) lanes. The CMP specifies that a capacity of 2,300 vehicles per hour per lane (vphpl) be used for segments three lanes or wider in one direction, and a capacity of 2,200 vphpl be used for segments two lanes wide in one direction. HOV lanes are specified as having a capacity of 1,650 vphpl.

Freeway segments within Alameda County are evaluated by using V/C ratios according to the Alameda County Transportation Commission (ACTC) guidelines. The CMP specifies that a capacity of 2,000 vehicles per hour per lane (vphpl) be used for all freeway segments. The Alameda County freeway segment V/C ratio is correlated to level of service as shown in Table 3.

### **Freeway Ramps**

A freeway ramp analysis was performed in order to verify that the freeway ramps would have sufficient capacity to serve the expected traffic volumes with and without the project. This analysis consisted of a volume-to-capacity ratio evaluation of the freeway ramps at the study interchanges. The ramp capacities were obtained from the *Highway Capacity Manual 2000*, and considered the free-flow speed, number of lanes on the ramp, and ramp metering.



**Table 3**  
**Freeway Segment Level of Service Definition**

Level of Service	Description	San Mateo County <sup>1</sup>	Santa Clara County <sup>2</sup>	Alameda County <sup>3</sup>
		Maximum V/C Ratio	Density (vehicles/mile/lane)	Maximum V/C Ratio
A	Average operating speeds at the free-flow speed generally prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	0.28	11.0 or less	0.35
B	Speeds at the free-flow speed are generally maintained. The ability to maneuver within the traffic stream is only slightly restricted, and the general level of physical and psychological comfort provided to drivers is still high.	0.46	11.0 to 18.0	0.58
C	Speeds at or near the free-flow speed of the freeway prevail. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more vigilance on the part of the driver.	0.67	18.0 to 26.0	0.75
D	Speeds begin to decline slightly with increased flows at this level. Freedom to maneuver within the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort levels.	0.85	26.0 to 46.0	0.90
E	At this level, the freeway operates at or near capacity. Operations in this level are volatile, because there are virtually no usable gaps in the traffic stream, leaving little room to maneuver within the traffic stream.	1	46.0 to 58.0	1
F	Vehicular flow breakdowns occurs. Large queues form behind breakdown points.	greater than 1	greater than 58.0	greater than 1

Source:

1. City/County Association of Governments of San Mateo County, Final San Mateo County Congestion Management Program 2019, Table B-1 (65 mph free-flow speed).
2. Santa Clara County Valley Transportation Authority, Transportation Impact Analysis Guidelines, Updated October 2014.
3. Alameda County Congestion Management Agency, 2020 Multimodal Monitoring Report, Table A-1.

## **Level of Service Standards and Adverse Effect Criteria**

### **City of Menlo Park Definition of Adverse Effect**

The following thresholds are from the City of Menlo Park's TIA Guidelines and the proposed project's compliance with local policies was evaluated based on these thresholds.

- A project is considered potentially noncompliant with local policies if the addition of project traffic causes an intersection on a collector street operating at LOS "A" through "C" to operate at an unacceptable level (LOS "D," "E" or "F") or have an increase of 23 seconds or greater in average vehicle delay, whichever comes first. Potential noncompliance shall also include a project that causes an intersection on arterial streets or local approaches to State controlled signalized intersections operating at LOS "A" through "D" to operate at an unacceptable level (LOS "E" or "F") or have an increase of 23 seconds or greater in average vehicle delay, whichever comes first.
- A project is also considered potentially noncompliant if the addition of project traffic causes an increase of more than 0.8 seconds of average delay to vehicles on all critical movements for intersections operating at a near-term LOS "D" through "F" for collector streets and at a near-term LOS "E" or "F" for arterial streets. For local approaches to State controlled signalized intersections, a project is considered to be potentially noncompliant if the addition of project traffic causes an increase of more than 0.8 seconds of delay to vehicles on the most critical movements for intersections operating at a near-term LOS "E" or "F."

### **State (Caltrans) Controlled Intersections Definition of Adverse Effect**

For signalized intersections involving two state routes, the proposed project is considered potentially non-compliant with local policies if for any peak hour:

- The level of service degrades from an acceptable LOS D or better under existing conditions to an unacceptable LOS E or F under existing plus project conditions, and the average delay per vehicle increases by four seconds or more, or
- The level of service is an unacceptable LOS E or F under existing conditions and the addition of project trips causes an increase in the average control delay at the intersection by four seconds or more.

### **City of East Palo Alto Definition of Adverse Effect**

The following thresholds are used in East Palo Alto, and the proposed project's compliance with local policies was evaluated based on these thresholds:

At a signalized intersection, the project is considered to have an adverse effect if it:

- Causes operations to degrade from LOS D (or better) to LOS E or F; or
- Exacerbates LOS E or F conditions by both increasing critical movement delay by four or more seconds and increasing volume-to-capacity ratio (V/C ratio) by 0.01 at an intersection evaluated using the TRAFFIX software; or
- Increases the V/C ratio by > 0.01 at an intersection that exhibits unacceptable operations, even if the calculated LOS is acceptable; or
- Causes planned future intersections to operate at LOS E or F.

At an unsignalized intersection, the proposed project is considered to have an adverse effect if it:

- Causes operations to degrade from LOS D or better to LOS E or F; or
- Exacerbates LOS E or F conditions by increasing control delay by five or more seconds; and
- Causes volumes under project conditions to exceed the Caltrans Peak-Hour Volume Warrant Criteria.

### Intersection Vehicle Queuing Analysis

For selected high-demand movements at the study intersections, the estimated maximum vehicle queues were compared to the existing or planned storage capacity. The queuing analysis is used to determine the appropriate storage lengths for the high-demand turn lanes where the proposed project would add a substantial number of trips to these movements. Vehicle queues were estimated using Vistro or Synchro for intersections analyzed with this software and a Poisson probability distribution for intersections analyzed in Traffix. Poisson probability distribution estimates the probability of “n” vehicles for a vehicle movement using the following formula:

$$\text{Probability (X=n)} = \frac{\lambda^n e^{-(\lambda)}}{n!}$$

Where:

Probability (X=n) = probability of “n” vehicles in queue per lane

n = number of vehicles in the queue per lane

$\lambda$  = Average number of vehicles in queue per lane (vehicles per hour per lane/signal cycles per hour)

The basis of the analysis is as follows: (1) the Poisson probability distribution, Vistro, or Synchro is used to estimate the 95th percentile maximum number of queued vehicles per signal cycle for a particular movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the movement.

For signalized intersections, the 95th percentile queue length value indicates that during the peak hour, a queue of this length or less would occur on 95 percent of the signal cycles. In other words, a queue length larger than the 95th percentile queue would only occur on five percent of the signal cycles (about three cycles during the peak hour for a signal with a 60-second cycle length). Therefore, left-turn storage pocket designs based on the 95th percentile queue length would ensure that storage space would be exceeded only five percent of the time. The 95th percentile queue length is also known as the “design queue length.”

## 2. CEQA VMT Analysis

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Project VMT is defined as the total distance traveled by vehicles traveling to and from the Proposed Project over a typical day. In order to estimate VMT for the various land use components, the citywide travel demand forecast model was used. The citywide model is the best available model to represent travel within the City of Menlo Park, and serves as the primary forecasting tool for the City. The model is a mathematical representation of travel within the nine Bay Area counties, as well as the Santa Cruz, San Benito, Monterey and San Joaquin counties. The base model structure was developed by the Metropolitan Transportation Commission (MTC) and further refined by the City/County Association of Governments and Santa Clara Valley Transportation Authority for use within San Mateo County and Santa Clara County. The City further refined this model for application with Menlo Park to add more detail to the zone structure and transportation network. The model has a base year of year 2019 (see Appendix E, Transportation/Traffic, of this EIR for the model's calibration and validation memo).

There are four main components of the model: 1) trip generation, 2) trip distribution, 3) mode choice, and 4) trip assignment. The model uses socioeconomic inputs (i.e., population, income, employment) aggregated into geographic areas, called transportation analysis zones (TAZ) to estimate travel within the model area. There are 80 TAZs within the model to represent the City of Menlo Park. The model was used to estimate the Proposed Project's effect on VMT in accordance with the City's VMT guidelines.

### VMT Evaluation

The most readily available long-range forecast year is the year-2040 conditions, which assumes the buildout of the City of Menlo Park General Plan and any pending General Plan Amendments, the buildout of the pending developments in the City of East Palo Alto (as of December 2020), and regional growth projected by the Association of Bay Area Governments (ABAG), modified by VTA/C/CAG for model land use inputs. Therefore, the project's VMT analysis was conducted under year-2040 conditions.

#### Office and Residential Land Uses

According to the City's VMT guidelines, office land use is evaluated based on a daily VMT per employee metric. Using the model, this metric is calculated only for home-based work trips, per OPR's Technical Advisory on Evaluating Transportation Impacts in CEQA. Based on the latest citywide travel demand model, the regional average office VMT is 15.9 per employee. Therefore, City's office VMT impact threshold, at 15% below regional average, would be 13.6 daily VMT per employee.

According to City VMT guidelines, the evaluation of residential land use is based on a daily VMT per capita metric. Using the model, this metric is calculated only for home-based trips, per OPR's technical advisory. Based on the latest citywide travel demand model, regional average residential VMT is 13.1

per capita. Therefore, the City’s residential VMT impact threshold, at 15% below regional average, would be 11.2 daily VMT per capita.

Office and residential land uses were evaluated using the model under the year-2040 plus project scenario. For the Campus District, the applicant proposed a daily trip cap of 18,237 trips, which would be 20% below the standard ITE trip generation estimate. The model was adjusted to account for the proposed trip cap. As shown in Table 4 below, the project’s Campus District land use would generate VMT at the City’s VMT impact threshold and would thus not have a VMT impact.

For the residential land use, trip generation was adjusted to account for the Project’s expected 2.03 people per unit compared to the ITE average of 2.46 people per unit. The VMT analysis also accounted for the applicant proposed TDM Plan for the mixed-use district. The TDM Plan proposed a 20% trip reduction from gross ITE trip generation through a combination of passive TDM measures and active TDM measures. Passive TDM measures include the project’s proximity to complementary land uses, proximity to alternative transportation infrastructure, and the project’s mixed-use nature. As discussed in Chapter 3 below, it is estimated that the passive TDM measures would achieve a 17% trip reduction from the gross ITE trip generation. Active TDM measures include TDM programs to be implemented to further promote alternative modes of travel. These TDM measures generally include providing transit, biking, and carpooling information to residents, assisting in ride-matching programs for residents, and could also include transit subsidies and other measures. To represent the applicant proposed 20% trip reduction goal and given that passive TDM measures are assumed to achieve a 17% trip reduction, the balance of 3% (20%-17%) trip reduction due to active TDM measures was assumed for the VMT analysis.

The Project’s residential land use would require a 16% reduction in VMT to mitigate the significant VMT impact. The VMT analysis, as discussed above, already assumed 3% trip reduction due to active TDM measures. Therefore, mitigation of the VMT impact would require implementing a TDM Plan for the residential component that achieves at least 19% (3% + 16%) trip reduction via active TDM measures (see Figure 10 below in Chapter 3) or increases the effectiveness of passive TDM measures. According to the Project’s proposed TDM Plan dated July 2021 and attached in Appendix G, the proposed active TDM measures for the residential component could achieve at least a 19% reduction in trips, with an estimated reduction between between 11% and 36%<sup>13</sup>. This range represents the potential low to high range of effectiveness of the proposed TDM measures, as calculated by research data from the California Air Pollution Control Officers Association (CAPCOA). This range depends on how each TDM measure is eventually implemented. Therefore, it is feasible for the Project to mitigate its residential VMT impact by implementing its proposed TDM Plan.

**Table 4**  
**Office and Residential VMT Evaluation**

Land Use	Regional Average	VMT Threshold	Project VMT	VMT Impact	Additional TDM Mitigation needed to eliminate VMT impact
Office <sup>1</sup>	15.9	13.6	13.6	No	-
Residential <sup>2</sup>	13.1	11.2	13.3	Yes	16%

**Notes:**  
\* All data referenced the latest Menlo Park citywide travel demand forecast model.  
1. VMT for office land use is reported in VMT per employee.  
2. VMT for residential land use is reported in VMT per capita.

<sup>13</sup> Willow Village TDM Plan. Prepared for Peninsula Innovation Partners. Fehr & Peers, Inc. July 2021

**IMPACT (TRA-2 in Transportation Chapter):** As shown in Table 4 above, the Proposed Project’s residential land use VMT is estimated to be 13.3 daily miles per capita, which would exceed the VMT threshold and result in a VMT impact. The mitigation measure TRA-2 identified below would fully mitigate this impact.

**MITIGATION MEASURE (TRA 2 in Transportation Chapter):** The residential land use of the Project Site will be required to implement a TDM Plan achieving a 36% reduction from gross ITE trip generation rates (for the Proposed Project, this reduction equals 6,023 daily trips). Should a different number of residential units be built, the total daily trips will be adjusted accordingly. The required residential TDM Plan will include annual monitoring and reporting requirements on the effectiveness of the TDM program. The Project applicant submitted a draft residential TDM Plan, which contained specific measures that would meet this trip reduction requirement. The draft TDM Plan is subject to City review and approval. If the annual monitoring finds that the TDM reduction is not met, the TDM coordinator will be required to work with City staff to detail next steps to achieve the TDM reduction. With the implementation of the required residential TDM Plan, the residential VMT impact would be **less than significant with mitigation (LTS/M)**.

## Hotel

Hotel land uses are not explicitly represented in the model. Therefore, the hotel rooms and jobs expected for the Proposed Project are accounted for separately. Hotel employees are represented in the model by service employees. To reflect trips by hotel patrons, residential land use was used as a proxy, as it most closely resembles the behavior pattern of a hotel guest. Trip making characteristics for these proxy residential land uses were restricted to offices and restaurants/shops to mimic patron activities at a typical business hotel (home-based work and home-based shopping trips). Other types of trip-making typical to an actual home such as school trips generally are not applicable to hotel guests. Given the model would only explicitly represent hotel employee VMT without this adjustment, this proxy evaluation provides a conservative analysis as it attributes more VMT (hotel guest VMT) to the Proposed Project. This methodology is undertaken only for VMT purposes.

### Project Study Area

Based on consultation with the City and applicant, the hotel is expected to have a service area of approximately three (3) miles in radius. This means that most of the destinations of hotel patrons are expected to be within three miles of the hotel. While some trips are expected to be longer than three miles, the majority of the change in VMT is expected to occur within this three-mile radius. The evaluated daily VMT includes the entire length of the trip even when it extends beyond the three-mile radius.

### Scenario Evaluation

The hotel VMT analysis was conducted using the City’s transportation model. To evaluate the effect of the hotel component on total daily VMT, the analysis compared two scenarios: 1) with project, and 2) with project without the hotel component (or the “no hotel” scenario).

It was assumed that new hotels would not increase trips overall but would reorient existing trips. Therefore, when hotel trips were added in one zone, they must be subtracted from other zones. This process was represented in the model by redistribution of the hotel attractions from nearby existing hotels. Eleven comparable hotels were found within the area for this redistribution effort (see Figure 4). The proposed hotel would be located within very close proximity to major employment in the Bayfront area, such that hotel patrons may enjoy shorter travel distances to their business destinations. Its location within a mixed-use project, including complementary retail space, also would allow hotel patrons to shop/dine within walking distance.

Service employees were coded in the model under “no hotel” conditions for the zones representing the eleven existing hotels. Under the “with-project” model run, service employees at these zones were shifted to the project zone. According to the project applicant, the hotel would have 210 employees. Thus, approximately 19 service employees were shifted from each of the existing zones to the project zone under the “with-project” model run.

The zones representing the eleven existing hotels do not include any residential land use as a proxy for hotel patrons under the “no hotel” scenario. Thus, residential dwelling units were first added to these zones under the “no hotel” model run, so that under the “with-project” model run, shifting these residential land uses to the project zone would still maintain the same model-wide total land uses. Approximately 270 households were needed at the project zone in addition to the 210 service employees under the “with-project” model run for the model to compute trip generation roughly equivalent to the daily trip generation estimated for the hotel component based on ITE rates. Therefore, under the “no hotel” model run, 270 households were evenly distributed to the eleven zones with existing hotels. It should be noted that the project’s proposed TDM plan is accounted for in the daily trip generation estimates.

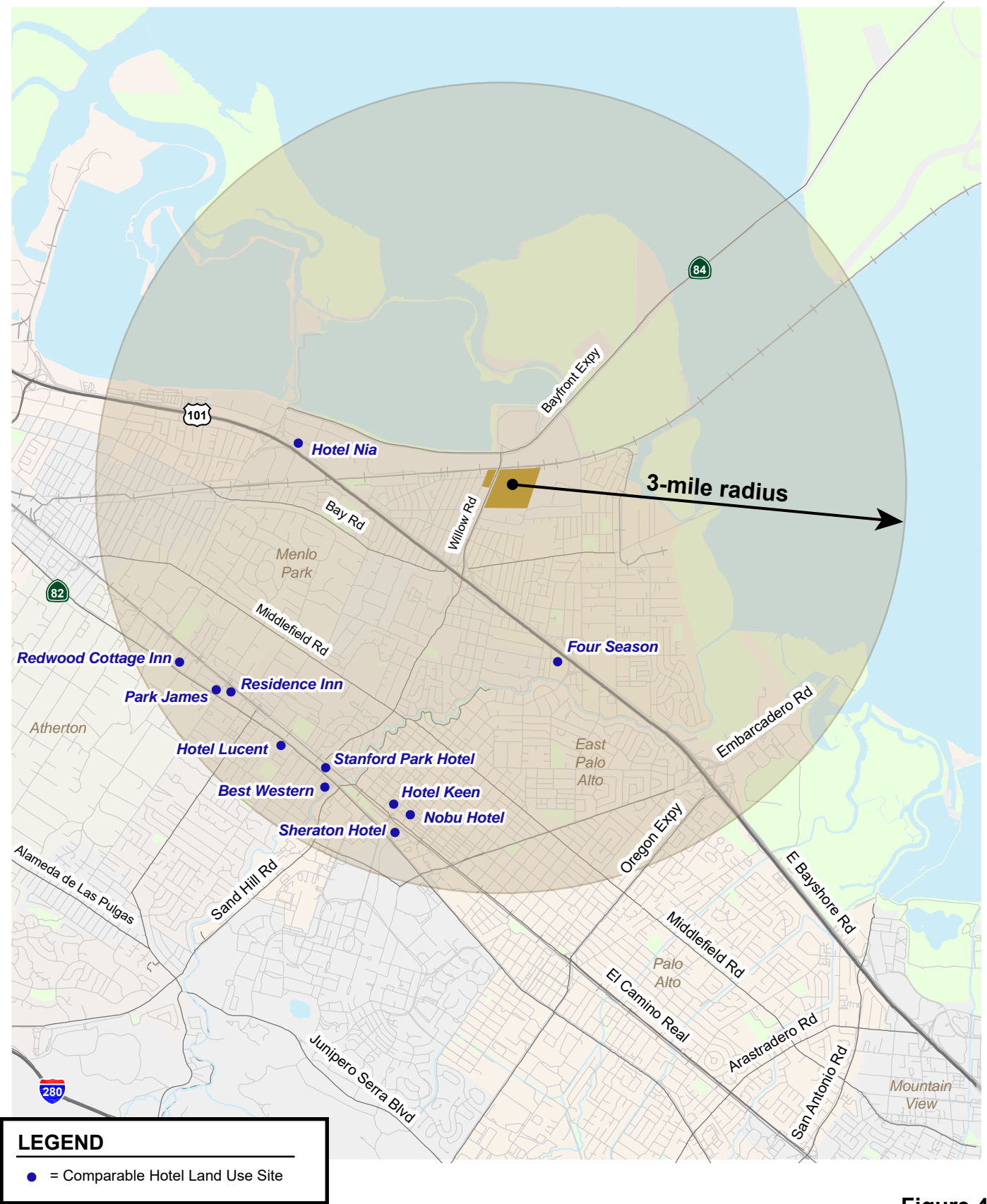
### **VMT Evaluation**

The total daily VMT generated by land uses within a three-mile radius was compared under the “no hotel” and “with project” scenarios. As shown in Table 5, the proposed hotel component of the project was shown to slightly reduce the total daily VMT generated by land uses within a three-mile radius of the Project Site. Since the proposed hotel would be located within very close proximity to major employment in the Bayfront area, hotel patrons would enjoy shorter travel distances to their business destinations. It’s location within a mixed-use project, including complementary retail space, also would allow hotel patrons to shop/dine within walking distance.

Because the proposed hotel component of the Project would not cause an increase in total VMT generated within the analysis area, it is concluded that the proposed hotel component of the Project would have a less than significant impact on vehicle miles travelled.

**Table 5**  
**Hotel VMT Evaluation**

	3-Mile Radius Area of Project Site		
	No Hotel Conditions <sup>2</sup>	With Project Conditions <sup>2</sup>	% Change
Total Daily VMT <sup>1</sup>	6,656,914	6,629,443	-0.4%
<b>Notes:</b>			
1. Total daily VMT includes VMT generated by all trips having at least one trip-end in the analysis area, as estimated by the citywide travel demand model.			
2. "No hotel conditions" represent conditions with the Proposed Project <u>except</u> the hotel component. "With project conditions" represent conditions with the Proposed Project including the hotel component.			



**Figure 4**  
**Locations of Comparable Hotel Land Use**



## **Retail**

The project has two areas of retail development. The main Project Site includes up to 200,000 s.f. of retail space within a mixed use development. North of Willow Road, as a result of the proposed Hamilton Avenue realignment, the two retail parcels adjacent to Hamilton Avenue at the intersection with Willow Road (“Hamilton Avenue Parcels”) would be reconfigured. The Project proposes to increase the total retail square footage at the Hamilton Avenue parcels by up to 7,700 s.f. to approximately 23,400 s.f. Because the retail at the Hamilton Avenue Parcels will require a separate use permit and would be operated as a separate retail use from the retail uses at the main Project Site, the Hamilton Avenue Parcels retail is evaluated separately from the retail component of the main Project Site. According to the City’s VMT policy, local serving retail (defined as having total square footage less than 50,000 s.f.) would be exempt from a VMT analysis. The Project’s proposed net 7,700 s.f. of potential retail development at the Hamilton Avenue Parcels would thus be exempt from VMT analysis. The discussion below is focused on the 200,000 s.f. of retail space at the main Project Site.

### **Project Study Area**

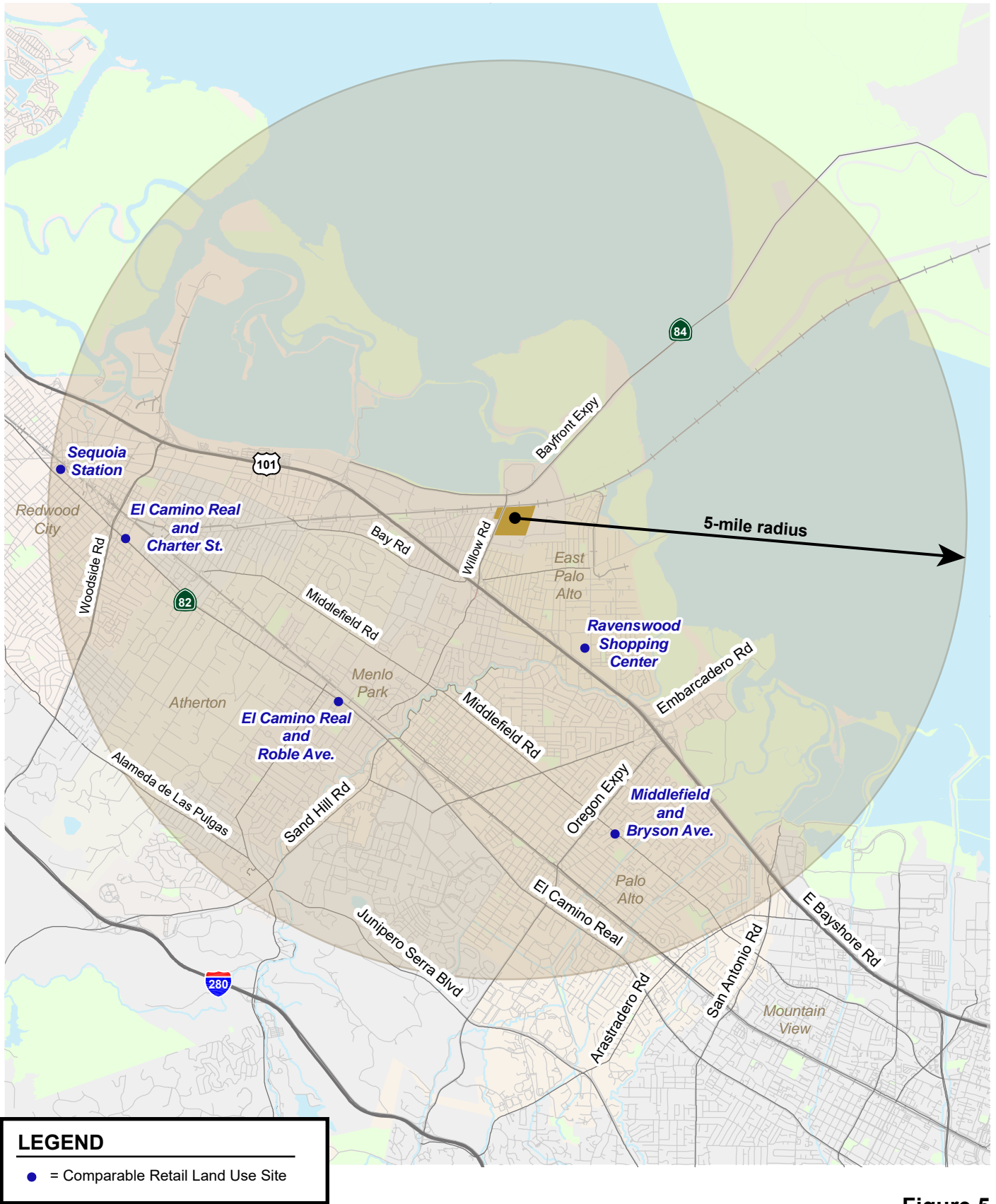
Based on the types of retail being proposed as well as nearby comparable retail stores, it is expected that the proposed retail would have a service area of approximately five (5) miles in radius. The 5-mile radius service area was selected based on engineering judgement, as it would cover most of Menlo Park, Palo Alto, as well as downtown Redwood City, and would include a mix of retail shops and restaurants comparable to the three cities. Assuming equal services, it is expected that people would patronize the closer store or restaurant. The five-mile radius service area also means that most of the destinations of the Project’s retail patrons are expected to be within five miles of the project. While some trips are expected to be longer than five miles, the majority of the change in VMT is expected to occur within this five-mile radius.

### **Scenario Evaluation**

The retail VMT analysis was conducted using the City’s transportation model. To evaluate the effect of the retail component on total daily VMT, the analysis compared two scenarios: 1) with project, and 2) with project without the retail component (or the “no retail” scenario).

Similar to the hotel evaluation methodology discussed above, retail employees were redistributed from existing retail locations for the purpose of the VMT analysis. Six (6) comparable retail sites were found within the area for this redistribution effort (see Figure 5).

Retail employees were coded in the model under “no retail” conditions for the zones representing the six existing retail sites. Under the “with-project” model run, retail employees at these zones were shifted to the project zone. The retail land use is expected to generate 571 employees based on the City’s default retail employees-per-square-foot conversion rate (1 employee per 350 square feet). Retail employees were shifted from each of the existing zones to the project zone under the “with-project” model run. The number of retail employees shifted from each existing zone was proportionally based on each zone’s existing retail employment size (see Figure 6).



**Figure 5**  
Locations of Comparable Retail Land Use



Figure 6  
Retail Employment Shifts for VMT Analysis

## VMT Evaluation

The total daily VMT generated by land uses within a five-mile radius was compared under the “no retail” and “with project” scenarios. As shown in Table 6, the proposed retail component of the project was shown to slightly reduce the total daily VMT generated by land uses within a five-mile radius of the Project Site. Since the proposed retail space would be located in close proximity to the Belle Haven neighborhood, a large number of offices and life sciences buildings in the Bayfront area, as well as the project’s proposed residential land uses, the proposed retail component would provide retail stores closer to homes for nearby residents and closer to jobs for nearby workers.

Because the proposed retail component of the Project would not cause an increase in total VMT generated by the analysis area, it is concluded that the proposed retail component of the Project would have a less than significant impact on vehicle miles travelled.

**Table 6**  
**Retail VMT Evaluation**

	5-Mile Radius Area of Project Site		
	No Retail Conditions <sup>2</sup>	With Project Conditions <sup>2</sup>	% Change
Total Daily VMT <sup>1</sup>	14,360,590	14,334,067	-0.2%
<u>Notes:</u>			
1. Total daily VMT includes VMT generated by all trips having at least one trip-end in the analysis area, as estimated by the citywide travel demand model.			
2. "No retail conditions" represent with the Proposed Project <u>except</u> the retail component. "With project conditions" represent with the Proposed Project including the retail component.			

## **Event VMT**

The Campus District would consist of up to 1.6 million square feet of space for office and accessory uses, consisting of up to 1.25 million sf of office uses and the balance (350,000 sf if office uses were maximized) of accessory uses<sup>14</sup>. In addition to serving as a gathering space for the surrounding campuses, the applicant proposes to host approximately 55 events per year, that would attract majority non-Menlo Park Meta workers and/or guests. Ten of these events are envisioned as large-sized events with attendance varying between 2,500 and 5,000 people. 15 of these events are envisioned as medium-sized events with attendance varying between 1,000 and 2,500 people. The remaining 30 events would be small-sized events with attendance lower than 1,000 people. It is anticipated that the small-sized events would generate a minimal number of trips that would not exceed the proposed Campus District trip cap. The Project is proposing an allowance of up to 25 exceptions to the trip cap for days when there are medium-size or large-size events. Due to the limited number of events that would exceed the proposed trip cap, it is deemed that such events are not typical conditions and do not require a VMT analysis for CEQA purposes. This impact would be ***less than significant***.

While some of these events could potentially generate substantial traffic that could affect intersection operations in the Project area, specific event details are not known. While congestion is not a CEQA impact, the Project would be required, as a condition of Project approval, to submit event traffic plans

<sup>14</sup> Accessory uses could include the following types of spaces: meeting/collaboration space, orientation space, training space, event space, incubator space, a business partner center, an event building (including pre-function space, collaboration areas, and meeting/event rooms), a visitor center, product demonstration areas, film studio, gathering terraces and private gardens, and space for other Meta accessory uses. Accessory uses could occur in spaces located anywhere throughout the Campus District.

for large events for City approval to demonstrate measures that would be taken to minimize the events' effect on roadway traffic conditions.

## Impacts on Pedestrian, Bicycle and Transit Facilities

The project is consistent with all applicable pedestrian, bicycle and transit related plans, ordinances and policies, as listed below:

- City of Menlo Park Circulation Element of the General Plan
- City of Menlo Park Municipal Code, Sections 16.43.100 and 16.45.090
- City of Menlo Park Transportation Master Plan
- City of Menlo Park Transportation Impact Fee

### Pedestrian and Bicycle Facilities

The Proposed Project would include multiple pedestrian and bicycle connections between the Project Site and the surrounding roadway network and within the Project Site. The planned bicycle and pedestrian facilities within the Project Site are discussed in Appendix H.

The proposed pedestrian connections to the surrounding roadway network include crosswalks at the proposed signalized intersections on Willow Road at Main Street and Park Street that would connect the Project Site to the Belle Haven neighborhood. The proposed bicycle connections include connections to the existing class II bike lane along Willow Road via Park Street and Main Street. In addition, the Proposed Project includes an elevated park that would provide grade separated pedestrian and bicycle access between the Project site and the Belle Haven neighborhood.

Menlo Park's TIF program also proposes the following bicycle and pedestrian facilities in the immediate vicinity of the Project Site which would improve connections between the Project Site and the surrounding neighborhoods:

- Bicycle signals, cross-bike markings, high visibility crosswalks, and pedestrian improvements at the eastbound right-turn channelizing island at Willow Road and Bayfront Expressway
- Class III bike routes, wider sidewalks, and narrower median on Ivy Drive
- Wider median on the west leg of Willow Road and Ivy Drive, increased pedestrian crossing time, and high visibility crosswalks at the intersection
- Curb ramps, high visibility crosswalks, increased pedestrian crossing times, and bulbouts on the southeast and southwest corners at Willow Road and O'Brien Drive
- Sidewalks and class II bike lanes on both sides of Adams Drive between O'Brien Drive and University Avenue
- Sidewalks and class II bike lanes on both sides of O'Brien Drive between Willow Road and University Avenue
- Install class IV protected bike lanes along Willow Road

The Proposed Project also includes a subgrade pedestrian, bicycle, and tram connection between the main Project Site and the Meta West Campus. This connection would be known as the Willow Road Tunnel. The Willow Road Tunnel would extend between Facebook Way in the Meta West Campus and North Loop Road in the Willow Village Campus underneath Willow Road. The proposed design of the tunnel includes a sidewalk along the eastern edge, a two-way class I bike path which would connect the Bay Trail to the Project Site, and a two-way tram connection between the West Campus and the Project Site. The tunnel would not allow vehicular traffic other than the trams and the bicycle and pedestrian access would be open to the public similar to the existing tunnel between the East and West Campuses.

### **Pedestrian and Bicycle Access to Schools**

Schools in the immediate vicinity of the Project Site include Mid-Peninsula High School, Open Mind School, Cesar Chavez Ravenswood Middle School, San Francisco 49ers Academy, Creative Montessori learning, Belle Haven School, TIDE Academy, and Costano Elementary School. Bicycle and pedestrian access to each school is described below:

- **Mid-Peninsula High School.** This school is located immediately west of the Project Site. Pedestrian and bicycle access from the Project Site to the school would be via Willow Road, which has continuous sidewalks along the south side, and existing Class II bicycle facilities on both sides of the road.
- **Open Mind School.** This school is located immediately west of the Project Site on O'Brien Drive. There are currently no sidewalks or bicycle facilities on O'Brien Drive between the school and the Project Site. The Project proposes a sidewalk that would connect the Project Site with the school's driveway, as part of the Project proposed roundabout at the East Loop Road/O'Brien Drive location.
- **Cesar Chavez Ravenswood Middle School, San Francisco 49ers Academy, Creative Montessori Learning.** These schools are located on Bay Road between Willow Road and University Avenue. Pedestrian and bicycle access from the Project Site to these schools would be via Willow Road to Albern Street and Ralmar Avenue. These streets have sidewalks along both sides. These are also residential streets with low vehicular speeds and volumes and therefore, bicycle friendly. Access to the San Francisco 49ers Academy and Creative Montessori is directly from Bay Road, which has sidewalks along both sides. Also, Bay Road has dedicated bicycle lanes.
- **Belle Haven School.** This school is located approximately 0.4 miles north of the Project Site. Pedestrian and bicycle access from the Project Site to this school would be via Ivy Drive or Hamilton Avenue. Pedestrian amenities include crosswalks and pedestrian push buttons at the intersections of Willow Road and Ivy Drive and Willow Road and Hamilton Avenue, a continuous sidewalk along the south side of Willow Road, a continuous sidewalk along both sides of Ivy Drive and Hamilton Avenue between the school and the Project Site, and bulbouts on Hamilton Avenue. However, there are no designated bicycle facilities on Ivy Drive or Hamilton Avenue.

- **Costano Elementary School.** The school is located 0.2 miles south of the Project Site on University Avenue at Adams Drive. Pedestrian and bicycle access from the Project Site is via Adams Drive or O'Brien Drive. There are limited pedestrian connections between the Project Site and the school. Sidewalk facilities are lacking along O'Brien Drive and Adams Drive, and there are no crosswalks at University Avenue and O'Brien Drive or University Avenue and Adams Drive. Class II bicycle lanes and sidewalks are proposed along O'Brien Drive and Adams Drive in Menlo Park's TIF, which would improve bicycle and pedestrian access to the school. Implementation of this improvement from the TIF Program would reduce this potential effect on bicyclists and pedestrians from the proposed project.
- **Tide Academy.** This school is located approximately 1.2 miles north of the Project Site. Pedestrian and bicycle access from the Project Site to this school would be via Ivy Drive or Hamilton Avenue, Chilco Street, and Jefferson Drive. Pedestrian amenities include crosswalks and pedestrian push buttons at the intersections of Willow Road and Ivy Drive and Willow Road and Hamilton Avenue, a continuous sidewalk along the south side of Willow Road, a continuous sidewalk along both sides of Ivy Drive, Hamilton Avenue, Chilco Street, and Jefferson Drive between the school and the Project Site, and bulbouts on Hamilton Avenue. There are also designated bicycle facilities on Chilco Street and Jefferson Drive, however, there are no designated bicycle facilities on Ivy Drive or Hamilton Avenue.

### Transit Facilities

The Proposed Project would provide tram stops and shuttle stops on the Project Site for use by Meta workers. A detailed description of the tram and shuttle services is provided in Appendix I.

The Proposed Project is expected to generate an increase in transit demand, which could be accommodated by the available capacity of the SamTrans bus service. The SamTrans routes 81, 281, 296, 397, Dumbarton Express Lines, M2 Belle Haven Shuttle, and M4 Willow Road shuttle serve the immediate vicinity of the project area with approximately 15 to 25-minute headways during the AM and PM peak commute hours. Bus stops are within a typical walking distance (one-quarter mile or 5 minutes) of the Project Site. The Proposed Project would make no change to existing public transit facilities. However, by adding vehicle trips and increasing delay at intersections along bus routes, it would increase bus travel time. Bus services that would be affected in the vicinity of the Project Site include bus routes (DB, M2 Belle Haven Shuttle, M4 Willow Road Shuttle, SamTrans Route 81) along Willow Road, University Avenue, and O'Brien Drive.

Proposed intersection improvements to reduce intersection delay include improvements at Willow Road and Ivy Drive, Willow Road and Hospital Plaza/Durham Street, Willow Road and Newbridge Street, Willow Road and Bay Road, O'Brien Drive and Kavanaugh Drive, and Adam's Drive and O'Brien Drive. These improvements would help to reduce some bus delay along these routes. The City's TIF includes installing Transit Signal Priority (TSP) for queue jumps by shoulder running buses on northbound and southbound Bayfront Expressway and allowing the use of the existing right turn lane for queue jump with TSP at Willow Road and O'Brien Drive. The timing and implementation of these TSP projects are not certain.

The Caltrain electrification project would enable Caltrain to provide more frequent train service at the Menlo Park, Palo Alto, and Redwood City Caltrain stations. Caltrain predicts an initial capacity increase of over 30%. It is expected that the Caltrain electrification project would accommodate the potential increase in transit ridership generated by the Proposed Project.

### 3. Non-CEQA Level of Service Transportation Analysis

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This chapter describes the existing conditions level of service and observed traffic conditions at roadway facilities in the vicinity of the site. It also describes the method by which project traffic is estimated and any adverse effects to intersection levels of service caused by the proposed project under existing, near-term (2025), cumulative (2040), and cumulative (2040) with Dumbarton rail conditions.

#### Existing Intersection Lane Configurations and Traffic Volumes

The existing lane configurations at the study intersections were confirmed by observations in the field and are shown on Figure 7. Existing traffic volumes were obtained from new peak hour counts collected in year 2019 and year 2020. The existing AM and PM peak hour intersection volumes are shown in Figure 8. Intersection turning-movement count data are presented in Appendix A.

#### Existing Intersection Levels of Service

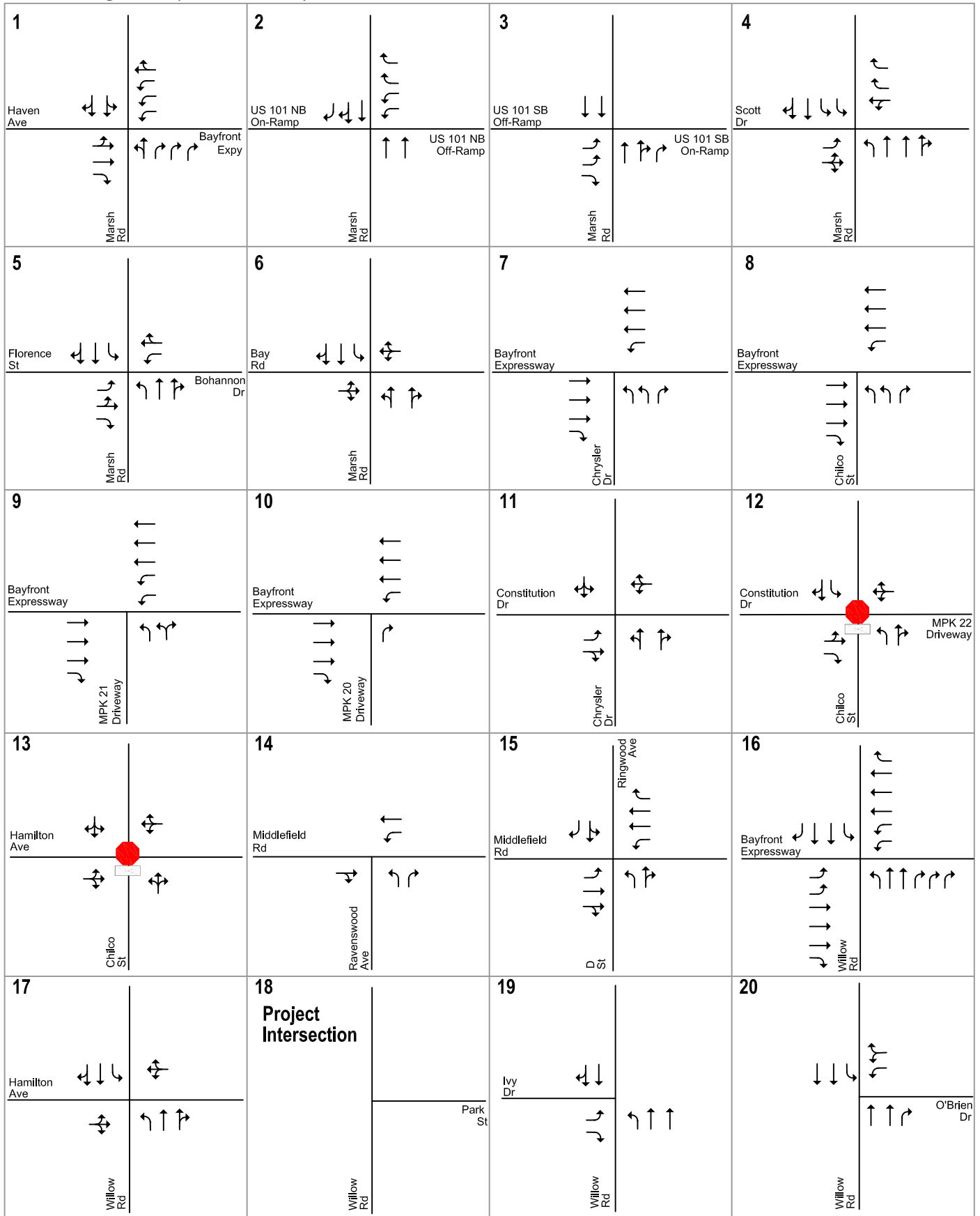
The results of the intersection level-of-service analysis under existing conditions show that many of the study intersections currently operate at an unacceptable level (see Table 7 and 8). As noted in the ConnectMenlo DEIR, the counted traffic volumes at the Menlo Park study intersections along Willow Road did not appropriately reflect the actual traffic demand, and isolated intersection analysis fails to capture these results. Similarly, the counted traffic volumes at the East Palo Alto study intersections in the vicinity of the US 101/University Avenue interchange do not reflect actual traffic demand. Therefore, instead of calculated level of service, the existing level of service results are reported based on level of service as identified by field observations and microsimulation to reflect “unserved demand”. The microsimulation methodology and assumptions for Willow Road are documented in Appendix B. Hexagon has also developed a microsimulation model for intersections in the vicinity of the US 101/University Avenue interchange, which has been used for other studies in East Palo Alto. This microsimulation model was used to analyze level of service for intersections near the US 101/University Avenue interchange.



The intersection level of service calculation sheets are included in Appendix C. The following study intersections (See Figure 9) currently operate at an unacceptable level of service during at least one peak hour:

11. Chrysler Drive and Constitution Drive (AM peak hour)
12. Chilco Street and Constitution Drive/MPK 22 Driveway (AM and PM peak hours)
16. Willow Road and Bayfront Expressway (AM and PM peak hours)
17. Willow Road and Hamilton Avenue (AM and PM peak hours)
19. Willow Road and Ivy Drive (AM peak hour)
20. Willow Road and O'Brien Drive (AM and PM peak hours)
21. Willow Road and Newbridge Street (AM and PM peak hours)
22. Willow Road and US 101 Northbound Ramps (AM and PM peak hours)
23. Willow Road and US 101 Southbound Ramps (PM peak hour)
24. Willow Road and Bay Road (PM peak hour)
25. Willow Road and Hospital Plaza/Durham Street (PM peak hour)
28. Willow Road and Middlefield Road (AM peak hour)
32. Adam's Drive and O'Brien Drive (PM peak hour)
33. University Avenue and Bayfront Expressway (PM peak hour)
34. University Avenue and Purdue Avenue (PM peak hour)
35. University Avenue and Adams Drive (AM and PM peak hours)
42. University Avenue and Donohoe Street (AM and PM peak hours)
43. US 101 Northbound Off-Ramp and Donohoe Street (PM peak hour)
45. University Avenue and US 101 Southbound Ramps (AM and PM peak hours)
46. University Avenue and Woodland Avenue (AM and PM peak hours)
50. E. Bayshore Road & Euclid Avenue (AM peak hour)

Willow Village Transportation Analysis



**Figure 7**  
**Existing Lane Configurations**

Willow Village Transportation Analysis

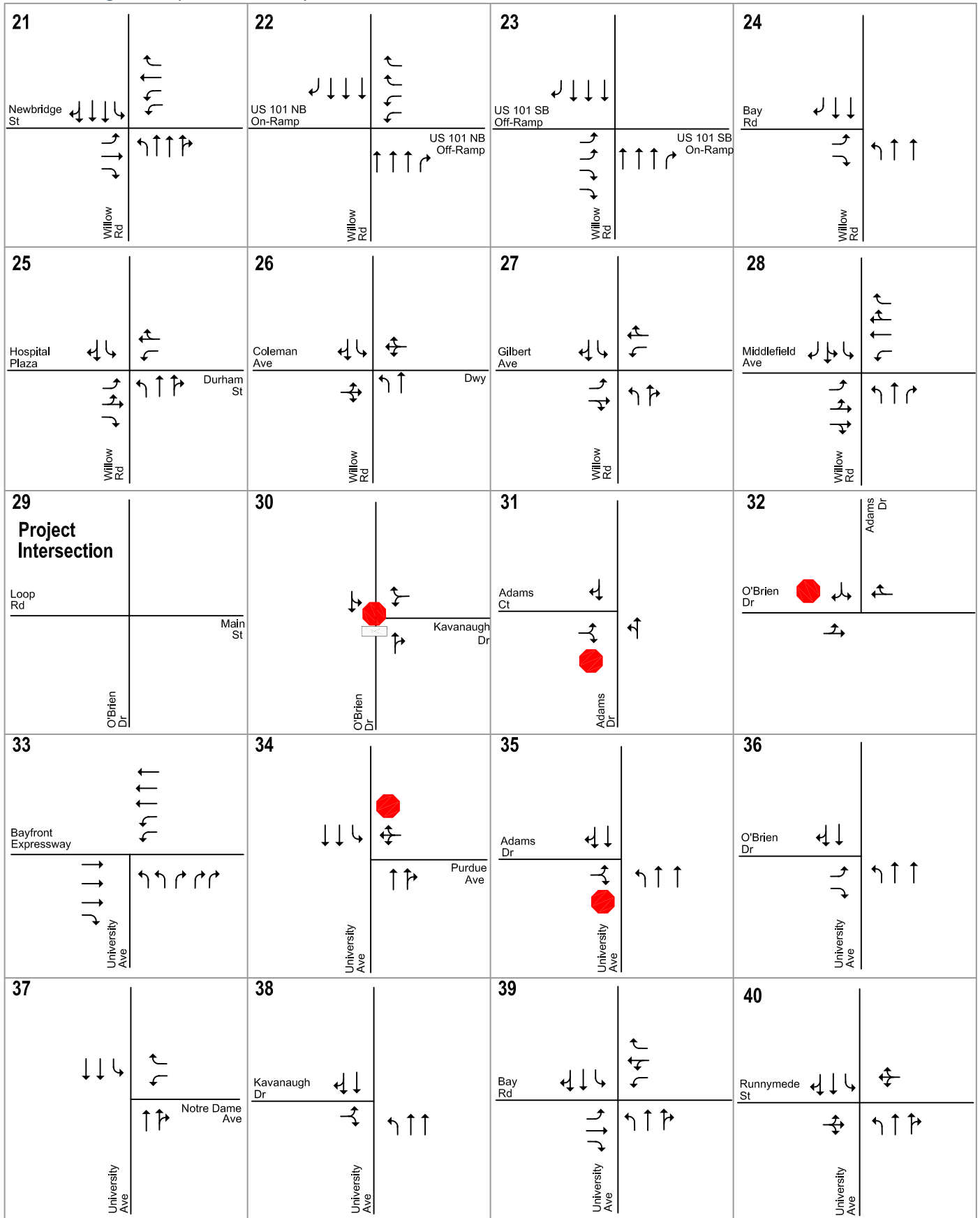
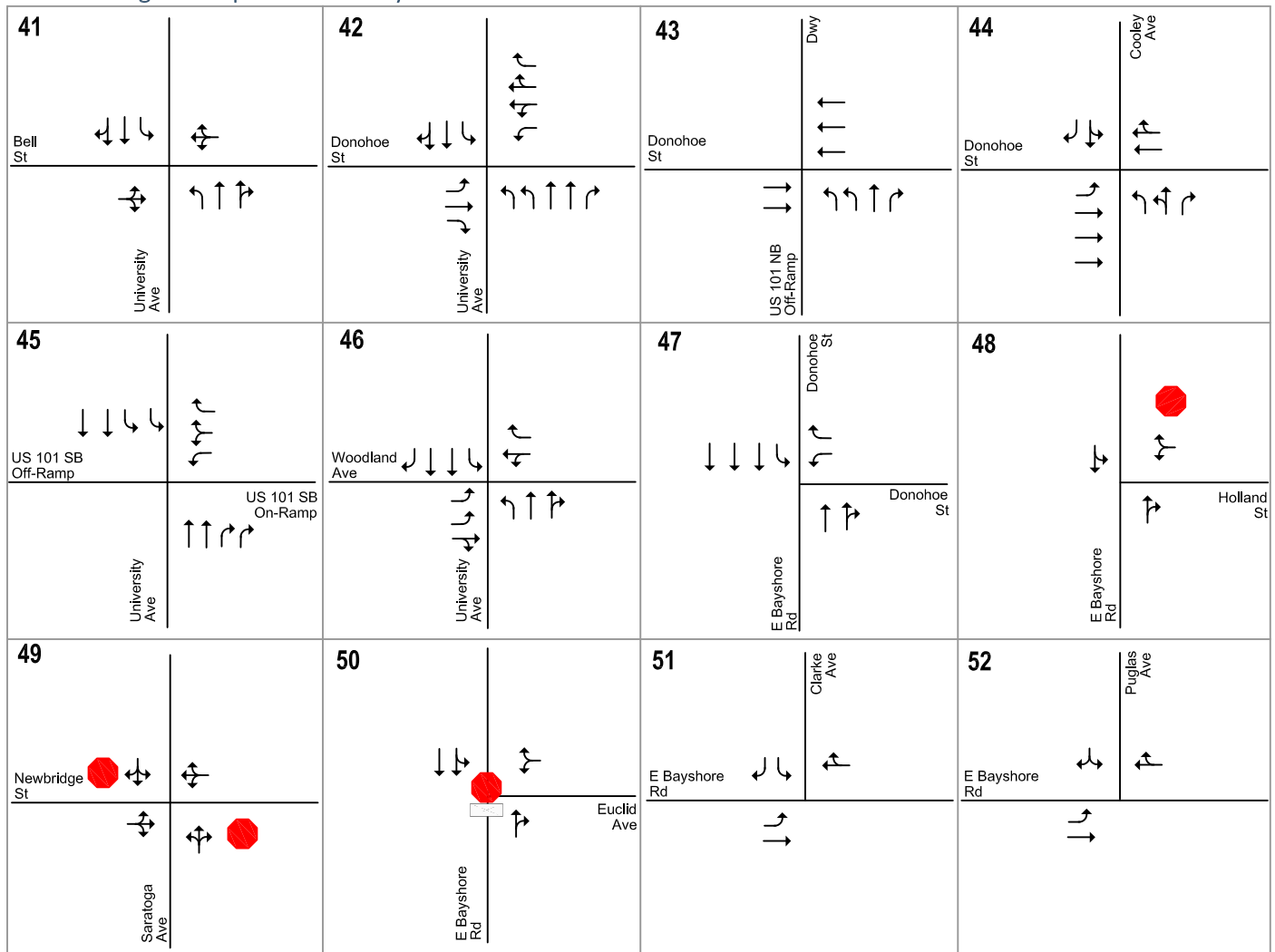




Figure 7  
Existing Lane Configurations

# Willow Village Transportation Analysis



## LEGEND

-  = Stop Controlled Approach
-  = Stop Controlled Intersection

**Figure 7**  
**Existing Lane Configurations**

Willow Village Transportation Analysis

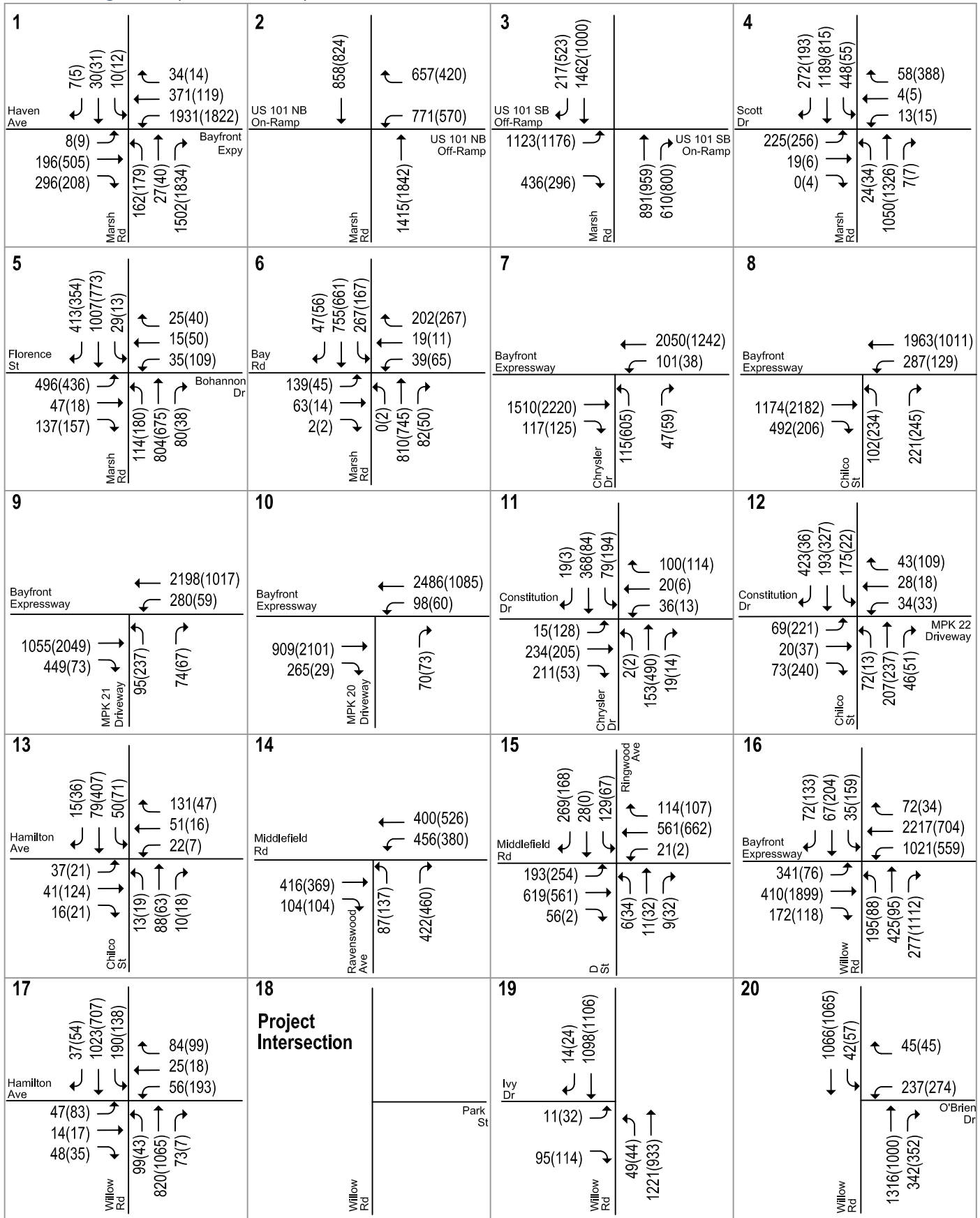


Figure 8  
Existing Traffic Volumes

Willow Village Transportation Analysis

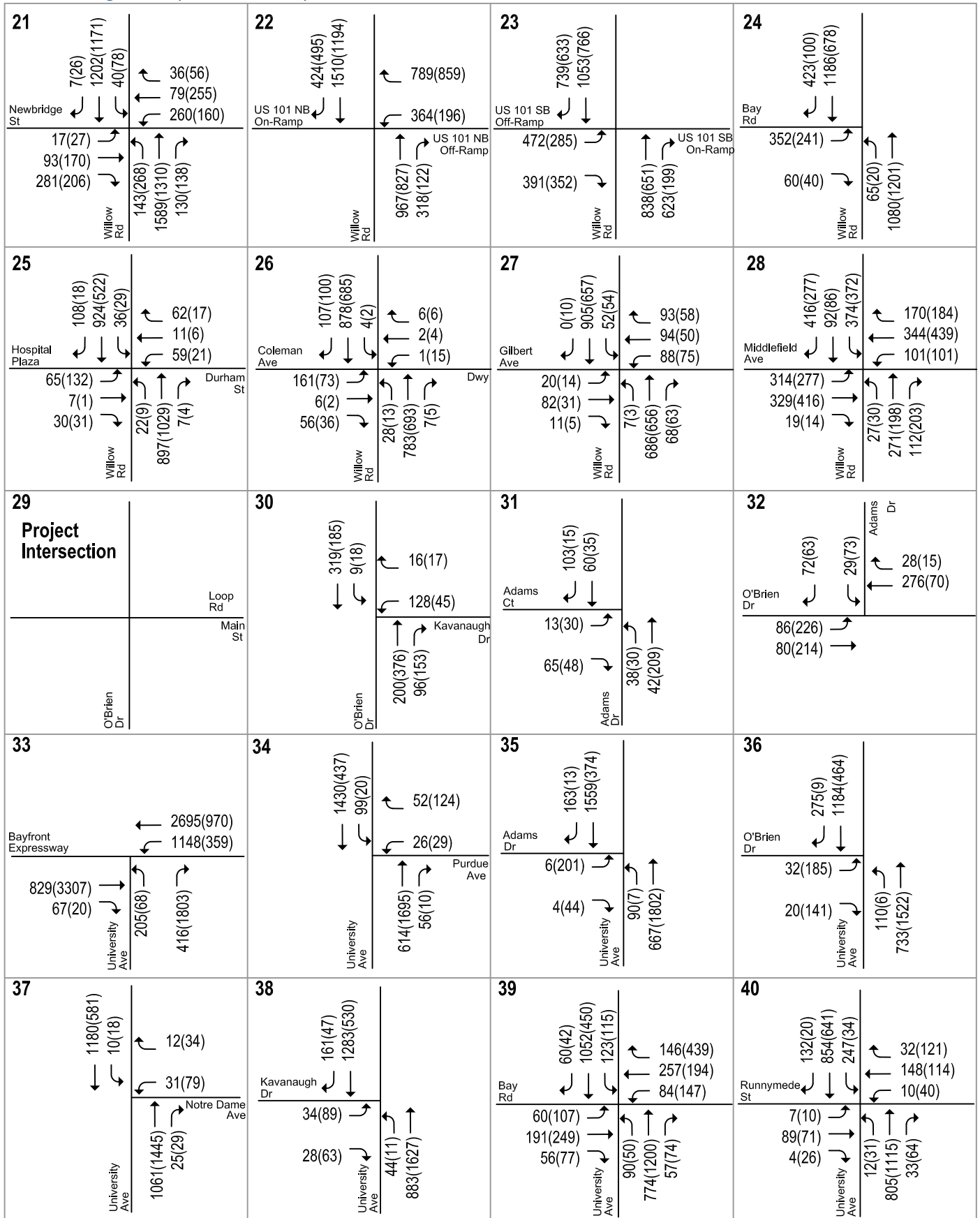
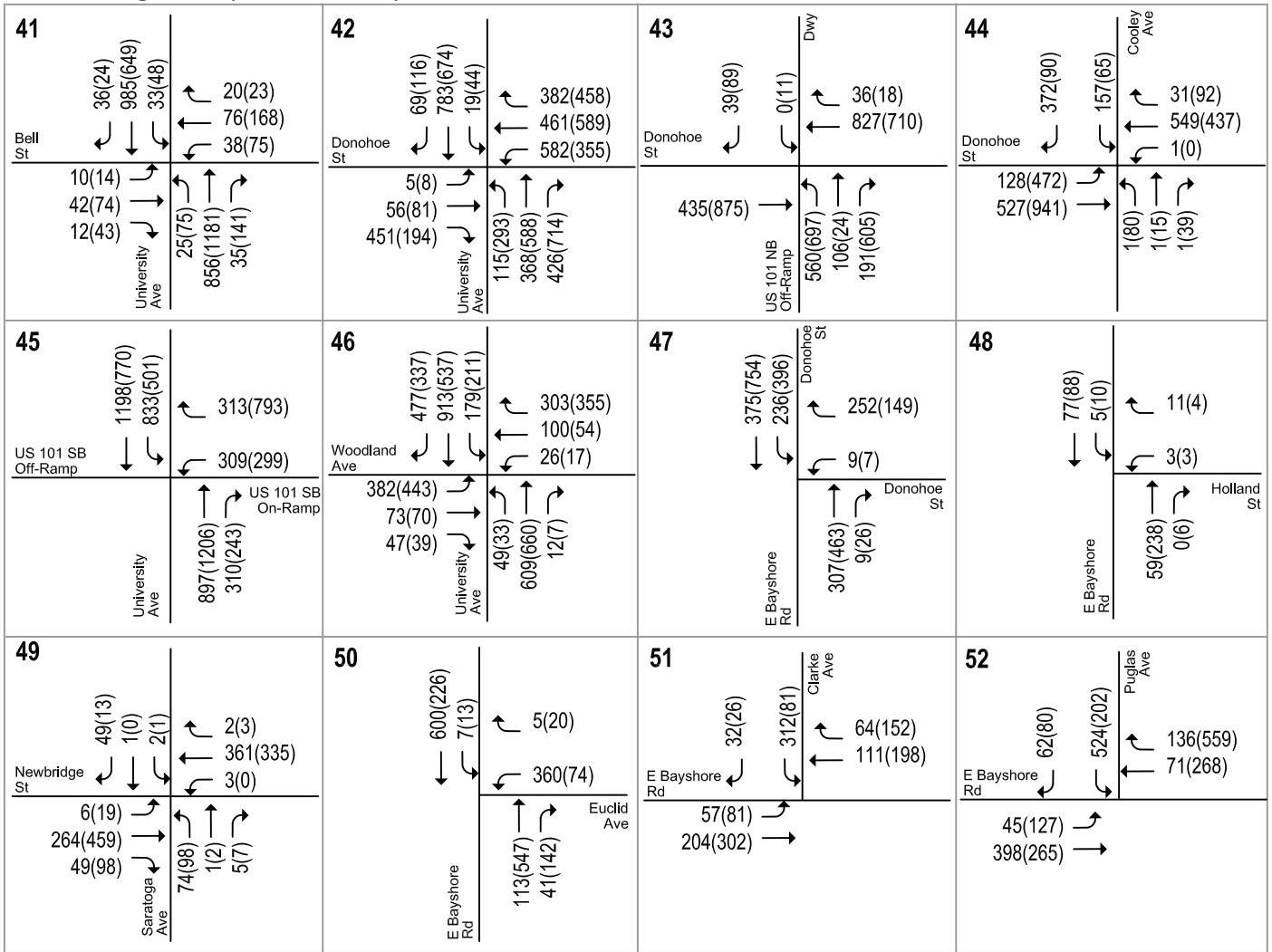


Figure 8  
Existing Traffic Volumes

Willow Village Transportation Analysis



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 8  
Existing Traffic Volumes

**Table 7**  
**Existing Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Count Date	Traffic Control	Existing Conditions	
					Avg. Delay (sec) <sup>1</sup>	LOS
1	Marsh Road & Bayfront Expressway*	AM	4/16/2019	Signal	50.5	D
		PM	4/16/2019		31.6	C
2	Marsh Road & US 101 Northbound Off-Ramp	AM	4/16/2019	Signal	15.8	B
		PM	4/16/2019		13.3	B
3	Marsh Road & US 101 Southbound Off-Ramp	AM	4/16/2019	Signal	19.0	B
		PM	4/16/2019		17.0	B
4	Marsh Road & Scott Drive	AM	4/16/2019	Signal	18.5	B
		PM	4/16/2019		15.3	B
5	Marsh Road & Bohannon Drive/Florence Street	AM	3/21/2019	Signal	35.3	D
		PM	3/21/2019		34.6	C
6	Marsh Road & Bay Road	AM	3/21/2019	Signal	19.7	B
		PM	3/21/2019		18.6	B
7	Chrysler Drive & Bayfront Expressway	AM	4/16/2019	Signal	8.4	A
		PM	4/16/2019		13.1	B
8	Chilco Street & Bayfront Expressway	AM	4/16/2019	Signal	10.9	B
		PM	4/16/2019		13.1	B
9	MPK 21 Driveway & Bayfront Expressway	AM	4/25/2019	Signal	7.9	A
		PM	4/25/2019		10.2	B
10	MPK 20 Driveway (east) & Bayfront Expressway	AM	4/25/2019	Signal	10.0	A
		PM	4/25/2019		8.2	A
11	Chrysler Drive & Constitution Drive	AM	3/21/2019	Signal	<b>50.6</b>	<b>D</b>
		PM	3/21/2019		28.0	C
12	Chilco Street & Constitution Drive/MPK 22 Driveway	AM	3/21/2019	AWSC	<b>32.1</b>	<b>D</b>
		PM	3/21/2019		<b>32.5</b>	<b>D</b>
13	Chilco Street & Hamilton Avenue	AM	1/0/1900	AWSC	9.2	A
		PM	1/0/1900		16.8	C
14	Ravenswood Avenue & Middlefield Road	AM	3/19/2019	Signal	36.1	D
		PM	3/19/2019		16.1	B
15	Ringwood Avenue & Middlefield Road	AM	3/19/2019	Signal	12.5	B
		PM	3/19/2019		13.7	B
16	Willow Road & Bayfront Expressway*[1]	AM	4/23/2019	Signal	<b>&gt;120</b>	<b>F</b>
		PM	4/23/2019		<b>&gt;120</b>	<b>F</b>
17	Willow Road & Hamilton Avenue[1]	AM	3/21/2019	Signal	<b>73.3</b>	<b>E</b>
		PM	3/21/2019		<b>&gt;120</b>	<b>F</b>
18	Willow Road & Park Street (future intersection)[1]	AM	--	Project Intersection		
		PM	--			
19	Willow Road & Ivy Drive[1]	AM	3/21/2019	Signal	<b>75.2</b>	<b>E</b>
		PM	3/21/2019		39.5	D
20	Willow Road & O'Brien Drive[1]	AM	3/21/2019	Signal	<b>58.9</b>	<b>E</b>
		PM	3/21/2019		<b>&gt;120</b>	<b>F</b>
21	Willow Road & Newbridge Street[1]	AM	3/21/2019	Signal	<b>93.4</b>	<b>F</b>
		PM	3/21/2019		<b>&gt;120</b>	<b>F</b>
22	Willow Road & US 101 Northbound Ramps[1]	AM	3/13/2019	Signal	<b>92.8</b>	<b>F</b>
		PM	3/13/2019		<b>83.9</b>	<b>F</b>
23	Willow Road & US 101 Southbound Ramps[1]	AM	3/13/2019	Signal	38.5	D
		PM	3/13/2019		<b>98.9</b>	<b>F</b>
24	Willow Road & Bay Road[1]	AM	4/23/2019	Signal	45.3	D
		PM	4/23/2019		<b>113.5</b>	<b>F</b>



**Table 7 (Continued)**  
**Existing Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Count Date	Traffic Control	Existing Conditions	
					Avg. Delay (sec) <sup>1</sup>	LOS
25	Willow Road & Hospital Plaza/Durham Street[1]	AM	4/16/2019	Signal	43.6	D
		PM	4/16/2019		>120	F
26	Willow Road & Coleman Avenue	AM	3/19/2019	Signal	18.6	B
		PM	3/19/2019		9.2	A
27	Willow Road & Gilbert Avenue	AM	3/19/2019	Signal	19.7	B
		PM	3/19/2019		10.3	B
28	Willow Road & Middlefield Road	AM	3/19/2019	Signal	<b>61.6</b>	<b>E</b>
		PM	3/19/2019		31.5	C
29	O'Brien Drive/Loop Road & Main Street/O'Brien Drive (future intersection)	AM	--		Project	
		PM	--		Intersection	
30	O'Brien Drive & Kavanaugh Drive	AM	4/25/2019	TWSC	11.8	B
		PM	4/25/2019		15.2	C
31	Adams Drive & Adams Court	AM	4/25/2019	TWSC	11.5	B
		PM	4/25/2019		11.9	B
32	Adams Drive & O'Brien Drive	AM	4/25/2019	TWSC	17.3	C
		PM	4/25/2019		<b>27.6</b>	<b>D</b>
33	University Avenue & Bayfront Expressway*	AM	4/25/2019	Signal	11.4	B
		PM	4/25/2019		<b>94.1</b>	<b>F</b>

**Notes:**

\* Denotes CMP Intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control

<sup>1</sup> Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported

[1] Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections.

**Bold** indicates substandard level of service

**Table 8**  
**Existing Intersection Levels of Service (East Palo Alto)**

#	Intersection	Peak Hour	Count Date	Traffic Control	Existing Conditions	
					Delay (sec) <sup>1</sup>	LOS
34	University Avenue & Purdue Avenue	AM	6/5/2019	TWSC	16.5	C
		PM	6/5/2019		<b>47.0</b>	<b>E</b>
35	University Avenue & Adams Drive	AM	4/25/2019	TWSC	<b>88.1</b>	<b>F</b>
		PM	4/25/2019		<b>&gt;120</b>	<b>F</b>
36	University Avenue & O'Brien Drive	AM	4/23/2019	Signalized	9.6	A
		PM	4/23/2019		15.3	B
37	University Avenue & Notre Dame Avenue	AM	3/4/2020	Signalized	4.1	A
		PM	3/4/2020		9.3	A
38	University Avenue & Kavanaugh Drive	AM	4/25/2019	Signalized	6.3	A
		PM	4/25/2019		12.0	B
39	University Avenue & Bay Road	AM	4/25/2019	Signalized	40.4	D
		PM	4/25/2019		49.9	D
40	University Avenue & Runnymede Street	AM	4/25/2019	Signalized	6.1	A
		PM	4/25/2019		8.7	A
41	University Avenue & Bell Street	AM	4/25/2019	Signalized	11.3	B
		PM	4/25/2019		16.8	B
42	University Avenue & Donohoe Street*	AM	5/1/2019	Signalized	<b>107.1</b>	<b>F</b>
		PM	5/1/2019		<b>75.2</b>	<b>E</b>
43	US 101 Northbound Off-Ramp & Donohoe Street*	AM	4/25/2019	Signalized	49.8	D
		PM	4/25/2019		<b>&gt;120</b>	<b>F</b>
44	Cooley Avenue & Donohoe Street*	AM	6/5/2019	Signalized	32.9	C
		PM	6/5/2019		36.7	D
45	University Avenue & US 101 Southbound Ramps*	AM	4/25/2019	Signalized	<b>98.9</b>	<b>F</b>
		PM	4/25/2019		<b>87.1</b>	<b>F</b>
46	University Avenue & Woodland Avenue*	AM	4/25/2019	Signalized	<b>67.1</b>	<b>E</b>
		PM	4/25/2019		<b>&gt;120</b>	<b>F</b>
47	E. Bayshore Road & Donahoe Street*	AM	5/21/2019	Signalized	32.6	C
		PM	5/21/2019		38.5	D
48	E. Bayshore Road & Holland Street	AM	6/5/2019	TWSC	8.8	A
		PM	6/5/2019		10.0	A
49	Saratoga Avenue & Newbridge Street	AM	6/5/2019	TWSC	13.3	B
		PM	6/5/2019		15.6	C
50	E. Bayshore Road & Euclid Avenue*	AM	5/21/2019	AWSC	<b>52.4</b>	<b>F</b>
		PM	5/21/2019		32.6	D
51	Clarke Avenue & E. Bayshore Road	AM	9/25/2018	Signalized	13.9	B
		PM	9/25/2018		10.7	B
52	Pulgas Avenue & E. Bayshore Road	AM	6/5/2019	Signalized	20.4	C
		PM	6/25/2019		19.9	B

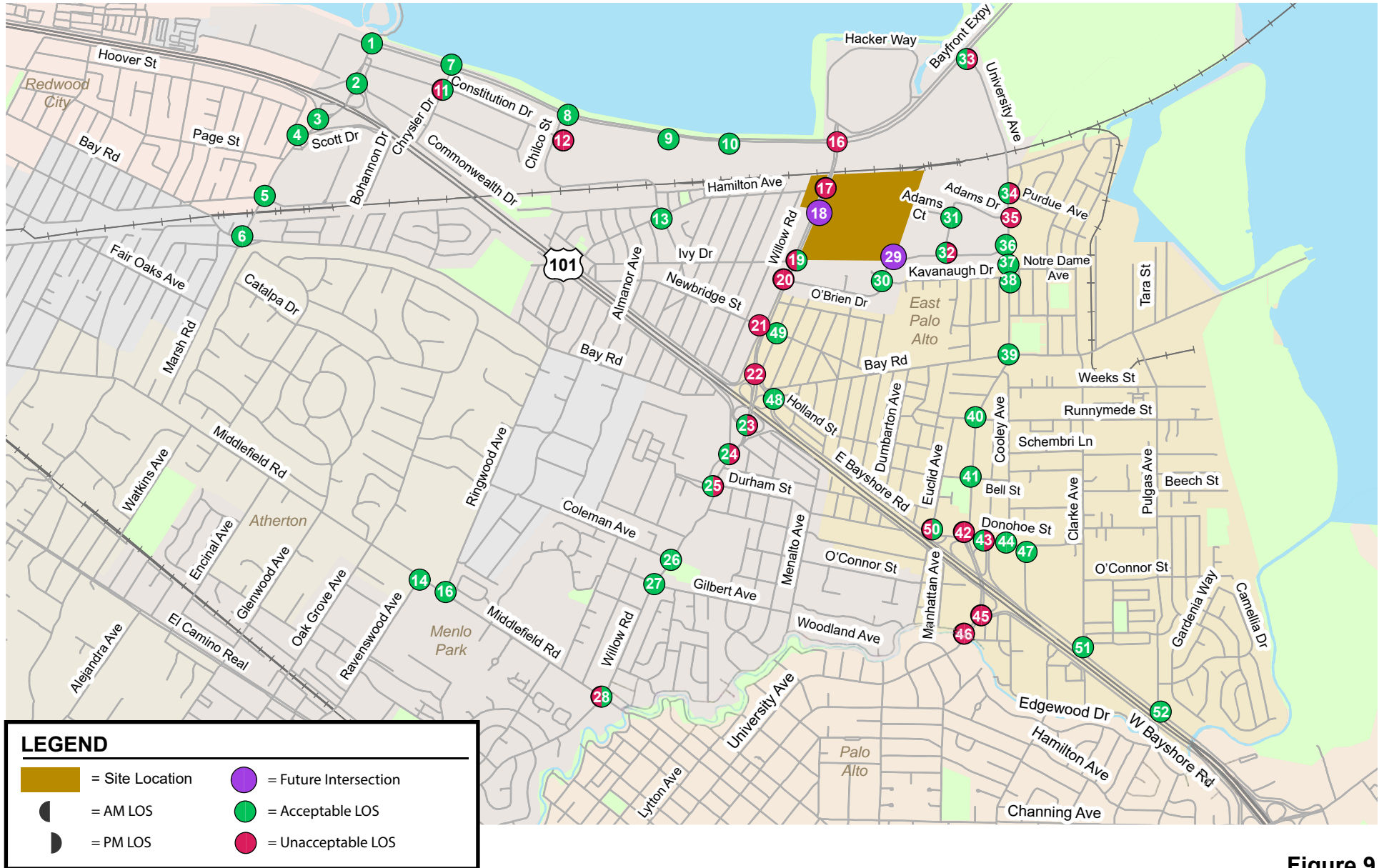
Note:

AWSC - All Way Stop Control; TWSC - Two Way Stop Control

<sup>1</sup> Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.

\* Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections.

**Bold** indicates substandard level of service



**Figure 9**  
Existing Intersection Level of Service Summary

## Existing Freeway Levels of Service

Existing weekday AM and PM peak hour traffic volumes on the study freeway segments were obtained from the *San Mateo County Congestion Management Program 2019* for segments within San Mateo County. The *Valley Transportation Authority 2018 CMP Monitoring Report* was referenced for segments within Santa Clara County. The *Alameda County Transportation Commission 2018 LOS Monitoring Report* was referenced for segments within Alameda County. As shown on Tables 9 to 11, the following freeway segments are currently operating below their respective level of service standards, or at LOS F:

### San Mateo County

- SR 84 – between Willow Road and University Avenue, AM Peak Hour
- SR 84 – between University Avenue and Alameda County Line, AM & PM Peak Hours
- US 101 – between Santa Clara County Line and SR 92, AM & PM Peak Hours
- SR 109 – from SR 84 to Kavanaugh Drive, AM & PM Peak Hours

### Santa Clara County

The following mixed-flow freeway segments are currently operating at LOS F:

- US 101 – from SR 85 to Rengstorff Avenue – AM & PM Peak Hours
- US 101 – from Rengstorff to San Antonio Avenue – PM Peak Hour
- US 101 – from San Antonio Avenue to Embarcadero Road – AM & PM Peak Hours
- US 101 – from Embarcadero Road to SR 85 – PM Peak Hour

The following HOV freeway segments are currently operating at LOS F:

- US 101 – from San Antonio Avenue to Embarcadero Road – PM Peak Hour
- US 101 – from Oregon Expressway to Embarcadero Road – AM Peak Hour

### Alameda County

- SR 84 – Paseo Padre Parkway to San Mateo County Line – AM Peak Hour
- SR 84 – Newark Boulevard to I-880 – PM Peak Hour

**Table 9**  
**Existing Freeway LOS – San Mateo County**

CMP Facility	Roadway Segment	Dir.	Pk Hr	LOS Standard	Capacity	Existing LOS
SR 84	US 101 to Willow Rd	SB	AM	D	1,100	C
		SB	PM	D	1,100	B
SR 84	Willow Rd to US 101	NB	AM	D	1,100	C
		NB	PM	D	1,100	B
SR 84	Willow Rd to University Ave	SB	AM	E	1,100	F
		SB	PM	E	1,100	E
SR 84	University Ave to Willow Rd	NB	AM	E	1,100	<b>F</b>
		NB	PM	E	1,100	E
SR 84	University Ave to Alameda County Line	SB	AM	F	2,100	<b>F</b>
		SB	PM	F	2,100	<b>F</b>
SR 84	Alameda County Line to University Ave	NB	AM	F	2,100	<b>F</b>
		NB	PM	F	2,100	<b>F</b>
US 101	Santa Clara County Line to Whipple Ave	NB	AM	F	2,300	<b>F</b>
		NB	PM	F	2,300	<b>F</b>
US 101	Whipple Ave to Santa Clara County Line	SB	AM	F	2,300	<b>F</b>
		SB	PM	F	2,300	<b>F</b>
US 101	Whipple Ave to SR 92	NB	AM	E	2,300	<b>F</b>
		NB	PM	E	2,300	<b>F</b>
US 101	SR 92 to Whipple Ave	SB	AM	E	2,300	<b>F</b>
		SB	PM	E	2,300	<b>F</b>
SR 109 (University Ave)	Kavanaugh Dr to SR 84	EB	AM	E	1,100	C
		EB	PM	E	1,100	C
SR 109 (University Ave)	SR 84 to Kavanaugh Dr	WB	AM	E	1,100	<b>F</b>
		WB	PM	E	1,100	<b>F</b>
SR 114 (Willow Rd)	US 101 to SR 84	EB	AM	E	1,100	B
		EB	PM	E	1,100	B
SR 114 (Willow Rd)	SR 84 to US 101	WB	AM	E	1,100	C
		WB	PM	E	1,100	C

**Notes:**  
Data referenced San Mateo County City/County Association of Governments *Congestion Management Program 2019*.  
**Bold** indicates non-compliant LOS

**Table 10**  
**Existing Freeway LOS – Santa Clara County**

Freeway Segment	Dir	Peak Hour	Existing Conditions					
			Mixed-Flow			HOV Lane		
			Capacity <sup>1</sup>	Volume <sup>2</sup> (pc/hr/ln)	LOS <sup>2</sup>	Capacity <sup>1</sup>	Volume <sup>2</sup> (pc/hr/ln)	LOS <sup>2</sup>
US 101 SR 85 to N. Shoreline Blvd	NB	AM	9,200	1,512	<b>F</b>	1,650	1,751	E
		PM	9,200	1,358	<b>F</b>	1,650	1,635	D
US 101 N. Shoreline Blvd to Rengstorff Ave	NB	AM	6,900	1,660	<b>F</b>	3,300	1,730	D
		PM	6,900	1,298	<b>F</b>	3,300	1,683	D
US 101 Rengstorff Ave to San Antonio Ave	NB	AM	6,900	1,747	E	3,300	1,716	D
		PM	6,900	1,333	<b>F</b>	3,300	1,646	D
US 101 San Antonio Ave to Oregon Expwy	NB	AM	6,900	1,262	<b>F</b>	3,300	1,693	D
		PM	6,900	1,083	<b>F</b>	3,300	1,482	<b>F</b>
US 101 Oregon Expwy to Embarcadero Rd	NB	AM	6,900	1,367	<b>F</b>	1,650	1,693	<b>F</b>
		PM	6,900	1,271	<b>F</b>	1,650	1,588	<b>F</b>
US 101 Embarcadero Rd to Oregon Expwy	SB	AM	6,900	1,991	D	1,650	n/a	A
		PM	6,900	1,135	<b>F</b>	1,650	1,627	D
US 101 Oregon Expwy to San Antonio Ave	SB	AM	6,900	1,989	D	3,300	919	A
		PM	6,900	1,050	<b>F</b>	3,300	1,693	D
US 101 San Antonio Ave to Rengstorff Ave	SB	AM	6,900	1,890	E	3,300	780	A
		PM	6,900	1,125	<b>F</b>	3,300	1,610	D
US 101 Rengstorff Ave to N. Shoreline Blvd	SB	AM	6,900	1,976	D	3,300	1,369	C
		PM	6,900	1,072	<b>F</b>	3,300	1,508	D
US 101 N. Shoreline Blvd to SR 85	SB	AM	6,900	1,950	D	1,650	1,068	A
		PM	6,900	1,115	<b>F</b>	1,650	1,752	E

**Notes:**

HOV = high-occupancy vehicle; LOS = level of service

1. Capacity is based on the capacities cited in VTA's *Transportation Impact Analysis Guidelines* (2014).

2. Volume, and Level of service (LOS) on each segment are taken from VTA's *2018 CMP Monitoring Report*. VTA did not report volume and density for segments with speed above 75.2 mph.

**Bold** indicates a substandard level of service.

**Table 11**  
**Existing Freeway LOS – Alameda County**

CMP Facility	Roadway Segment	Dir.	Pk Hr	Capacity	Existing LOS
SR 84	San Mateo County Line to Toll Plaza	EB	AM	2,200	A
		EB	PM	2,200	C
SR 84	Toll Plaza to San Mateo County Line	WB	AM	2,200	F
		WB	PM	2,200	A
SR 84	Toll Plaza to Thornton Ave	EB	AM	2,200	A
		EB	PM	2,200	B
SR 84	Paseo Padre Pkwy to Toll Plaza	WB	AM	2,200	F
		WB	PM	2,200	C
SR 84	Thornton Ave to Newark Blvd	EB	AM	2,200	A
		EB	PM	2,200	C
SR 84	Newark Blvd to Paseo Padre Pkwy	WB	AM	2,200	E
		WB	PM	2,200	A
SR 84	Newark Blvd to I-880	EB	AM	2,200	D
		EB	PM	2,200	F
SR 84	I-880 to Newark Blvd	WB	AM	2,200	D
		WB	PM	2,200	D

Notes:  
 Data referenced the Alameda County Transportation Commission 2018 LOS Monitoring Report, Appendix B.

## Existing Freeway Ramp Capacity Analysis

This analysis consists of a volume-to-capacity ratio evaluation of the study freeway ramps. The ramp capacities were obtained from the *Highway Capacity Manual 2000 (Chapter 25)*, which considers both the free-flow speed and the number of lanes on the study ramps. It was assumed that if ramp meter equipment is present, on-ramps on northbound US 101 would be metered during the AM peak hour, and on-ramps on southbound US 101 would be metered during the PM peak hour. Metered ramps are analyzed with a capacity of 900 vehicles per hour for the mixed-flow lanes. As shown on Table 12, the existing ramps currently have sufficient capacity to serve the existing traffic volumes.

**Table 12**  
**Freeway Ramp Capacity**

Interchange	Ramp	Peak Hour	Lanes				Existing Conditions		
			Type	Mixed	HOV	Meter <sup>1</sup>	Capacity <sup>2</sup>	Volume <sup>3</sup>	V/C
US 101/Marsh Road	SB Off-ramp to Marsh Road	AM PM	Diagonal	2	-	-	3,800 3,800	1,332 1,156	0.35 0.30
	NB on-ramp from WB Marsh Road	AM PM	Diagonal	2	1	YES -	1,800 2,000	1,559 1,472	0.87 0.74
US 101/Willow Road	NB off-ramp to Willow Road	AM PM	Diagonal	2	-	-	3,800 3,800	1,153 1,055	0.30 0.28
	NB on-ramp from WB Willow Road	AM PM	Diagonal	1	1	YES -	1,800 2,000	424 495	0.24 0.25
	SB on-ramp from WB Willow Road	AM PM	Loop	1	-	-	1,900 900	739 633	0.39 0.70
	SB off-ramp to Willow Road	AM PM	Diagonal	2	-	-	3,800 3,800	863 637	0.23 0.17
	NB off-ramp to Donohoe Street	AM PM	Diagonal	1	-	-	2,000 2,000	857 1,326	0.43 0.66
US 101/University Avenue	SB on-ramp from University Avenue	AM PM	Diagonal	2	-	-	1,800 900	1,143 744	0.64 0.83

**Notes:**  
*NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound*  
 1. Northbound on-ramps are assumed metered during the AM peak hour. Southbound on-ramps are assumed metered during the PM peak hour.  
 2. Ramp capacities were obtained from *Highway Capacity Manual 2000*, and considered the free-flow speed, the number of lanes on the ramp, and ramp metering.  
 3. Existing volumes referenced intersection counts collected in 2019.

## Observed Existing Traffic Conditions

Traffic conditions were observed in the field at each study intersection in order to identify existing operational deficiencies and to confirm the accuracy of the calculated level of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to level of service, (2) identify any locations where the level of service analysis does not accurately reflect existing traffic conditions. Hexagon conducted field observations on a regular weekday during the AM and PM peak hours in May, October, and November of 2019. Some of the study intersections had no significant operational issues, and vehicular queues on all approaches were mostly able to clear in one cycle. The observed operational issues at the remaining study intersections are identified below.

### Marsh Road between Bayfront Expressway and Bay Road

There were no operational deficiencies observed along this corridor during the AM peak hour.

During the PM peak hour, the eastbound traffic on Marsh Road queued from Bayfront Expressway past the 101 SB Off-Ramp. Most eastbound vehicles required more than one cycle to clear along this queue. The southbound left-turn movement at the Marsh Road/US 101 SB Off-Ramp intersection also received heavy demand. These vehicles usually waited through more than one queue to cross the intersection due to downstream spillback queues on eastbound Marsh Road.

### Middlefield Road between Marsh Road and University Avenue

During the AM peak hour, southbound traffic was heavy. The southbound left-turn queue at the Ringwood Avenue/Middlefield Road intersection occasionally exceeded the left-turn pocket as vehicles traveled to Menlo-Atherton High School. The northbound left-turn queue at the Ravenswood Avenue/Middlefield Road intersection frequently filled the entire block and occasionally impacted operations at Ringwood Avenue, as vehicles in the through lane waited to merge into the left-turn lane.



During the PM peak hour, the northbound left-turn queue at the Ravenswood Avenue/Middlefield Road intersection sometimes filled the entire block and occasionally impacted operations at Ringwood Avenue as vehicles in the through lane waited to merge into the left-turn lane. Vehicles making an eastbound right-turn from Ravenswood Avenue were observed to wait to merge to the southbound left-turn lane at the Ringwood Avenue/Middlefield Road intersection. The northbound right-turn movement at the Willow Road/Middlefield Road intersection received heavy demand but was often observed to be blocked by the northbound through queue.

### **Bayfront Expressway between Marsh Road and University Avenue**

Due to signal failures at the Bayfront Expressway and Marsh Road intersection during the day of observation, the observed AM peak hour conditions along this corridor were deemed atypical.

During the PM peak hour, the southbound traffic on Bayfront Expressway queued from University Avenue northward past upstream intersections. Most southbound vehicles required multiple cycles to clear intersections along this queue. The eastbound left-turn queue at the Chrysler Drive/Bayfront Expressway intersection extended past upstream intersections and required multiple cycles to clear. The southbound right-turn and northbound left-turn movements at the Chilco Street/Bayfront Expressway intersection sometimes required two signal cycles to clear due to eastbound spillback queues at the Chilco Street and Constitution Drive intersection. The eastbound left-turn movement frequently required two signal cycles to clear the Chilco Street/Bayfront Expressway intersection.

### **Chilco Street & Constitution Drive/MPK 22 Driveway**

During the AM peak hour, all approaches of this unsignalized intersection were busy. Vehicles frequently made left turns at all approaches. The two unsignalized pedestrian crosswalks were heavily utilized. The westbound through-right lane frequently queued towards Bayfront Expressway and was observed to take up to a minute to clear. The queue was observed to occasionally extend to the end of the southbound right-turn pocket on Bayfront Expressway.

During the PM peak hour, eastbound spillback queues from the Chilco Street and Bayfront Expressway intersection affected traffic operations at this intersection. At the Chilco Street and Constitution Drive intersection, the westbound vehicles frequently queued towards, and sometimes onto, Bayfront Expressway.

### **Chrysler Drive & Constitution Drive**

During the AM peak hour, there were no significant operational issues at this intersection.

During the PM peak hour, eastbound spillback queues from the Chrysler Drive and Bayfront Expressway intersection affected traffic operations at this intersection. At the Chrysler Drive and Constitution Drive intersection, the eastbound queues extended past upstream intersections. The westbound left-turn queue frequently extended into the southbound right-turn lane on Bayfront Expressway. The westbound left-turn queue was usually able to clear in one signal cycle, although it was observed to be sometimes blocked by the eastbound spillback queue. The northbound right-turn movement sometimes required multiple signal cycles to clear due to eastbound downstream queuing issues.

### **Willow Road between Hamilton Avenue and Gilbert Avenue**

During the AM peak hour, there was heavy demand on westbound Willow Road along this corridor. Westbound vehicles often required multiple cycles to clear an intersection. As a result, the southbound right-turn and northbound left-turn movements on the side streets turning onto westbound Willow Road also required multiple cycles to clear the intersection. The westbound queue was usually able to clear at the Willow Road/Durham Street intersection due to the long through phase. The eastbound left-turn movement at the Newbridge Street intersection received heavy demand and occasionally required two signal cycles to clear. Vehicles at the US 101 northbound off-ramp turning right onto eastbound Willow Road frequently queued onto the auxiliary lane on US 101 and required multiple cycles to clear.

During the PM peak hour, there was heavy demand on eastbound Willow Road along this corridor. Eastbound vehicles often required multiple cycles to clear an intersection. As a result, the northbound right-turn and southbound left-turn movements on the side street turning onto eastbound Willow Road also required multiple cycles to clear the intersection. The westbound left-turn movement at the Hamilton Avenue intersection received heavy demand that often required two signal cycles to clear. Vehicles at the US 101 northbound off-ramp turning right onto eastbound Willow Road frequently queued onto the auxiliary lane on US 101 and required multiple cycles to clear. Vehicles at the US 101 southbound off-ramp turning left onto eastbound Willow Road were often impacted by eastbound spillback queues and were observed to block the westbound through movement. The westbound left-turn queue extended onto US 101 southbound and impacted freeway operations. Vehicles were observed to utilize the parking lane to access the westbound right-turn movement at the Willow Road/Coleman Avenue intersection.

### **University Avenue between Purdue Avenue and Woodland Avenue**

During the AM peak hour, there was heavy demand on westbound University Avenue along this corridor. Westbound vehicles often required multiple cycles to clear an intersection between Adams Drive and Woodland Avenue. Eastbound traffic between Bay Road and the US 101 SB Ramps was also heavy and often required multiple cycles to clear. At the unsignalized intersection of University Avenue and Adams Drive, the eastbound and southbound left-turn movements occasionally had extended wait periods due to continuous westbound traffic. Protected signal phasing is recommended at the University Avenue and Runnymede Street intersection due to potentially hazardous interactions between vehicles performing permitted left-turns across heavy traffic and crossing pedestrians.

During the PM peak hour, there was heavy demand on eastbound University Avenue along this corridor. Eastbound vehicles often required multiple cycles to clear an intersection. As a result, the left-turn movements on the side streets also required multiple cycles or extended wait periods to clear the intersection. Eastbound traffic between Bay Road and Donohoe Street occasionally required more than one cycle to clear. At the unsignalized intersection of University Avenue and Purdue Avenue, vehicles were observed to make northbound right-turns, despite existing signage prohibiting that maneuver. At the University Avenue/Adams Drive intersection, vehicles were observed to pass through the intersection during a break in westbound traffic and wait in the median area until drivers allowed them to merge. The westbound left-turn movement at the University Avenue/Bay Road intersection sometimes required more than one cycle to clear. The eastbound left-turn movement at the University Avenue/Bell Street intersection frequently queued out of the turn pocket and required multiple cycles to clear.

## Donohoe Street between University Avenue and Cooley Avenue

During the AM peak hour, there was heavy demand on northbound Donohoe Street along this corridor. Northbound vehicles often required multiple cycles to clear an intersection. As a result, the westbound right-turn and eastbound left-turn movements on the side streets turning onto northbound Donohoe Street also required multiple cycles to clear the intersection. At the Cooley Avenue/Donohoe Street intersection, there was high demand for the number 1 lane. The congestion was due to spillback from the downstream intersections at University Avenue/Donohoe Street and US 101 NB Off-Ramp/Donohoe Street.

During the PM peak hour, there was heavy demand on northbound Donohoe Street along this corridor. Northbound vehicles often required multiple cycles to clear an intersection. The eastbound left-turn vehicles at the US 101 NB Off-Ramp/Donohoe Street intersection were observed to frequently fail to clear the intersection in one green cycle due to high volume and northbound spillback queues. At the Cooley Avenue/Donohoe Street intersection, there was high demand for the number 1 lane. The congestion was due to spillback from the downstream.

## Project Trips Estimates

Trip generation estimates for the mixed-use development are based on standard trip generation rates published in the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition manual. Below is a general discussion of the trip generation estimation methodology (see Table 13). Detailed trip generation analysis is provided in Appendix D.

### Gross Project Trip Generation

A description of the source of trip generation rates for each land-use is provided below:

- **Office.** Initial trip estimates for office and accessory uses are based on “ITE Land Use code 710: General Office Building”.
- **Residential.** The trip estimate is based on the “ITE Land Use code 221: Multifamily Housing (Mid-Rise)”, which includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three to ten levels. Some of the apartments are designated as senior housing, which could have a lower trip rate. Thus, the trip generation estimate for the apartments is conservative.
- **Retail.** Trip estimates are based on “ITE Land Use code 820: Shopping Center”, which includes several types of retail uses like restaurants, movie theaters, bowling alleys etc. that are typically present in shopping centers.
- **Hotel.** Trip estimates are based on “ITE Land Use code 310: Hotel”.
- **Publicly Accessible Park.** Trip estimates are based on “ITE Land Use code 488: Soccer Complex”. The programmatic design of the park has not been determined. In order to provide a conservative estimate of potential traffic generation and allow for flexible programming for the project through the project review process, it is assumed that the park will have play structures and open field areas for warm-ups or casual play.

## Transportation Demand Management (TDM)

The City of Menlo Park requires all new developments in the R-MU and O zoning districts to reduce their trip generation by 20 percent from standard trip generation rates via TDM strategies. The City has in practice applied the 20 percent reduction after crediting for any trip reductions based on a project's proximity to complimentary land uses, alternative transportation facilities, as well as reductions based on a project's mixed-use characteristics (see Appendix D for discussion on the project's trip reductions). As implemented by the City, this TDM ordinance is applied to daily trips, AM peak hour trips, and PM peak hour trips.

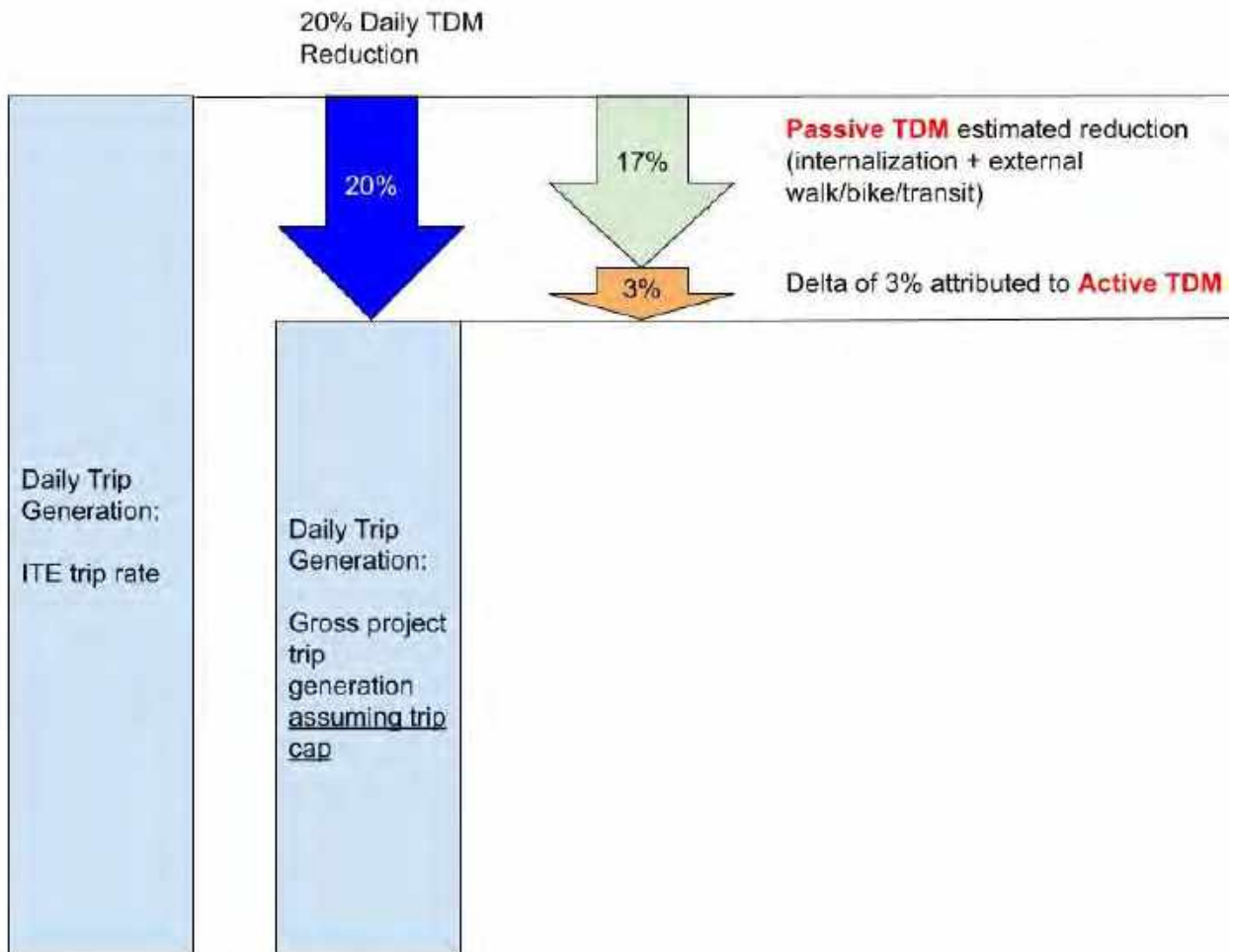
Per the Willow Village Adjustment Request: Transportation Demand Management, submitted by the applicant team, the applicant is proposing the following regarding TDM:

- For the Campus District, the applicant proposes a daily trip cap of 18,237 trips, and a trip cap of 1,670 trips during the AM and PM peak hours.
  - The daily trip cap represents a 20 percent reduction from gross ITE trip generation (see Figure 10).
  - The peak hour trip cap represents a 35-40 percent reduction from gross ITE trip generation.
- For the Residential/Shopping and Town Square Districts, the applicant proposes a 20 percent reduction from gross ITE trip generation for daily, and a 20 percent and 27 percent reduction from gross ITE trip generation during the AM and PM peak hours of commute, respectively.

### **TDM Monitoring**

The City incorporates monitoring requirements into project conditions. The project's TDM plan is anticipated to be monitored annually to ensure effectiveness of the TDM plan. The details of the TDM monitoring plan will be developed as part of CDP, and will detail frequency and duration of monitoring for each land use, as well as the methodology to conduct monitoring. The monitoring plan will also specify corrective measures if the TDM plan is not achieving its stated effectiveness.

**Figure 10**  
**Graphical Representation of How the Transportation Analysis Modeled Daily Trip Generation for All Land Uses**



*Note: the TDM program would achieve a higher reduction, but only a 3% reduction from active TDM measures is needed to achieve a 20% reduction off of gross trip generation estimated using ITE trip generation rates (see discussion above).*

## Net Project Trip Generation

The project trip generation assumes the applicant's proposed TDM plans for the Campus District as well as for the Residential/Shopping and Town Square Districts. It should be noted that the trip reductions due to the applicant proposed TDM plans already accounted for trip reductions due to the Proposed Project's location efficiency, as well as internal capture due to the Proposed Project's mixed use nature (see Appendix D for details).

As shown in Table 13, the proposed project trips generated by the proposed land uses after accounting for the proposed TDM plans at the main Project Site would be 33,263 daily trips, 2,396 AM peak hour trips, and 2,907 PM peak hour trips.

Net project trip generation represents the number of new project trips added to the surrounding roadway network. The following categories of trips are credited from the site-specific trip cap to derive the net project trip generation.

### Pass-By

The retail uses would attract some of their customers from people who are passing by the site on Willow Road or Bayfront Expressway heading towards their destination. These customers would not need to make a separate vehicle trip to come to the Project Site. Such vehicle trips are categorized as pass-by trips as they are not new trips generated on the roadway network and should be credited from the project trip generation. A pass-by trip reduction for retail trips was applied based on the average pass-by reduction rate published in the ITE Trip Generation Handbook, 3rd Edition. Pass-by data are typically available only for the PM peak hour. Hexagon assumed no pass-by trip reduction for the AM peak hour and half of the PM peak pass-by trip reduction for daily trip generation.

### Existing Uses

Trips associated with the existing uses on the Project Site were credited against the new trip generation. The trips generated by the existing buildings on the site were estimated based on driveway counts conducted over three days in September 2019 per Facebook Willow Traffic Counts Memorandum, Fehr & Peers, March 26, 2020. The existing uses on the site generated an average of 11,700 trips daily, including 985 trips in the AM peak hour (699 inbound and 286 outbound trips), and 805 trips in the PM peak hour (250 inbound and 555 outbound trips).

As shown in Table 13, the net Proposed Project trips generated by the main Project Site on the roadway network would be 20,537 daily trips, including 1,411 AM peak hour trips (939 inbound trips and 472 outbound trips), and 1,914 PM peak hour trips (719 inbound trips and 1,195 outbound trips).

As shown in Table 14, the net trips generated by the Hamilton Parcels are estimated to be 218 daily trips, including 6 AM peak hour trips (3 inbound trips and 3 outbound trips), and 18 PM peak hour trips (9 inbound trips and 9 outbound trips)<sup>15</sup>.

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<sup>15</sup> The Hamilton Parcels are located within C-2-S zoning, which does not require implementation of a TDM Plan. Therefore, no TDM reductions were applied.

**Table 13  
Project Trip Generation Estimates (Main Project Site)**

Land Use	ITE Land			Daily		AM Peak Hour			PM Peak Hour				
	Use Code <sup>1</sup>	Size	Unit	Rate <sup>1</sup>	Total	Rate <sup>1</sup>	IN	OUT	Total	Rate <sup>1</sup>	IN	OUT	Total
<b>Campus District</b>													
Office	710	6,950	employees	3.28	22,796	0.37	2,135	437	2,572	0.40	556	2,224	2,780
<i>TDM Reductions <sup>2</sup></i>					(4,559)		(765)	(137)	(902)		(171)	(939)	(1,110)
<b>Office Trip Cap <sup>2</sup></b>					<b>18,237</b>		<b>1,370</b>	<b>300</b>	<b>1,670</b>		<b>385</b>	<b>1,285</b>	<b>1,670</b>
<b>Residential/Shopping and Town Square Districts</b>													
Residential	221	1,730	d.u.	5.44	9,411	0.36	162	461	623	0.44	464	297	761
Retail	820	200	ksf	37.75	7,550	0.94	117	71	188	3.81	366	396	762
Hotel	310	193	rooms	8.36	1,613	0.47	54	37	91	0.60	59	57	116
Publicly Accessible Park <sup>3</sup>	488	3	fields	71.33	214	0.99	2	1	3	16.43	32	17	49
Subtotal					18,788		335	570	905		921	767	1,688
<i>TDM Reductions <sup>4</sup></i>					(3,762)		(67)	(112)	(179)		(245)	(206)	(451)
<b>Residential/Shopping and Town Square Districts Trips (MU)</b>					<b>15,026</b>		<b>268</b>	<b>458</b>	<b>726</b>		<b>676</b>	<b>561</b>	<b>1,237</b>
Project Trips after TDM Reductions (Office + MU)					33,263		1,638	758	2,396		1,061	1,846	2,907
<i>Retail Pass-By Reductions <sup>5</sup></i>					(1,026)		0	0	0		(92)	(96)	(188)
<b>Total New Trips Generated by the Project</b>					<b>32,237</b>		<b>1,638</b>	<b>758</b>	<b>2,396</b>		<b>969</b>	<b>1,750</b>	<b>2,719</b>
Existing Trip Generation Credit <sup>6</sup>					(11,700)		(699)	(286)	(985)		(250)	(555)	(805)
<b>Net New Trips Generated on Roadway Network</b>					<b>20,537</b>		<b>939</b>	<b>472</b>	<b>1,411</b>		<b>719</b>	<b>1,195</b>	<b>1,914</b>
<b>Notes</b>													
d.u. = dwelling unit, ksf = 1,000 s.f.													
1. Daily, AM, and PM peak hour average rates published in ITE Trip Generation Manual, 10th Edition, 2017 were used for each land use.													
2. Office trip generation and TDM reductions reflect the proposed daily, AM and PM peak hour trip caps.													
3. The publicly accessible park has not been determined. In order to provide a conservative estimate of potential traffic generation, it is assumed that the park will have play structures and open field areas for warm-ups or casual play. The park is planned for approximately 3.5 acres. Number of soccer fields on 3.5 acres of land was estimated based on the size of a standard soccer field. The park is assumed to be programmable. ITE Land Use "Soccer Field" is analyzed as a proxy. Number of soccer fields was estimated based on the size of a standard soccer field.													
4. For the Residential/Shopping and Town Square Districts, the applicant proposes a 20 percent reduction from gross ITE trip generation for daily, and a 20 percent and 27 percent reduction from gross ITE trip generation during the AM and PM peak hours of commute, respectively.													
5. Pass-by trip reduction is based on the average pass-by trip reduction rate published in the ITE Trip Generation Handbook, 3rd Edition. Hexagon assumes no pass-by trip reduction during the AM peak hour and half of the PM peak pass-by reduction for daily trip generation.													
6. Existing Use trip estimates based on driveway counts conducted over three days in September 2019 per Facebook Willow Traffic Counts Memorandum, Fehr & Peers, March 26, 2020. 8-9 AM in the AM peak period and 4-5 PM in the PM peak period have been considered as peak hours since they have the highest trips.													

**Table 14  
Project Trip Generation Estimates (Hamilton Parcel)**

Land Use	Size	Daily		AM Peak Hour			PM Peak Hour						
		Rate	Trips	Rate	In	Out	Total	Rate	In	Out	Total		
<b>Proposed Use</b>		<b>ITE Code <sup>1</sup></b>											
General Retail	820	7.7	ksf	37.75	291	0.94	4	3	7	3.81	14	15	29
<i>External Walk, Bike, and Transit <sup>2</sup></i>					(28)		(1)	0	(1)		(1)	(1)	(2)
<i>Retail Pass-By Reduction (34%) <sup>3</sup></i>					(45)		0	0	0		(4)	(5)	(9)
<b>Net Project Trips on Project Network</b>					<b>218</b>		<b>3</b>	<b>3</b>	<b>6</b>		<b>9</b>	<b>9</b>	<b>18</b>
<b>Notes:</b>													
ksf = 1,000 square feet													
1. Daily, AM, and PM peak hour average rates published in ITE Trip Generation Manual, 10th Edition, 2017 were used for each land use.													
2. External walk, bike, and transit reduction developed using US EPA Mixed Use Trip Generation Model v.4, 2010.													
3. Pass-by trip reduction is based on the average pass-by trip reduction rate published in the ITE Trip Generation Handbook, 3rd Edition. Hexagon assumes no pass-by trip reduction during the AM peak hour and half of the PM peak pass-by reduction for daily trip generation.													

## Trip Distribution and Assignment

The trip distribution pattern and trip assignment for the proposed uses were estimated based on the Menlo Park Travel Demand Model. The model estimated trip distribution pattern is summarized below:

- Dumbarton Bridge: approximately 11%
- US 101 to the north, including Haven Avenue: approximately 28%
- US 101 to the south, including Embarcadero Road: approximately 31%
- Marsh Road west of US 101: approximately 4%
- Willow Road west of US 101: approximately 8%
- University Avenue west of US 101: approximately 6%
- Menlo Park and East Palo Alto east of US 101: approximately 12%

## Future Traffic Volumes

Both near-term (year 2025) and cumulative (year 2040) scenario forecasts of intersection turning movements, freeway traffic and ramp volumes were completed using the latest Menlo Park travel demand forecast model (citywide travel demand forecast model). The citywide model is the best available model to represent travel within the City of Menlo Park, and serves as the primary forecasting tool for the City. The model is a mathematical representation of travel within the nine Bay Area counties, as well as the Santa Cruz, San Benito, Monterey and San Joaquin counties. The base model structure was developed by the Metropolitan Transportation Commission (MTC) and further refined by the City/County Association of Governments and Santa Clara Valley Transportation Authority for use within San Mateo County and Santa Clara County. The City further refined this model for application with Menlo Park to add more detail to the zone structure and transportation network. There are 81 transportation analysis zones (TAZs) within the model to represent the City of Menlo Park.

## Near-Term and Cumulative Traffic Volumes

Land use growth assumptions for Bay Area regions outside of Menlo Park and East Palo Alto for the near-term scenario (year 2025) are provided by the Association of Bay Area Governments (ABAG) and refined by VTA/C/CAG. Approved developments within the City of Menlo Park and the City of East Palo Alto were added to the existing land use to represent the year-2025 land use. The following approved projects within the City of Menlo Park and the City of East Palo Alto as of December 2020 were included:

- Menlo Gateway
- 1285 El Camino Real
- 123 Encinal Avenue
- 1010-1026 Alma Street
- 650-660 Live Oak Avenue
- 1275 El Camino Real
- Facebook Expansion Project (301-309 Constitution Drive)
- 500 El Camino Real
- New Magnet High School
- 1300 El Camino Real
- 1021 Evelyn Street
- 40 Middlefield Road
- 949 El Camino Real
- 1540 El Camino Real
- 115 El Camino Real



- 506-556 Santa Cruz Avenue
- 1125 Merrill Street
- 409 Glenwood Avenue
- 706-716 Santa Cruz Avenue
- 1345 Willow Road
- 201 El Camino Real
- 1021 Runnymede Street (East Palo Alto)

For the cumulative scenario, the City of Menlo Park land use assumed the buildout of the General Plan, as well as the portion of the proposed 123 Independence Drive project that would exceed the unrestricted dwelling units studied in the ConnectMenlo EIR. Pending developments as of December 2020 within the City of East Palo Alto were added to the near-term land use to represent the year-2040 land use for the city. Land use growth for other Bay Area regions for year 2040 were taken from Association of Bay Area Governments (ABAG) projections and refined by VTA/C/CAG. Table 15 shows the socioeconomic model inputs for the entire Bay Area separated by counties.

The forecasted intersection turning movements under all future scenarios were adjusted based on existing volumes to generate traffic volumes for near-term conditions (see Figure 11), near-term plus project conditions (see Figure 12), cumulative conditions (see Figure 13), and cumulative plus project conditions (see Figure 14).

**Table 15**  
**Socioeconomic Model Inputs for Bay Area**

County	Year 2040 Project Conditions Model Land Use Data			
	Total Households	Total Population	Employed Residents	Total Jobs
San Francisco	447,340	1,076,365	559,923	759,509
San Mateo	320,377	909,511	444,478	481,116
Santa Clara	818,369	2,406,587	1,158,389	1,229,995
Alameda	705,337	1,965,356	891,473	947,642
Contra Costa	464,151	1,328,458	579,757	467,333
Solano	168,706	494,363	224,059	179,946
Napa	56,312	158,792	69,450	89,554
Sonoma	220,740	591,546	284,856	257,466
Marin	112,046	274,489	136,554	129,150
City of Menlo Park	18,532	46,741	21,369	60,969

Willow Village Transportation Analysis

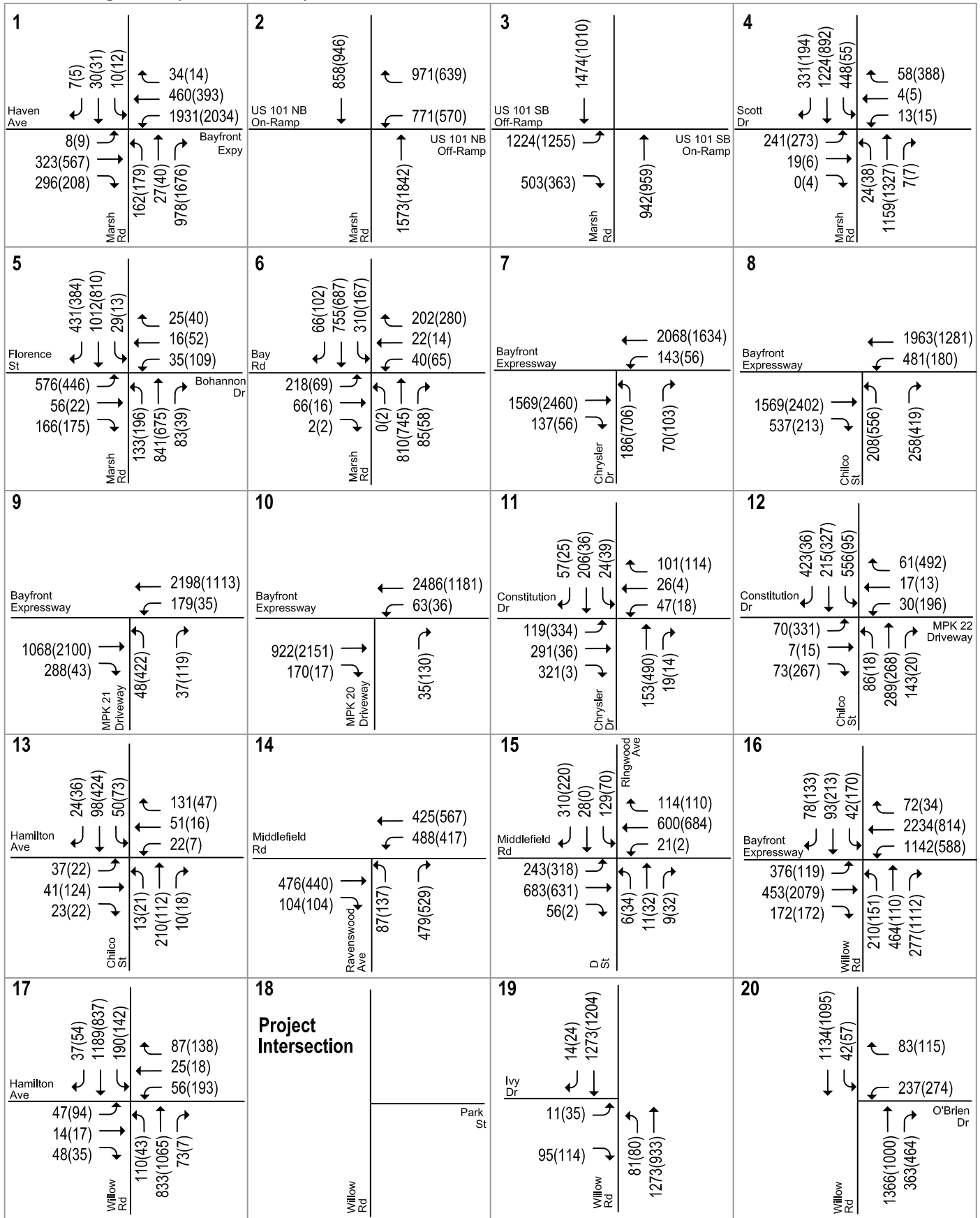


Figure 11  
Near-Term Traffic Volumes

Willow Village Transportation Analysis

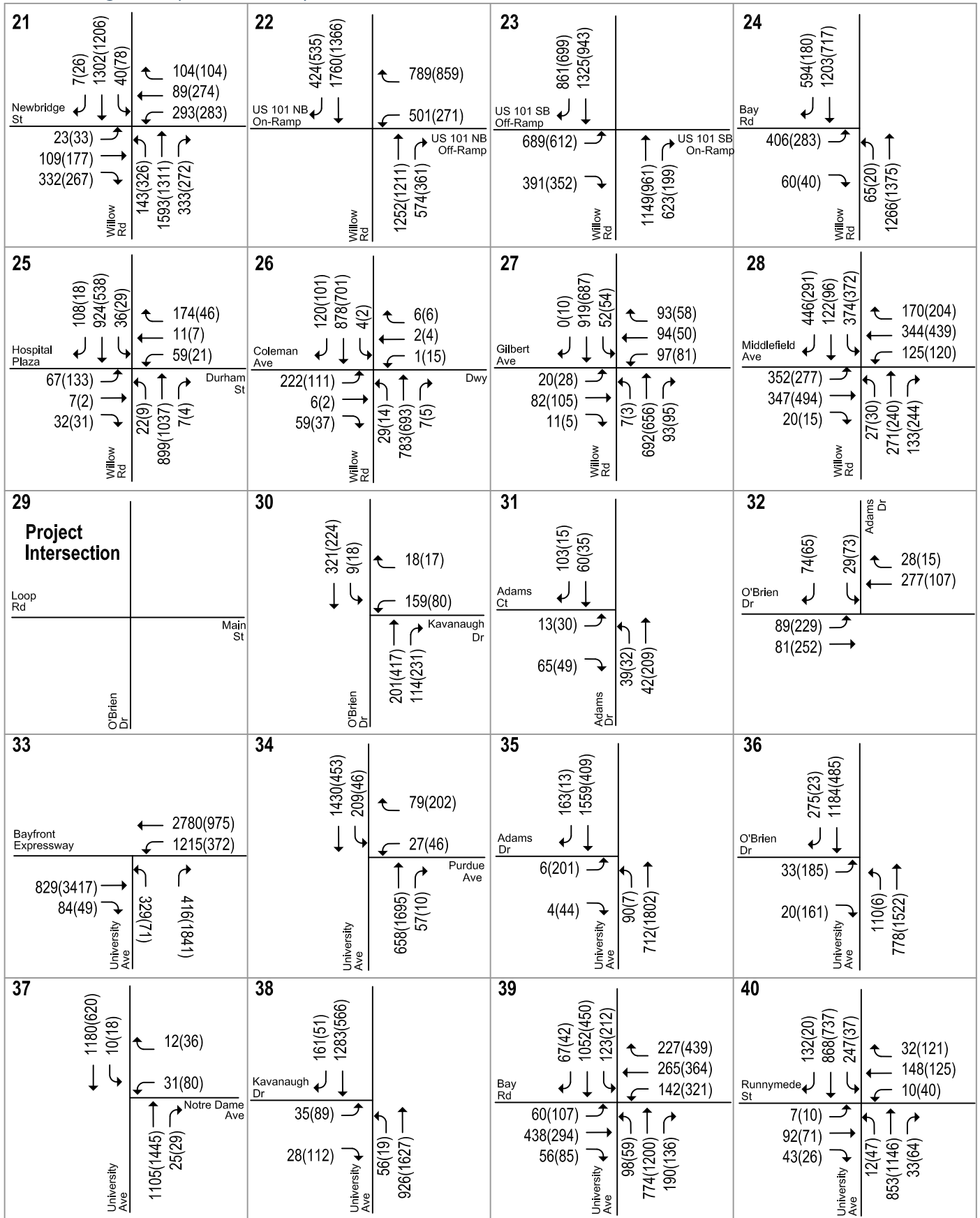
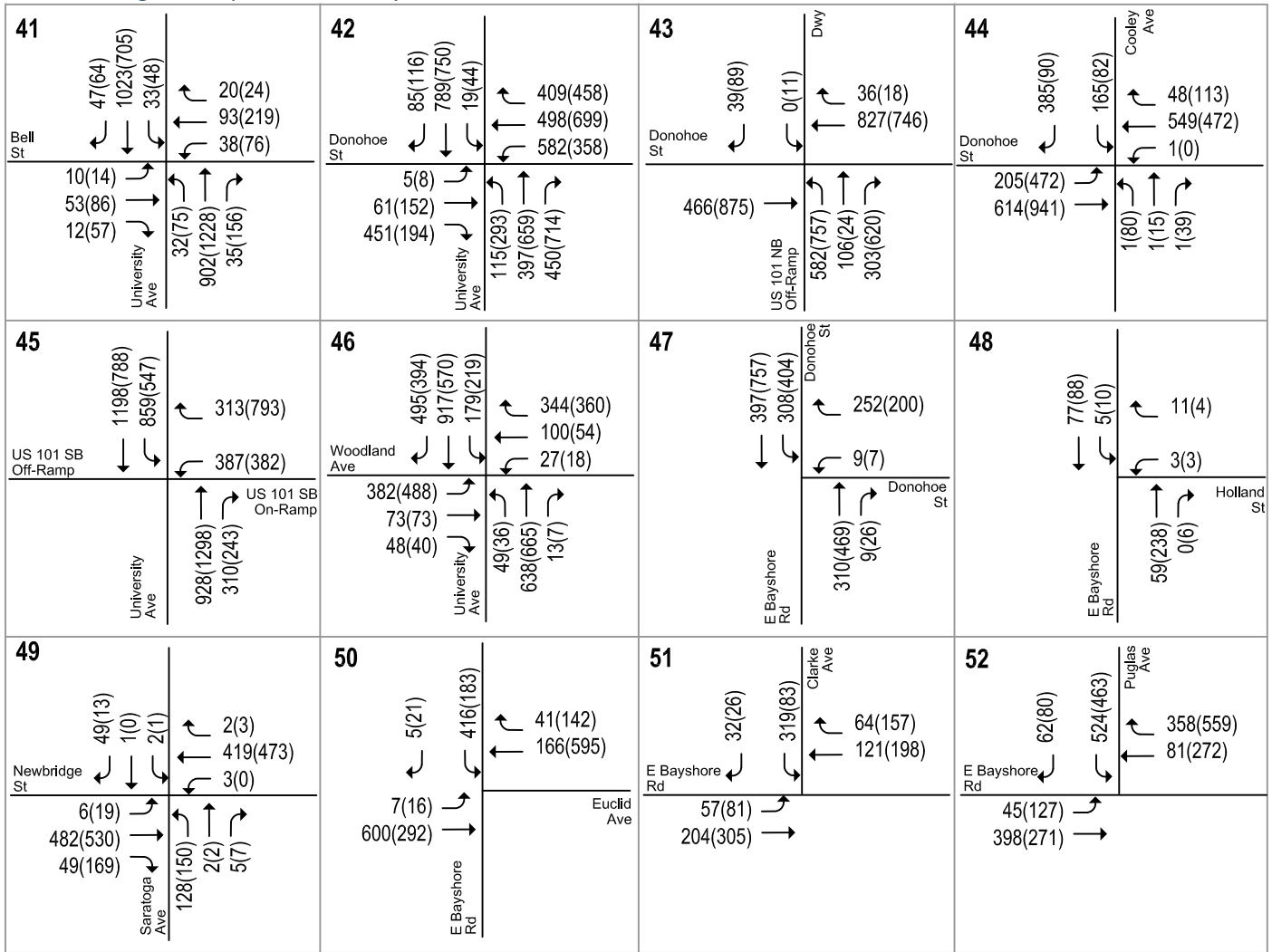


Figure 11  
Near-Term Traffic Volumes

Willow Village Transportation Analysis



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 11  
Near-Term Traffic Volumes

Willow Village Transportation Analysis

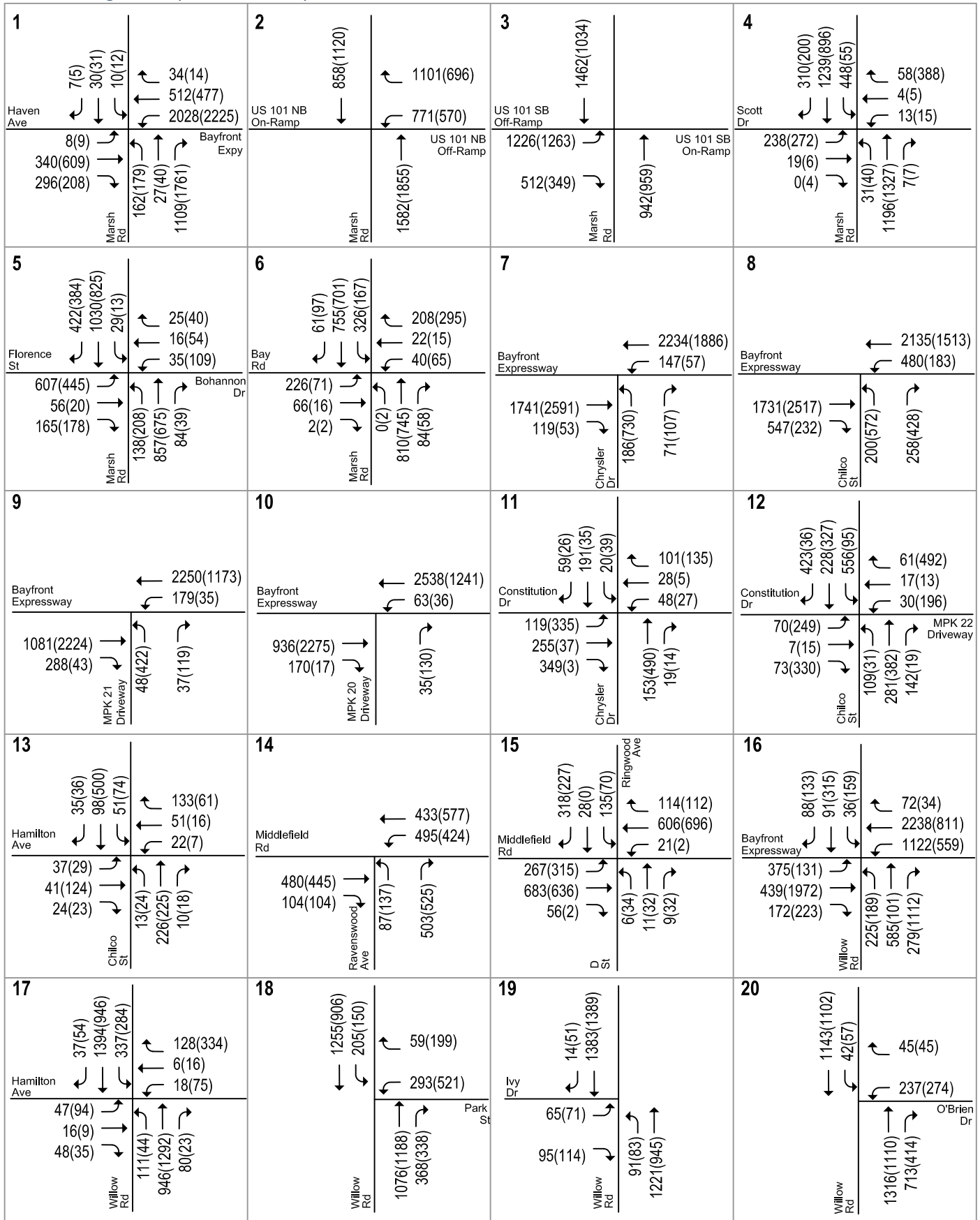


Figure 12  
Near-Term Plus Project Traffic Volumes

Willow Village Transportation Analysis

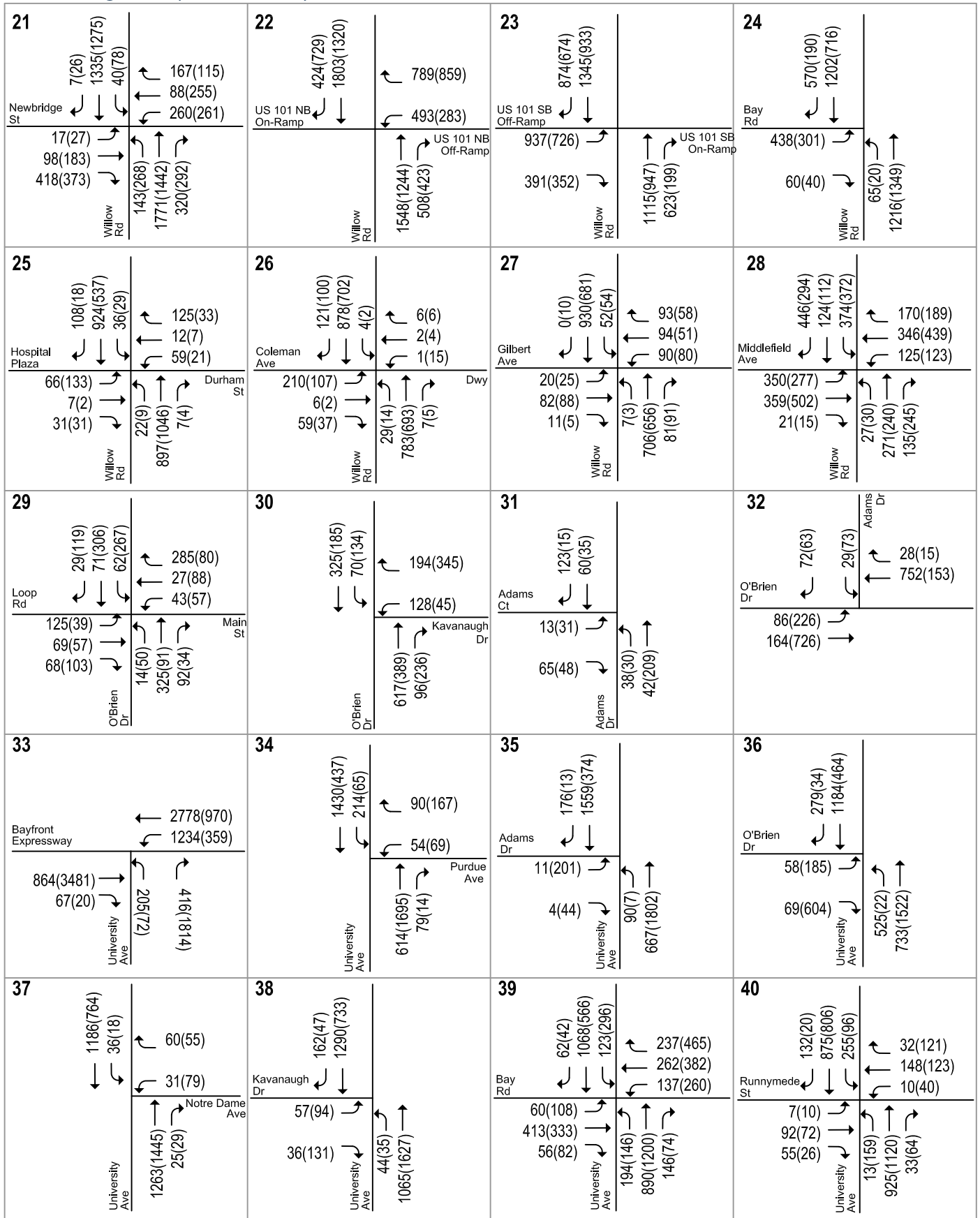
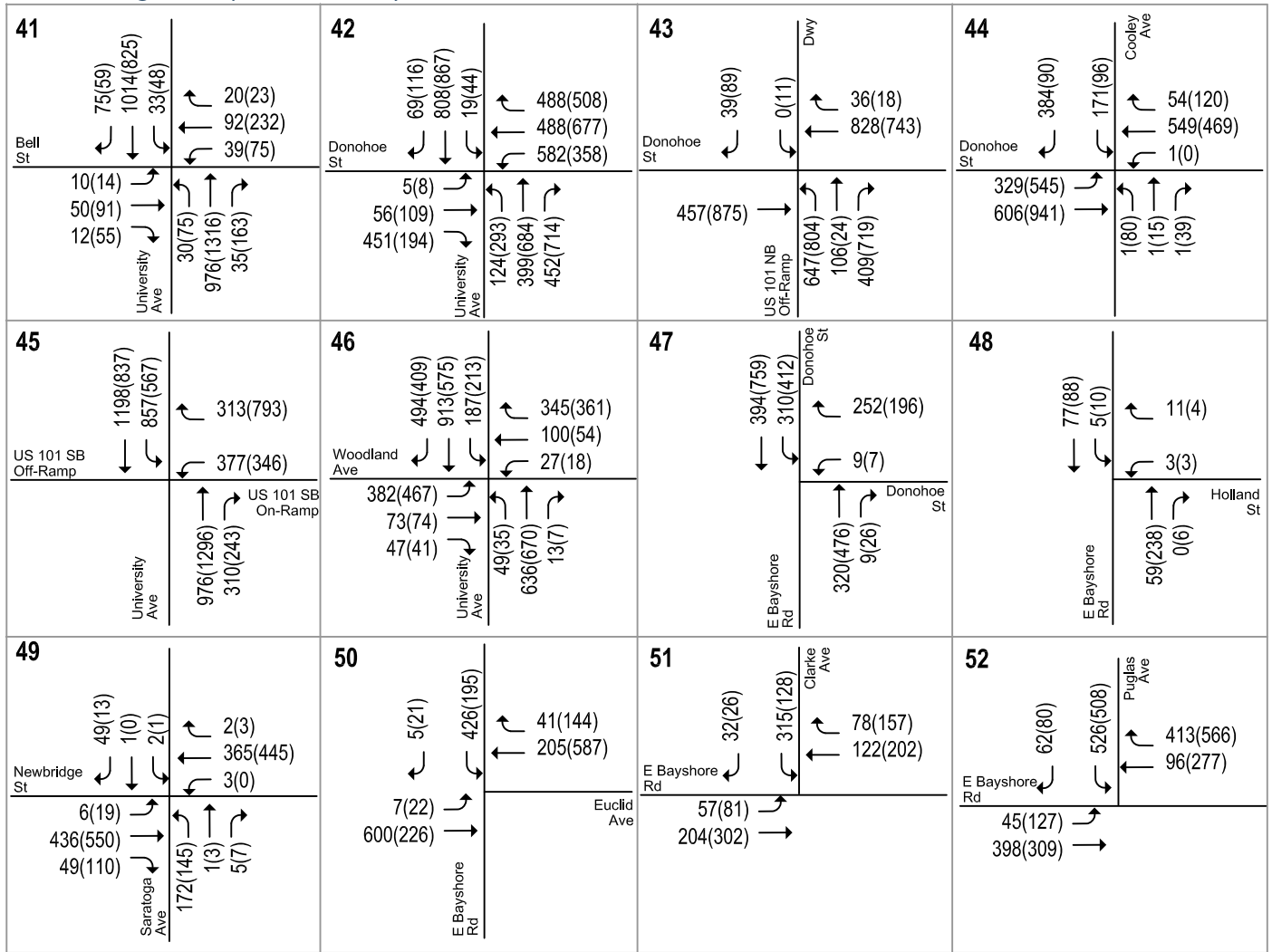


Figure 12  
Near-Term Plus Project Traffic Volumes

Willow Village Transportation Analysis



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 12  
Near-Term Plus Project Traffic Volumes

Willow Village Transportation Analysis

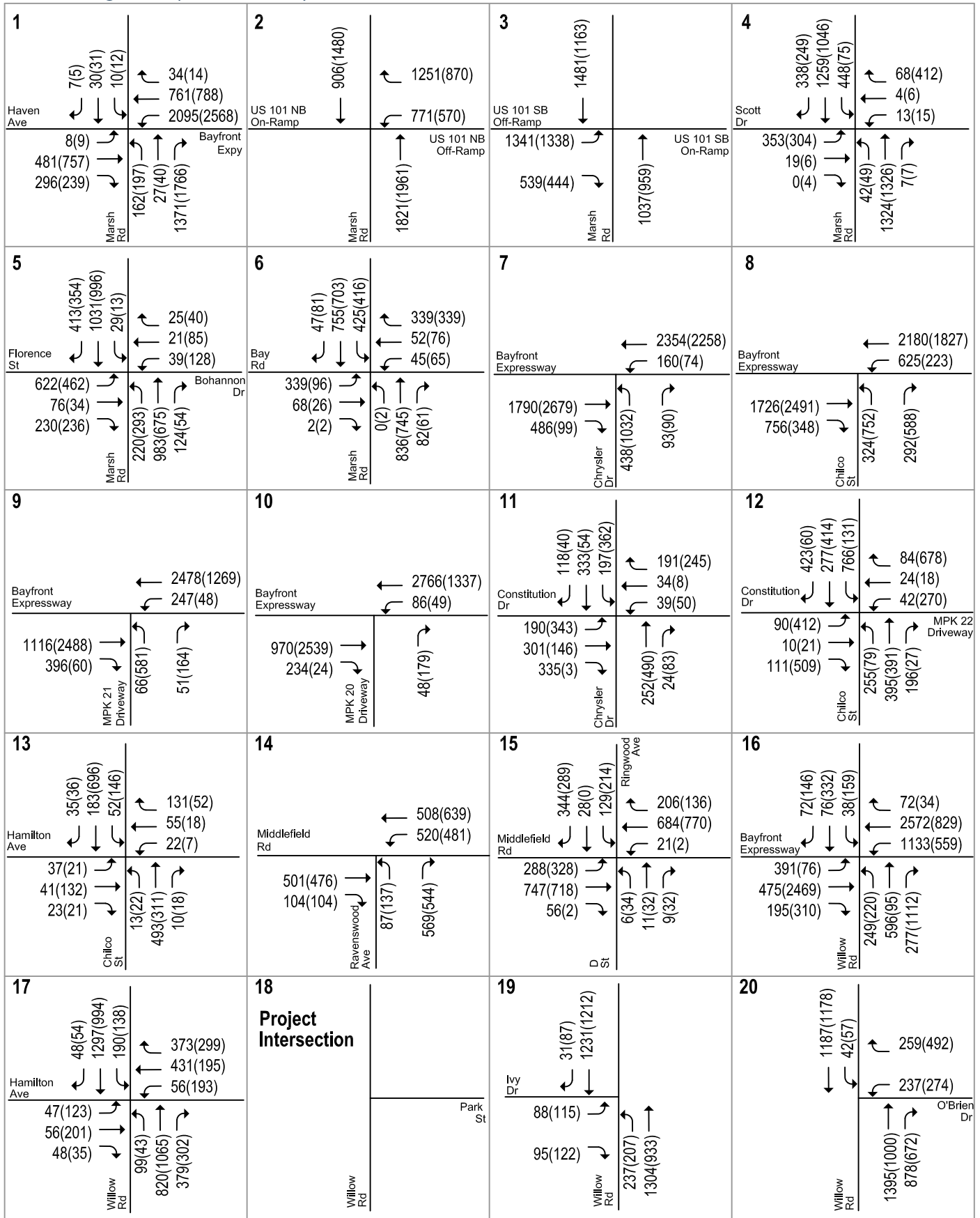
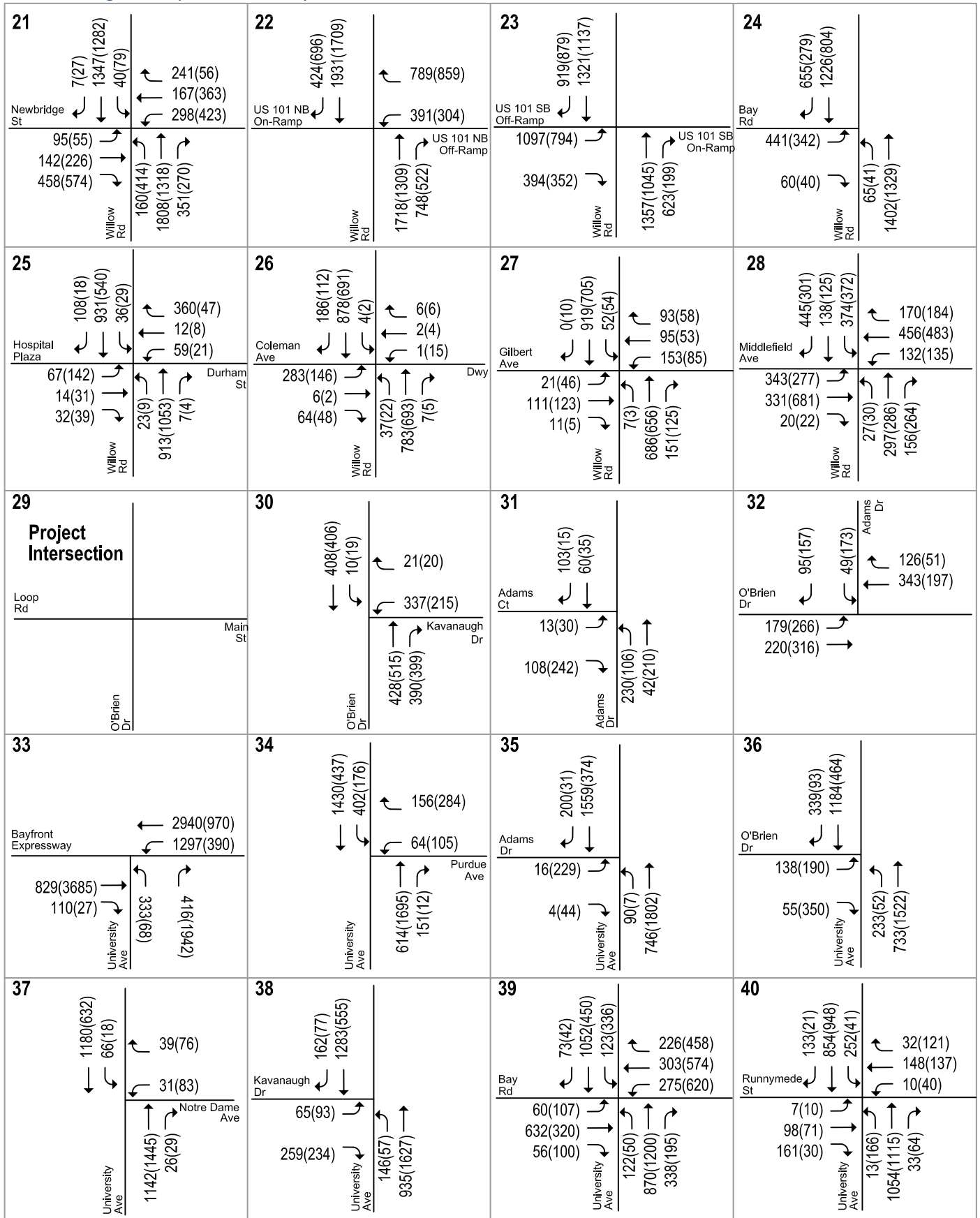


Figure 13  
Cumulative Traffic Volumes

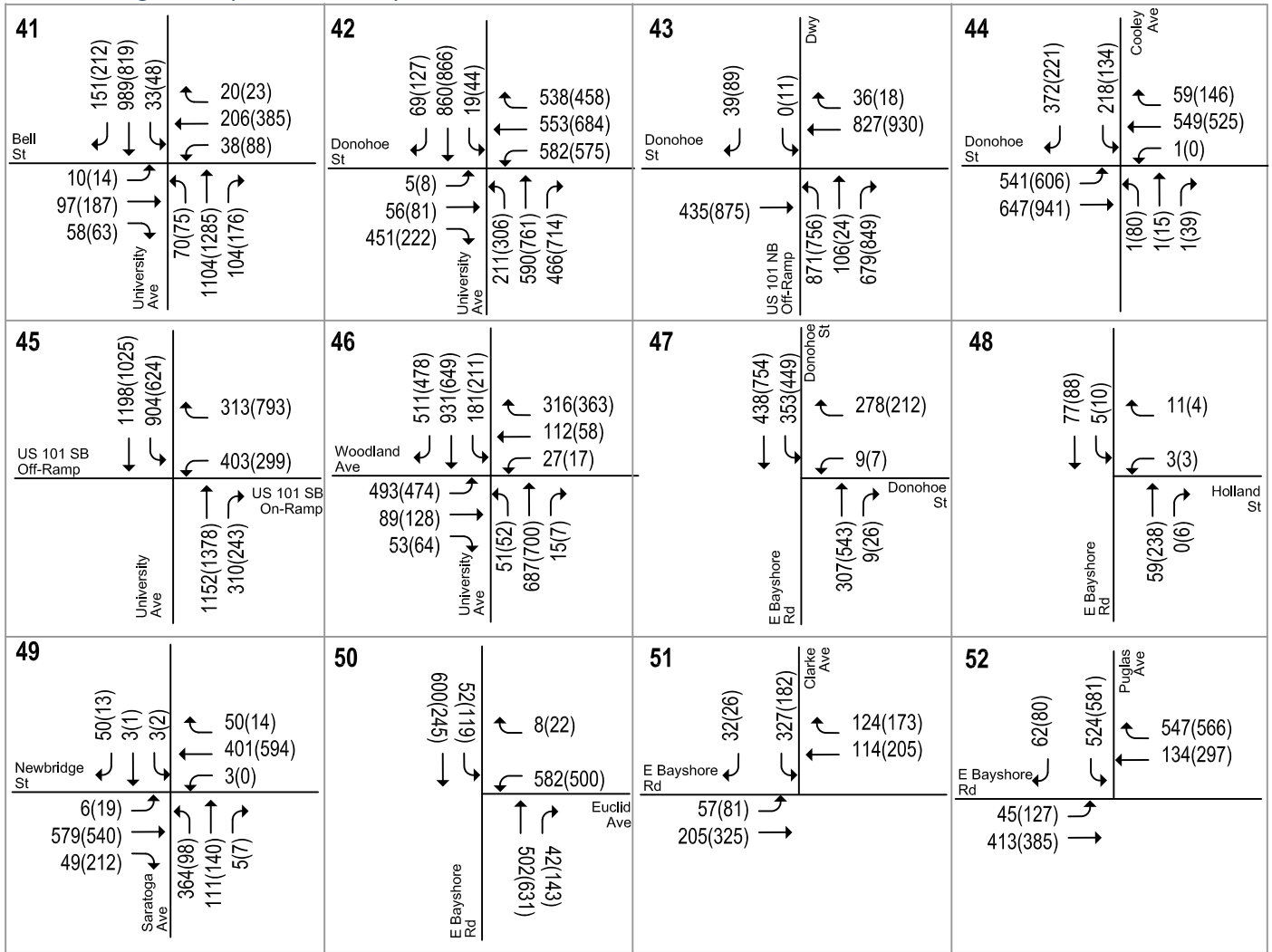


Willow Village Transportation Analysis



**Figure 13**  
**Cumulative Traffic Volumes**

Willow Village Transportation Analysis



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 13  
Cumulative Traffic Volumes

Willow Village Transportation Analysis

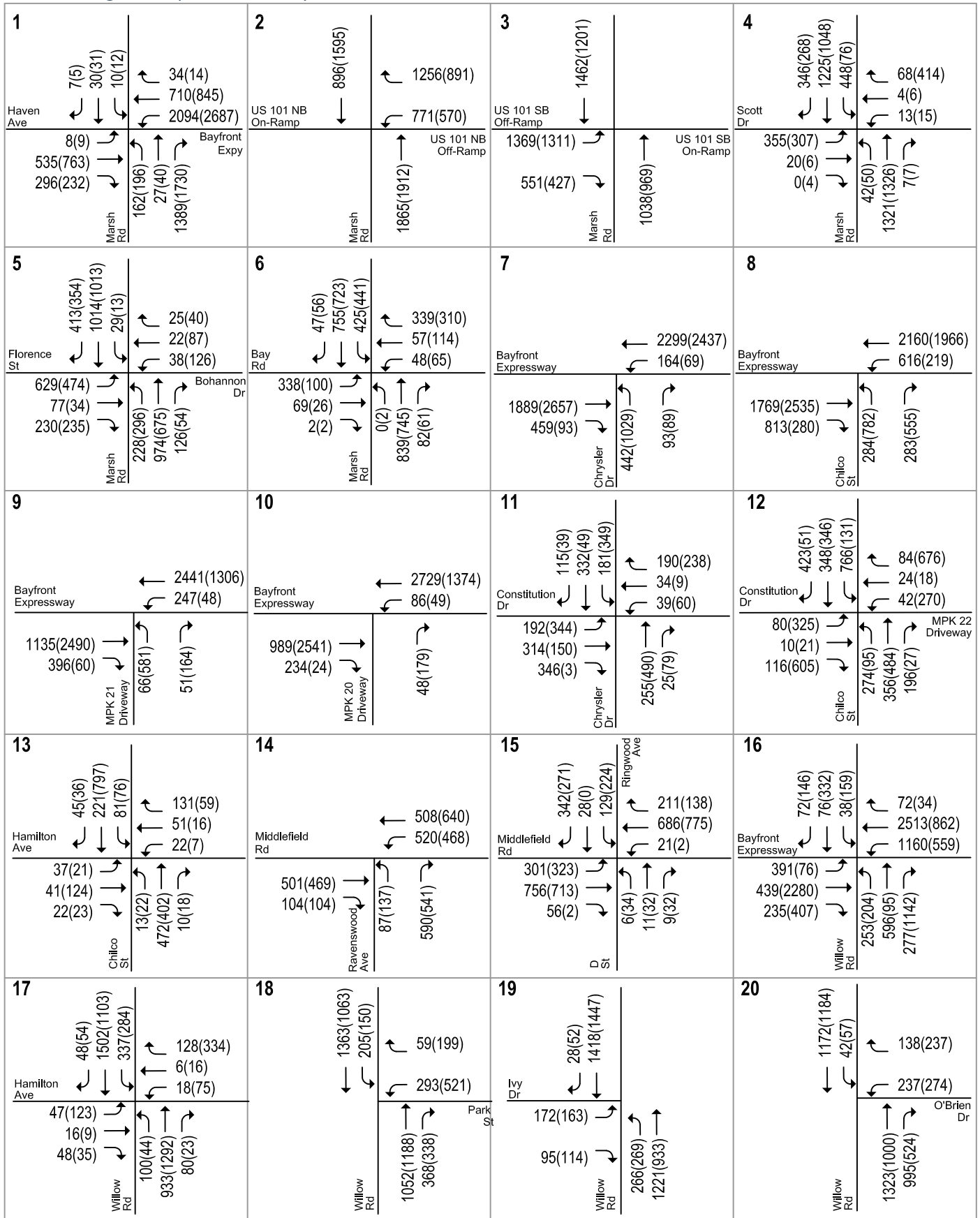


Figure 14  
Cumulative Plus Project Traffic Volumes

Willow Village Transportation Analysis

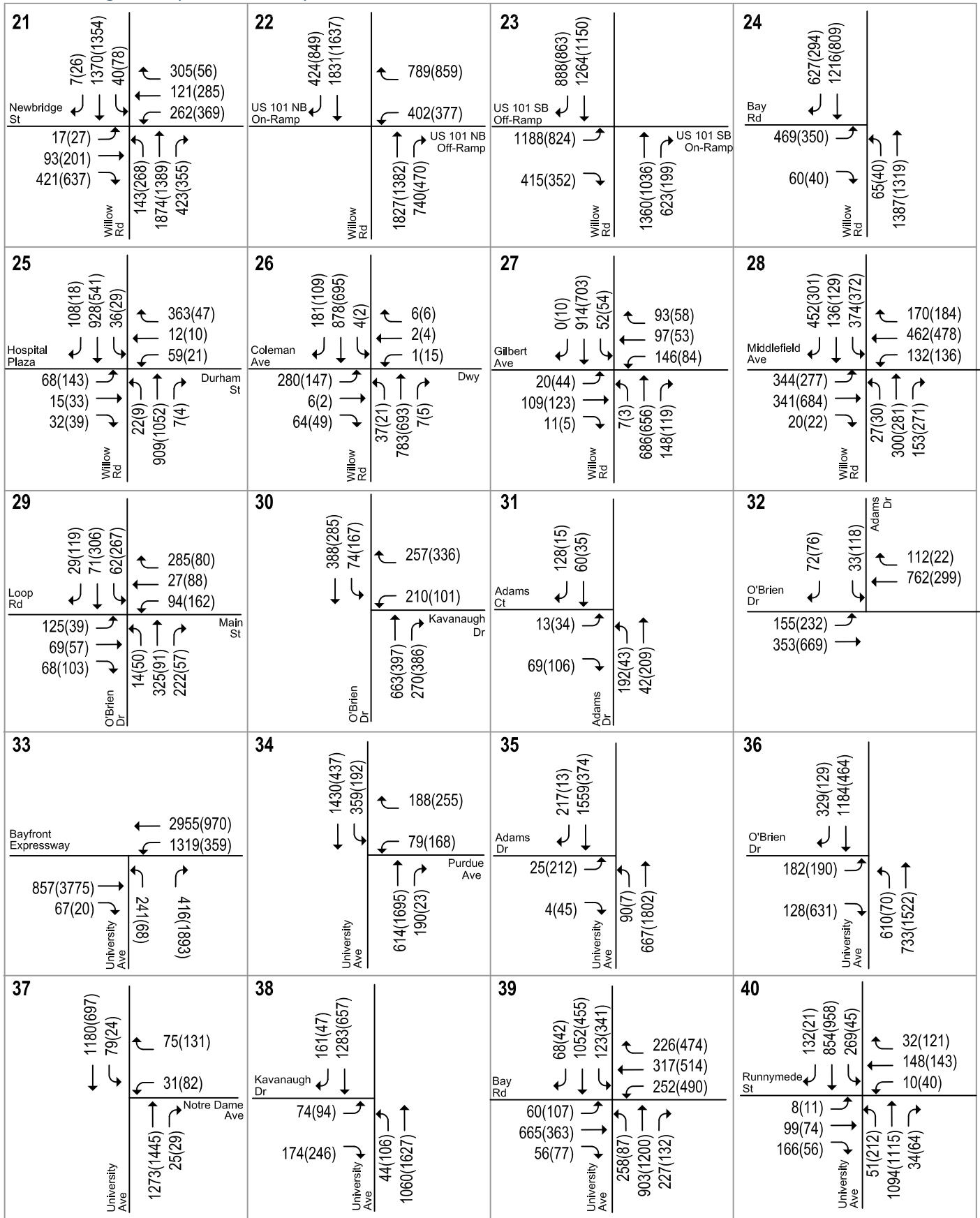
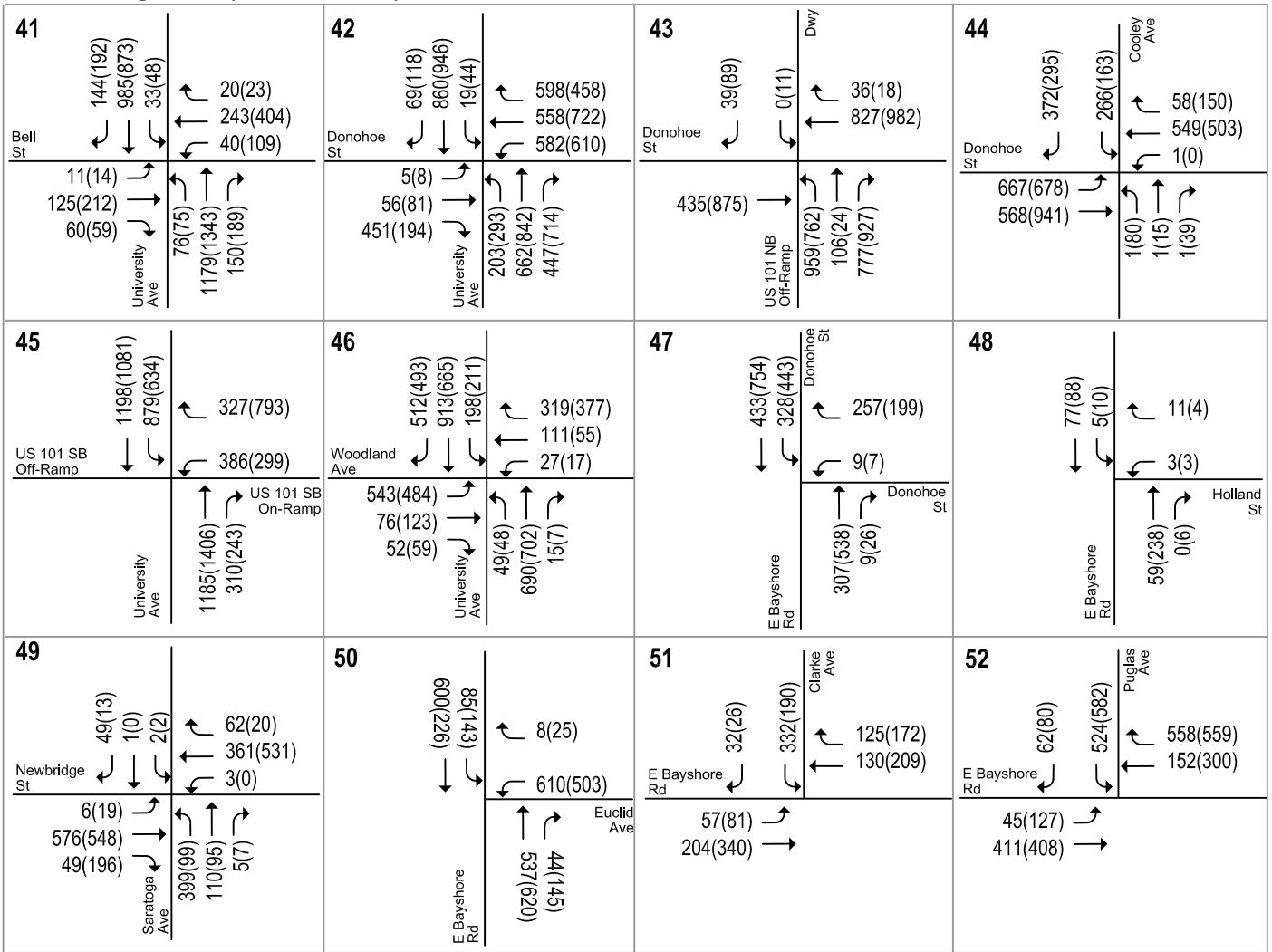


Figure 14  
Cumulative Plus Project Traffic Volumes

Willow Village Transportation Analysis



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 14  
Cumulative Plus Project Traffic Volumes

## Cumulative with Dumbarton Rail Scenario

Dumbarton rail service has not been designed, subjected to environmental review, approved, or funded. As a result, future Dumbarton rail service is speculative at this time and might or might not occur. If it does occur, capacity, frequency, ridership and other operational features are unknown at this time. As a result, any forecast of potential future traffic with Dumbarton rail service is speculative. The following analysis is provided for informational purposes to give the public and decision makers an idea of what impact Dumbarton rail might have on traffic based on a specific set of ridership assumptions. These impacts would occur instead of the impact identified above under Cumulative (2040) Plus Project Intersection Levels of Service.

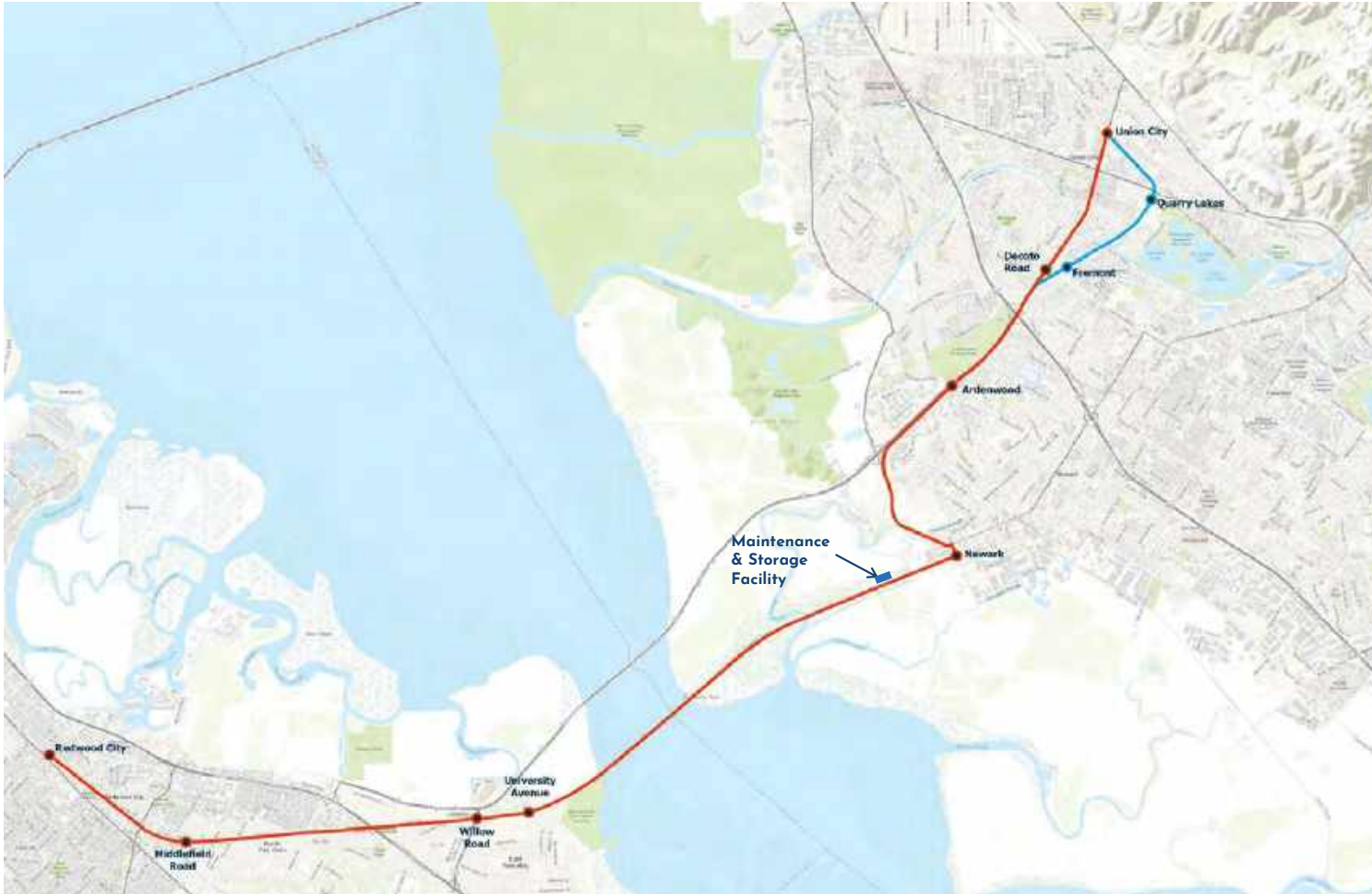
A cumulative with Dumbarton rail scenario was evaluated where the model assumed the operation of potential Dumbarton Rail service. The purpose of this scenario was to provide information on the possible effects of future Dumbarton Rail on the transportation network based on the assumptions made herein about such future service. A cumulative plus project with Dumbarton Rail scenario was compared against the cumulative with Dumbarton Rail scenario to inform the potential effects of the Project-generated traffic assuming potential Dumbarton Rail service.

Based on the *Dumbarton Rail Corridor Update* in March 2021, preliminary forecasts suggest that under 2040 conditions, the high-end ridership projections for the highest-ridership alternative would be around 24,300 riders per day. In comparison, the low-end ridership projections for the lowest-ridership alternative would be around 14,600 riders per day. As shown on Figure 15, this highest ridership forecast would be realized over a potential corridor with 10 stations located between downtown Redwood City and the Union City BART station. It should be noted that this potential corridor includes a stop on Willow Road just north of the proposed Project Site. At the time of this study's initiation, the ability to park-and-ride at the stations along this potential corridor was not available.

This study assumed the highest ridership projections as well as no park-and-ride capability at the stations. More ridership along the Dumbarton Rail corridor would mean lower traffic volumes. Therefore, the assumptions of this study would equate to evaluating the largest potential reduction in traffic volumes assuming the operation of Dumbarton Rail service.

To represent the daily ridership in the model, daily travel between TAZs within a quarter-mile radius of the stations was reduced by 24,300 daily person-level driving trips, or roughly 19,000 daily vehicular-trips. During a one-hour peak hour, based on the highest ridership projections, the Dumbarton Rail corridor would reduce approximately 1,900 vehicular trips, of which approximately half of the trip reduction would occur within the study area. These trips are assumed to be between TAZ sets within a quarter-mile radius of different stations, as the stations are assumed to not contain park-and-ride capabilities. A quarter-mile radius from the stations represents walkable distances to the stations.

Figure 16 shows the model-adjusted intersection turning movement volumes for the cumulative with Dumbarton Rail scenario. Volumes under the cumulative plus project with Dumbarton Rail scenario are shown in Figure 17. The Dumbarton Rail was estimated to reduce the Proposed Project's vehicular trip generation by approximately 4%.



**San Mateo County  
TRANSIT DISTRICT**

# LRT, BRT, & AVT Alignment

*Note: Alignments and stations are being studied for technical feasibility in regards to engineering, operations, land use, city and agency coordination*

**Figure 15  
Proposed Dumbarton Rail Corridor Alignment**

Willow Village Transportation Analysis

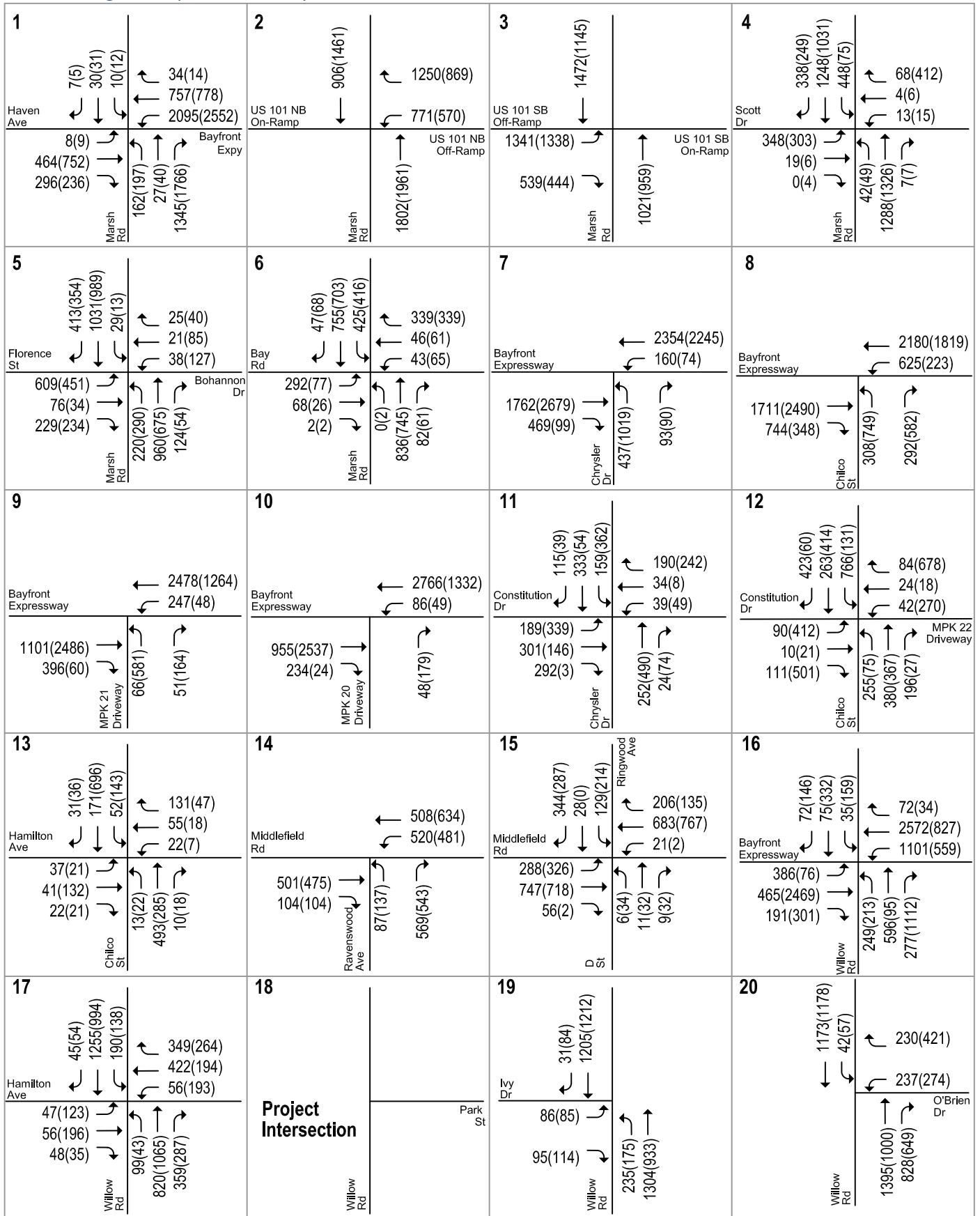


Figure 16  
Cumulative Traffic Volumes with Dumbarton Rail Traffic Volumes



Willow Village Transportation Analysis

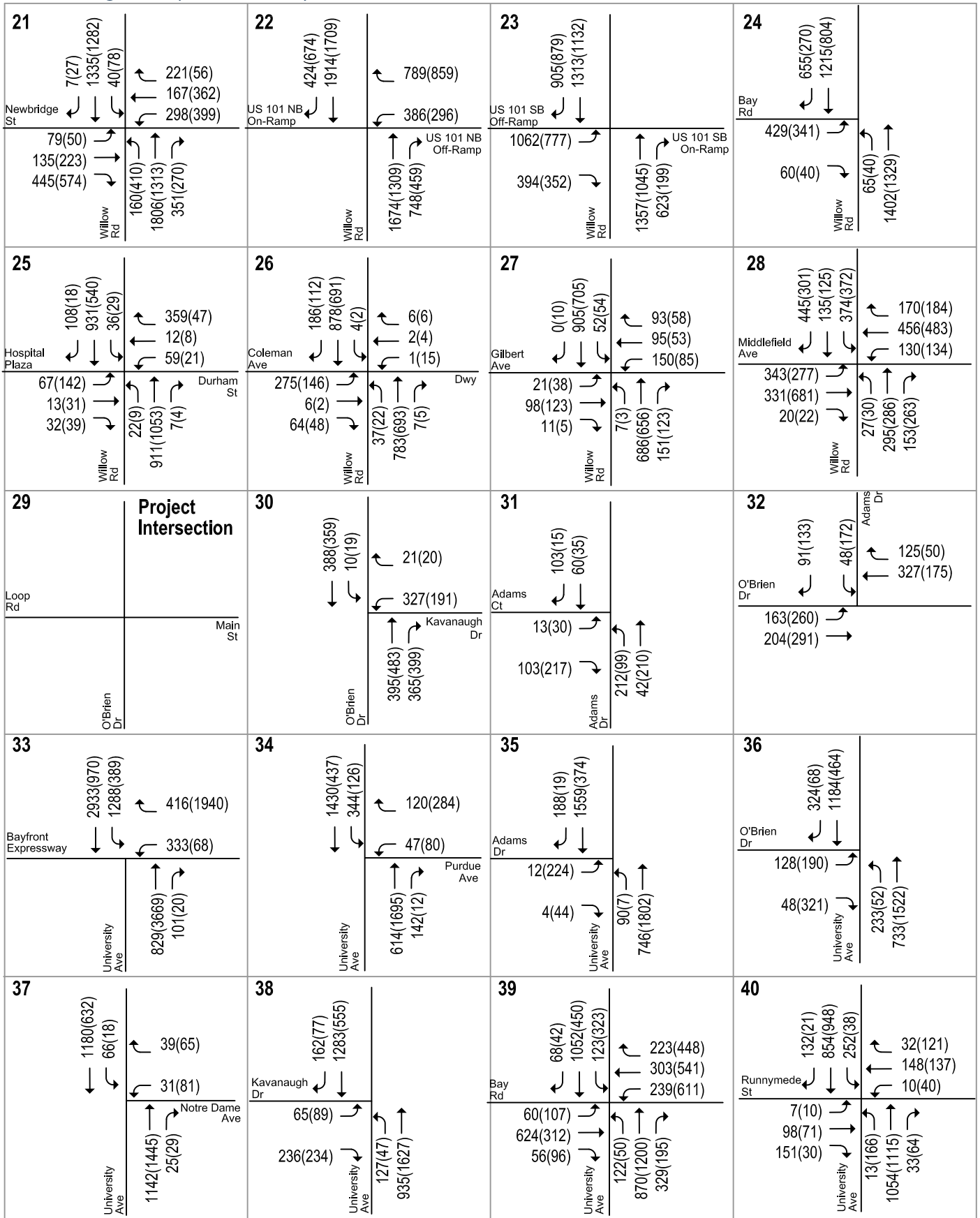
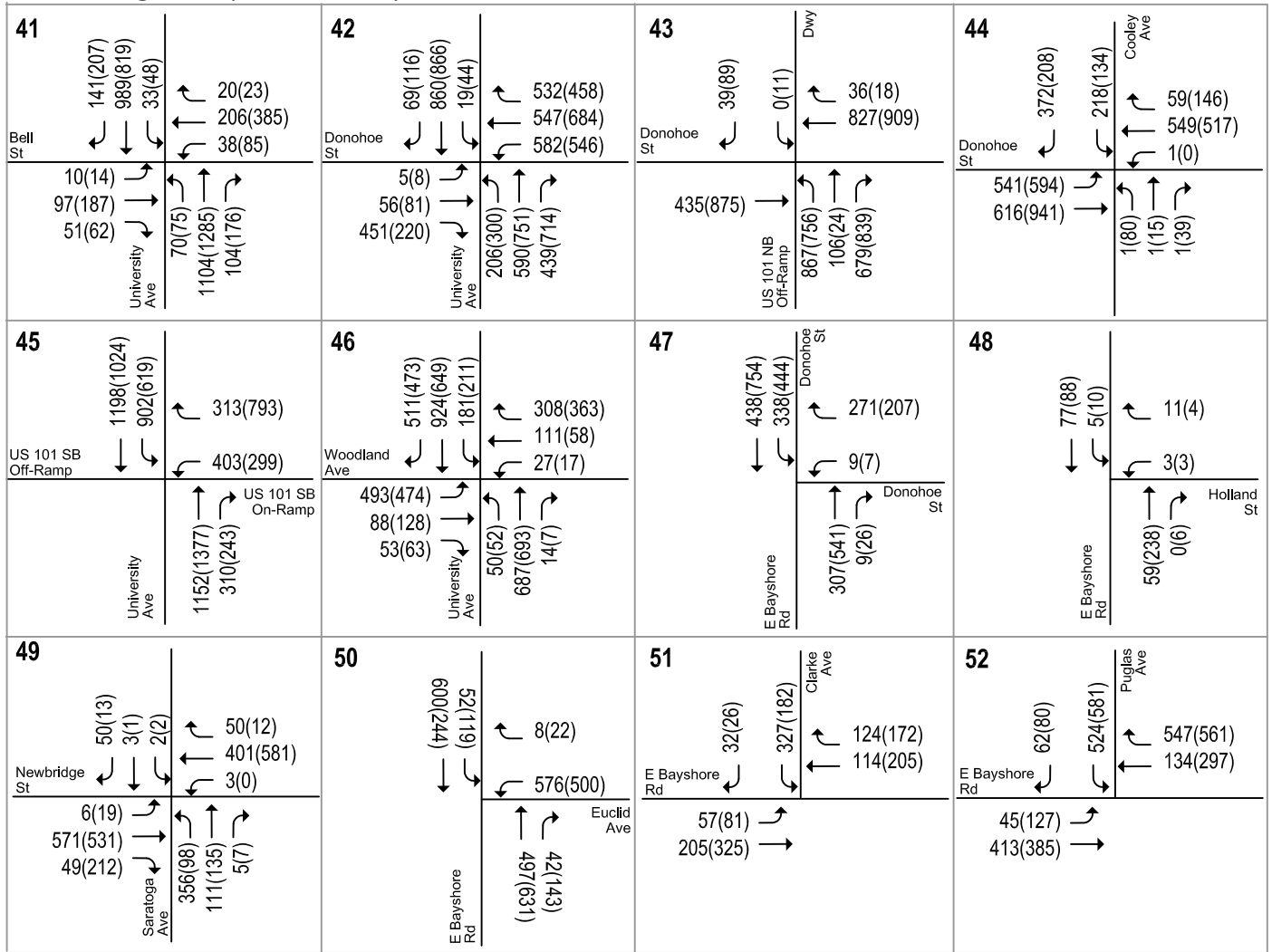


Figure 16  
Cumulative Traffic Volumes with Dumbarton Rail Traffic Volumes

Willow Village Transportation Analysis



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 16  
Cumulative Traffic Volumes with Dumbarton Rail Traffic Volumes

Willow Village Transportation Analysis

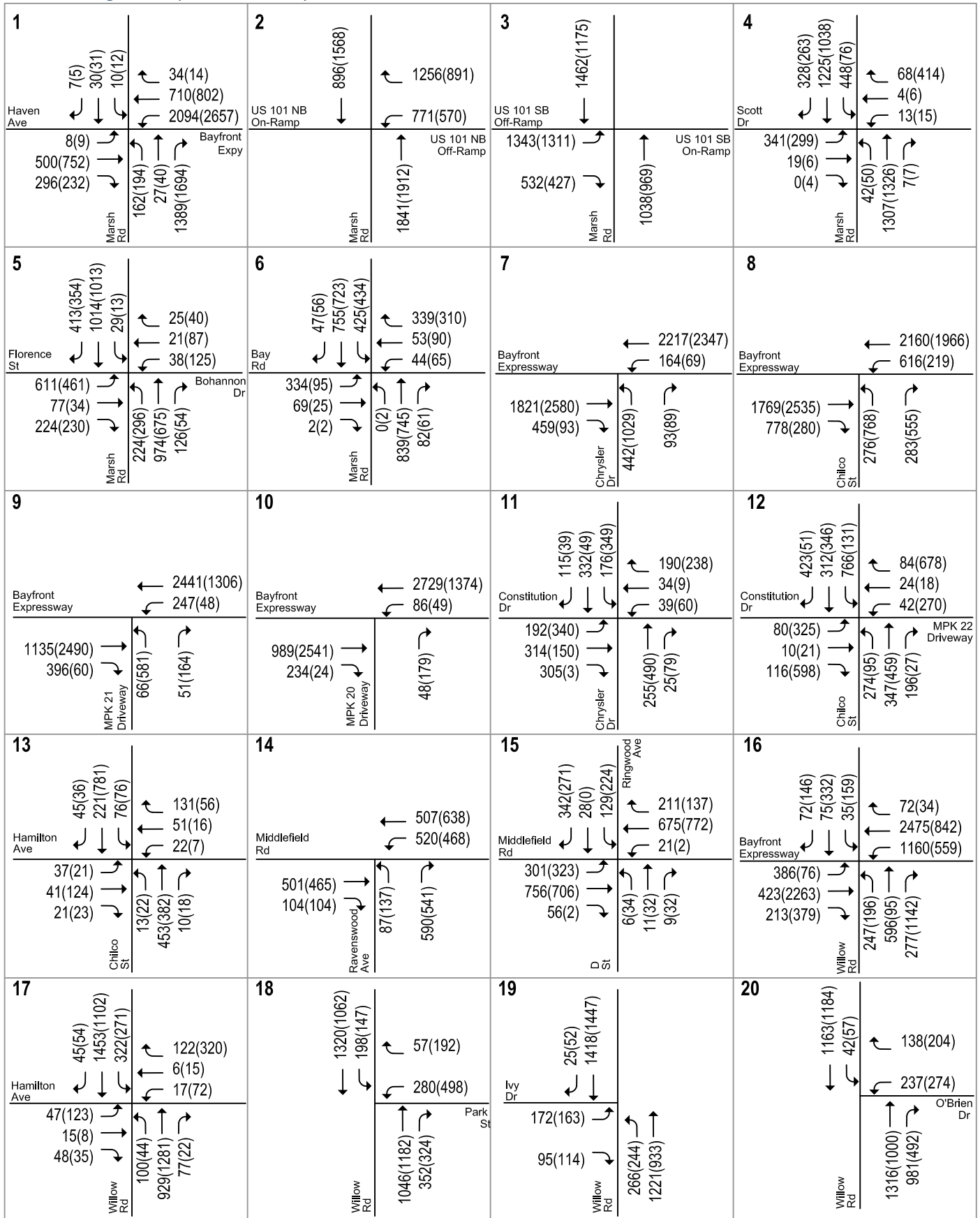


Figure 17  
Cumulative Plus Project Traffic Volumes with Dumbarton Rail Traffic Volumes

Willow Village Transportation Analysis

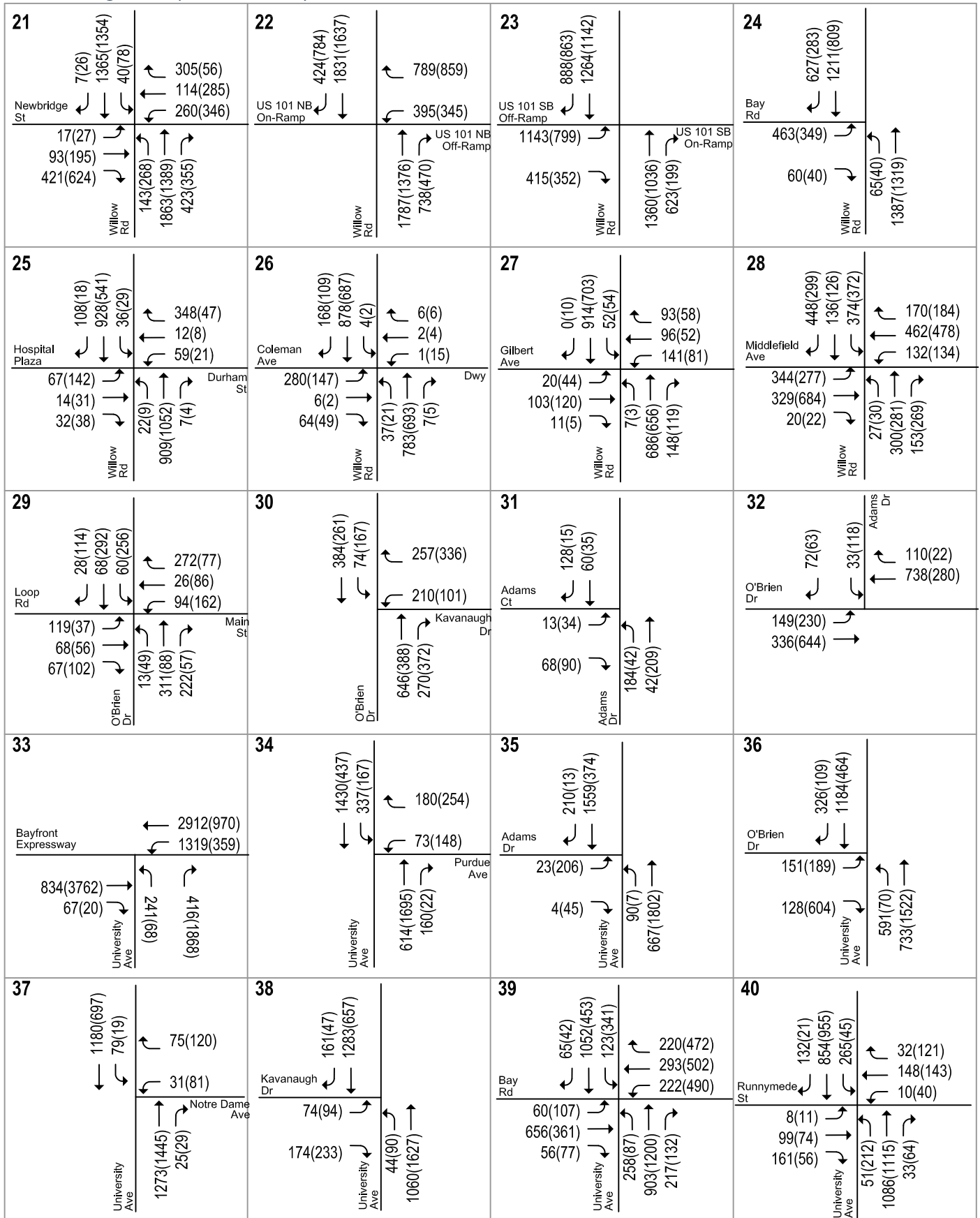
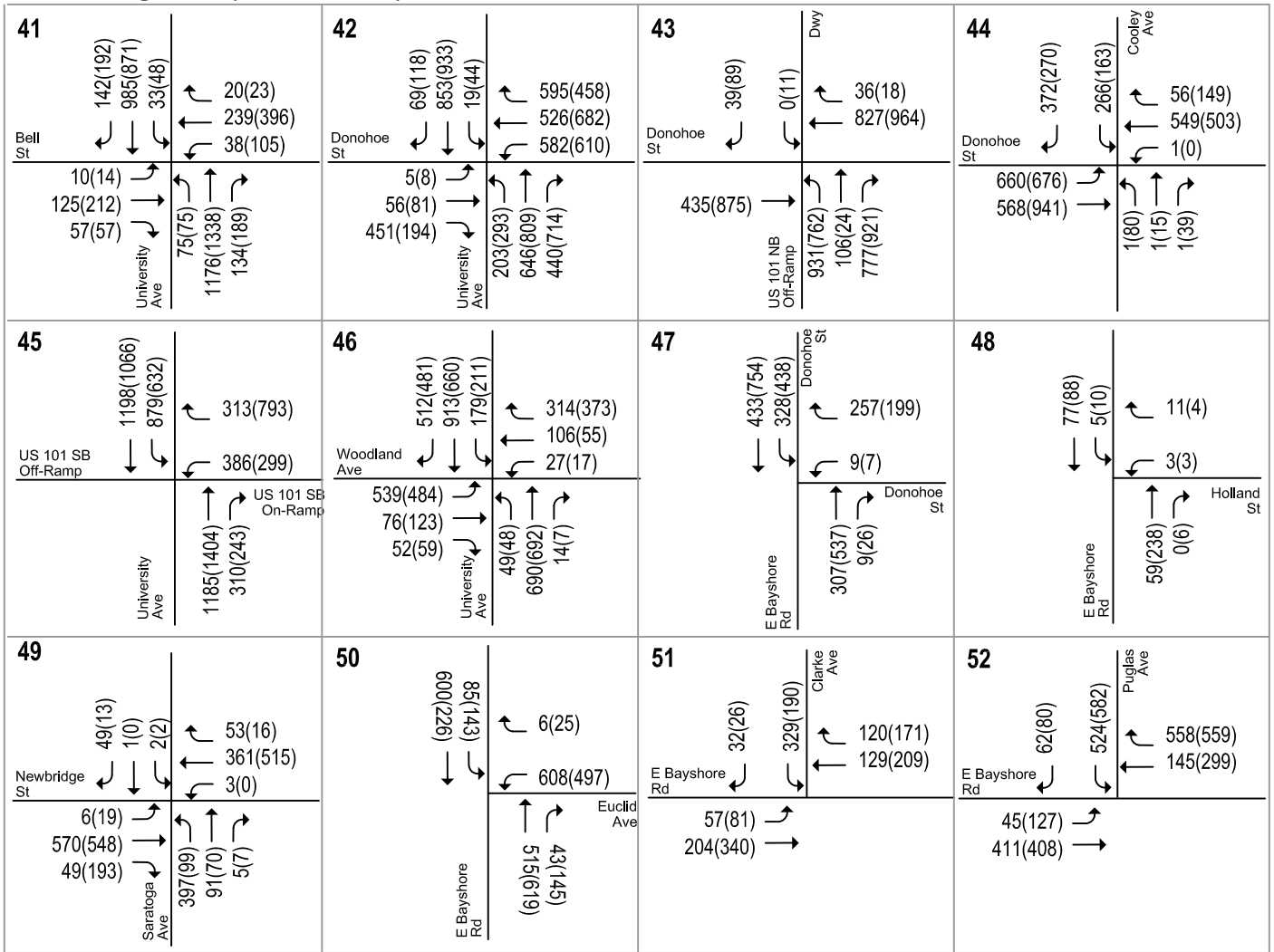


Figure 17  
Cumulative Plus Project Traffic Volumes with Dumbarton Rail Traffic Volumes

Willow Village Transportation Analysis



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 17  
Cumulative Plus Project Traffic Volumes with Dumbarton Rail Traffic Volumes

## Future Transportation Networks

### Near-term (2025) Conditions

The transportation network under near term conditions assumes a signal at Chilco Street and Constitution Drive/MPK 22 Driveway, consistent with the Menlo Gateway EIR and the Bayfront Campus Expansion EIR. The intersection would be restriped to include an eastbound left-turn lane and a shared through-right lane, two westbound left-turn lanes and a shared through-right lane, a northbound shared through-left lane and a right-turn lane, and a southbound shared left-through-right lane and right-turn lane. The roadway network for other study intersections is assumed to be the same as under existing conditions.

### Near-term (2025) plus Project Conditions

The following improvements are proposed to the Street network under plus project conditions:

- **Willow Road and Hamilton Avenue:** Hamilton Avenue would be realigned and a south leg that would provide access to the Project Site would be added to the intersection. The south leg is identified as Main Street. The proposed lane configuration for the intersection would be modified to a northbound left-turn lane and shared through-right lane, a southbound left-turn lane and shared through-right lane, an eastbound left-turn lane, through lane, and shared through-right lane, and two westbound left-turn lanes, a through lane, and a shared through-right turn lane.
- **Willow Road and Park Street:** This is a proposed new signalized intersection with Park Street providing access to the Project Site. The proposed lane configuration for the intersection would be a northbound left-turn lane and a shared left right lane, an eastbound through lane and shared through-right lane, and two westbound left-turn lanes and two through lanes.
- **O'Brien Drive/Loop Road and Main Street/O'Brien Drive:** This is a proposed new roundabout intersection. The proposed lane configuration for the intersection would be one shared left-through-right lane on all approaches.

### Cumulative (2040) Conditions

The transportation network under cumulative (2040) conditions and cumulative (2040) conditions with Dumbarton rail is assumed to include the improvements under near term conditions. The following additional road improvements in East Palo Alto identified in the Ravenswood/4 Corners TOD Specific Plan Environmental Impact Report (February 22, 2013) are also assumed:

- **University Avenue and Purdue Avenue (Mitigation Measure TRA-CUM-3):** Install a traffic signal at this intersection. Along with a new traffic signal, appropriate pedestrian and bicycle accommodation will be provided.
- **University Avenue and Bay Road (Mitigation Measure TRA-CUM-4):** Add an exclusive eastbound right-turn lane and a second eastbound left-turn lane on University Avenue, add a second northbound left-turn lane on Bay Road, add a second westbound left-turn lane on University Avenue, and modify signal phasing.
- **University Avenue and Donohoe Street (Mitigation Measure TRA-CUM-5):** Add an exclusive westbound right-turn lane on University Avenue.

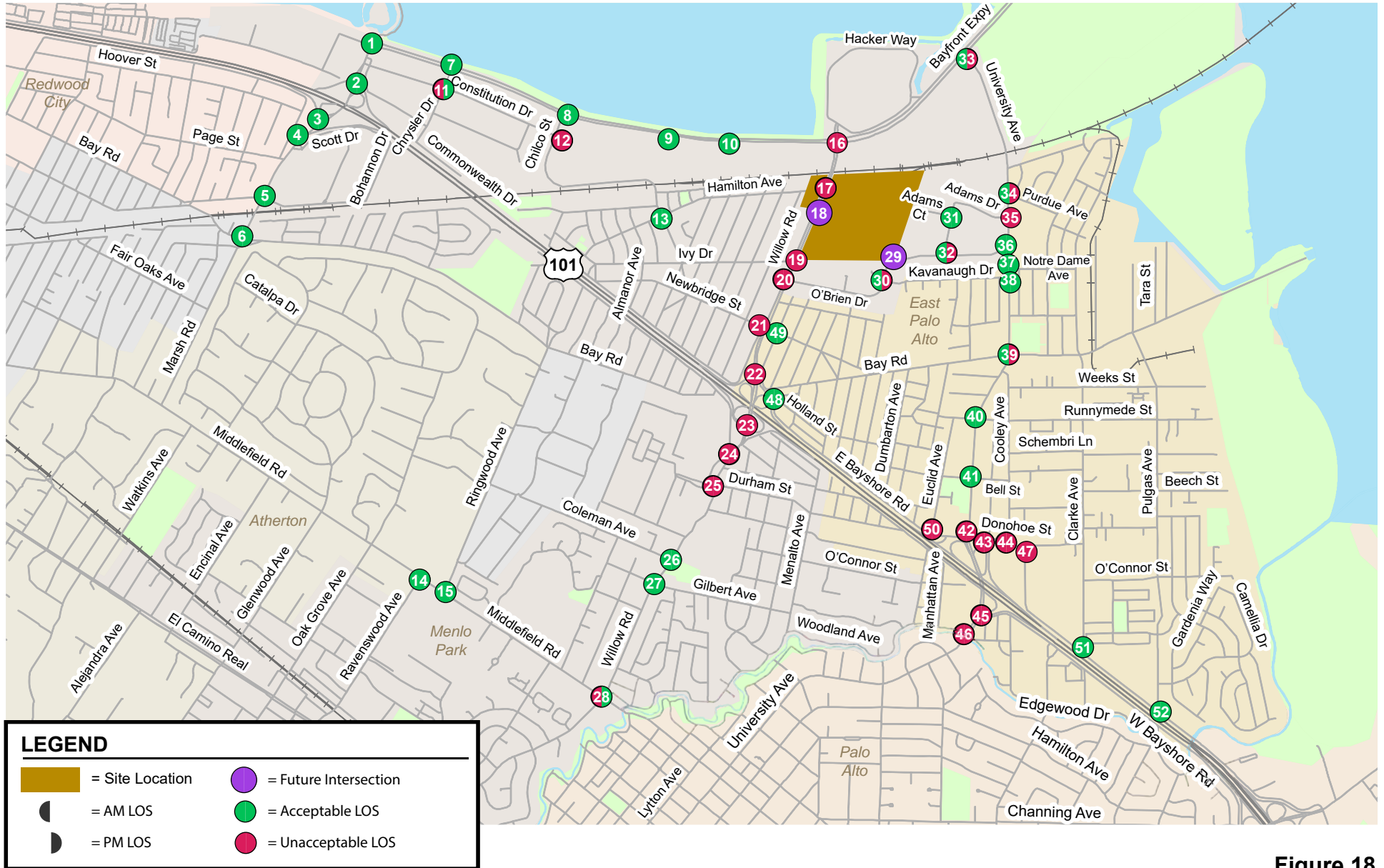
## Cumulative (2040) plus Project Conditions

The transportation network under cumulative (2040) plus project conditions and cumulative (2040) plus project conditions with Dumbarton rail is assumed to include the proposed project improvements described under the near term plus project conditions. The roadway network for other study intersections is assumed to be the same as under cumulative (2040) conditions.

## Near-Term (2025) Intersection Levels of Service

The results of the intersection level of service analysis under near-term conditions are summarized in Tables 16 and 17. The Willow Road corridor and 101/University Avenue interchange were analyzed using the Simtraffic microsimulation model as described Chapter 2. The microsimulation model indicates that the intersections would experience capacity issues where the demand cannot be served by the intersections. Oversaturated conditions would operate at LOS F and are indicated using 'OVERSAT' in the tables below. Vistro and Traffix were used to calculate critical delay and volume to capacity ratio at the Willow Road and 101/University Avenue intersections, respectively. The intersection LOS calculation sheets are included in Appendix C. The following study intersections (see Figure 18) would operate at an unacceptable level of service during at least one peak hour:

11. Chrysler Drive and Constitution Drive (AM peak hour)
12. Chilco Street and Constitution Drive/MPK 22 Driveway (PM peak hour)
16. Willow Road and Bayfront Expressway (AM and PM peak hours)
17. Willow Road and Hamilton Avenue (AM and PM peak hours)
19. Willow Road and Ivy Drive (AM and PM peak hours)
20. Willow Road and O'Brien Drive (AM and PM peak hours)
21. Willow Road and Newbridge Street (AM and PM peak hours)
22. Willow Road and US 101 Northbound Ramps (AM and PM peak hours)
23. Willow Road and US 101 Southbound Ramps (AM and PM peak hours)
24. Willow Road and Bay Road (AM and PM peak hours)
25. Willow Road and Hospital Plaza/Durham Street (AM and PM peak hours)
28. Willow Road and Middlefield Road (AM peak hour)
30. O'Brien Drive and Kavanaugh Drive (PM peak hour)
32. Adam's Drive and O'Brien Drive (PM peak hour)
33. University Avenue and Bayfront Expressway (PM peak hour)
34. University Avenue and Purdue Avenue (PM peak hour)
35. University Avenue and Adams Drive (AM and PM peak hours)
39. University Avenue and Bay Road (PM peak hour)
42. University Avenue and Donohoe Street (AM and PM peak hours)
43. US 101 Northbound Off-Ramp and Donohoe Street (AM and PM peak hours)
44. Cooley Avenue and Donohoe Street (AM and PM peak hours)
45. University Avenue and US 101 Southbound Ramps (AM and PM peak hours)
46. University Avenue and Woodland Avenue (AM and PM peak hours)
47. East Bayshore Road and Donohoe Street (AM and PM peak hours)
50. East Bayshore Road and Euclid Avenue (AM and PM peak hours)



**Figure 18**  
Near-Term Intersection Level of Service



## Near-Term (2025) Plus Project Intersection Levels of Service

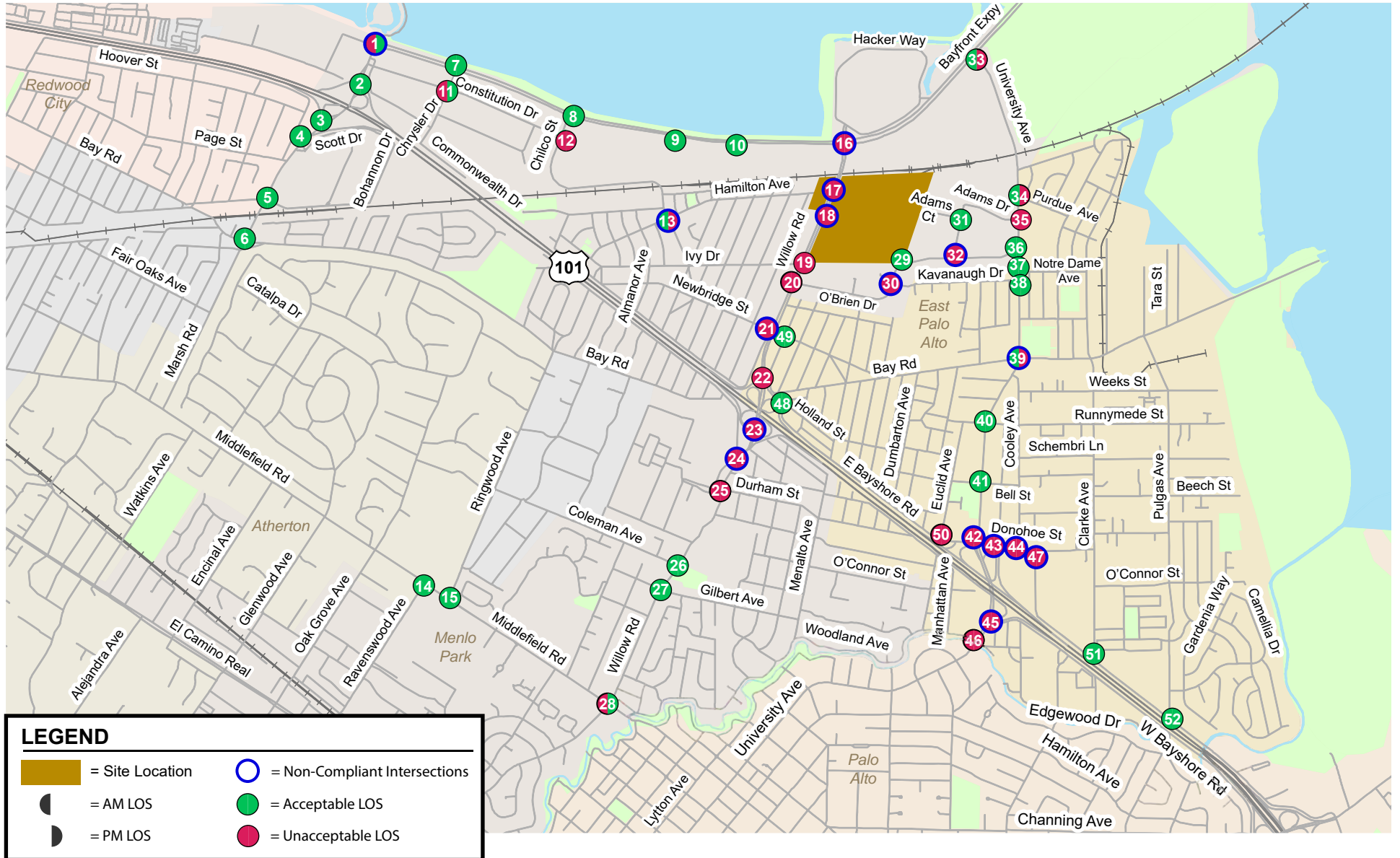
The results of the intersection level of service analysis under near term (2025) plus project conditions are summarized in Table 16 and 17. The Willow Road corridor and 101/University Avenue interchange were analyzed using the Simtraffic microsimulation model as described Chapter 2. The microsimulation model indicates that the intersections would experience capacity issues where the demand cannot be served by the intersections. Oversaturated conditions would operate at LOS F and are indicated using 'OVERSAT' in the tables below. Vistro and Traffix were used to calculate critical delay and volume to capacity ratio at the Willow Road and 101/University Avenue intersections, respectively. The intersection LOS calculation sheets are included in Appendix C.

Under near-term plus project conditions, the following 16 intersections (see Figure 19) would be non-compliant with local policies and would be adversely affected during either the AM or the PM peak hour as compared to near term conditions:

1. Marsh Road and Bayfront Expressway (AM peak hour)
13. Chilco Street and Hamilton Avenue (PM peak hour)
- 16. Willow Road and Bayfront Expressway (AM peak hour)**
- 17. Willow Road and Hamilton Avenue (AM and PM peak hours)**
18. Willow Road and Park Street (AM and PM peak hours)
- 21. Willow Road and Newbridge Street (AM and PM peak hours)**
- 23. Willow Road and US 101 Southbound Ramps (AM peak hour)**
- 24. Willow Road and Bay Road (AM peak hour)**
- 30. O'Brien Drive and Kavanaugh Drive (AM and PM peak hours)**
- 32. Adam's Drive and O'Brien Drive (AM and PM peak hours)**
- 39. University Avenue and Bay Road (PM peak hour)**
- 42. University Avenue and Donohoe Street (AM peak hour)**
- 43. US 101 Northbound Off-Ramp and Donohoe Street (AM and PM peak hours)**
- 44. Cooley Avenue and Donohoe Street (AM and PM peak hours)**
- 45. University Avenue and US 101 Southbound Ramps (AM peak hour)**
- 47. E. Bayshore Road and Donohoe Street (AM and PM peak hours)**

**Bold** indicates intersections that already operate unacceptably under near-term conditions.

It should be noted that at some intersections the average delay is shown to decrease with the addition of Project traffic. This occurs because the intersection delay is a weighted average of all intersection movements. When traffic is added to movements with delays lower than the average intersection delay, the average delay for the entire intersection can decrease. Furthermore, the congestion and queue spillback at an adjacent intersection can constrain the traffic volume at some intersections resulting in a small decrease in average delay.



**Figure 19**  
Near-Term Plus Project Intersection Level of Service Summary

**Table 16  
Near-Term (2025) Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Traffic Control	Near-Term (2025) Conditions								
				No Project		Project Conditions				With Improvement		
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Critical Delay
1	Marsh Road & Bayfront Expressway*	AM	Signal	52.0	D	<b>56.2</b>	<b>E</b>	<b>4.2</b>	<b>5.4</b>	50.2	D	-
	Haven Avenue Southbound	AM		<b>71.2</b>	<b>E</b>	<b>70.6</b>	<b>E</b>	<b>&lt;4</b>	<b>&lt;0.8</b>			
		PM	Signal	34.9	C	38.7	D	<4	4.7			
	Haven Avenue Southbound	PM		<b>66.9</b>	<b>E</b>	<b>65.6</b>	<b>E</b>	<b>&lt;4</b>	<b>&lt;0.8</b>			
2	Marsh Road & US 101 Northbound Off-Ramp	AM	Signal	23.1	C	39.0	D	15.9	25.1			
		PM		15.8	B	16.8	B	<4	1.6			
3	Marsh Road & US 101 Southbound Off-Ramp	AM	Signal	20.7	C	20.7	C	<4	<0.8			
		PM		17.6	B	17.6	B	<4	<0.8			
4	Marsh Road & Scott Drive	AM	Signal	20.3	C	20.5	C	<4	<0.8			
		PM		15.9	B	15.9	B	<4	<0.8			
5	Marsh Road & Bohannon Drive/Florence Street	AM	Signal	40.0	D	41.6	D	<4	2.3			
		PM		36.3	D	37.3	D	<4	2.2			
6	Marsh Road & Bay Road	AM	Signal	23.6	C	25.2	C	<4	2.8			
		PM		18.7	B	19.1	B	<4	<0.8			
7	Chrysler Drive & Bayfront Expressway	AM	Signal	9.1	A	9.4	A	<4	<0.8			
		PM		17.3	B	18.3	B	<4	1.5			
8	Chilco Street & Bayfront Expressway	AM	Signal	23.7	C	25.6	C	<4	5.3			
		PM		34.1	C	35.9	D	<4	4.5			
9	MPK 21 Driveway & Bayfront Expressway	AM	Signal	7.3	A	7.4	A	<4	<0.8			
		PM		13.7	B	15.0	B	<4	1.4			
10	MPK 20 Driveway (east) & Bayfront Expressway	AM	Signal	7.3	A	7.5	A	<4	<0.8			
		PM		9.7	A	9.4	A	<4	<0.8			
11	Chrysler Drive & Constitution Drive	AM	Signal	<b>59.8</b>	<b>E</b>	<b>55.1</b>	<b>E</b>	<b>&lt;4</b>	<b>&lt;0.8</b>			
		PM		28.5	C	30.4	C	<4	1.6			
12	Chilco Street & Constitution Drive/MPK 22 Driveway[2]	AM	Signal	24.8	C	24.6	C	<4	<0.8			
		PM		<b>42.9</b>	<b>D</b>	<b>54.3</b>	<b>D</b>	<b>11.4</b>	<b>11.4</b>			
13	Chilco Street & Hamilton Avenue	AM	AWSC	10.5	B	10.8	B	<4	<0.8	Traffic signal potentially feasible		
		PM		19.0	C	<b>38.0</b>	<b>E</b>	<b>19.0</b>	<b>19.0</b>			
14	Ravenswood Avenue & Middlefield Road	AM	Signal	43.1	D	44.9	D	<4	3.0			
		PM		17.6	B	17.9	B	<4	<0.8			

**Table 16 (Continued)**  
**Near-Term (2025) Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Traffic Control	Near-Term (2025) Conditions										
				No Project		Project Conditions				With Improvement				
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Critical Delay		
15	Ringwood Avenue & Middlefield Road	AM	Signal	13.2	B	13.7	B	<4	<0.8					
		PM		15.2	B	15.4	B	<4	<0.8					
16	Willow Road & Bayfront Expressway*[1]	AM	Signal	OVERSAT	F	OVERSAT	F	14.0	6.7	<i>No feasible Improvement</i>				
		PM		OVERSAT	F	OVERSAT	F	<4	<0.8					
17	Willow Road & Hamilton Avenue[1]	AM	Signal	OVERSAT	F	OVERSAT	F	44.1	54.0	<i>No feasible Improvement</i>				
	Hamilton Avenue Southbound	AM		64.9	E	>120	F	117.9	<0.8					
	Main Street Northbound	AM		83.3	F	113.7	F	30.4	>120					
		PM	Signal	OVERSAT	F	OVERSAT	F	>120	>120					
	Hamilton Avenue Southbound	PM		>120	F	>120	F	>120	<0.8					
	Main Street Northbound	PM		>120	F	>120	F	<4	>120					
18	Willow Road & Park Street (future intersection)[1]	AM	Signal	Project Intersection		OVERSAT	F	36.8	53.0	<i>No feasible Improvement</i>				
		PM				OVERSAT	F	17.5	23.1					
19	Willow Road & Ivy Drive[1]	AM	Signal	OVERSAT	F	OVERSAT	F	20.9	46.6					
	Ivy Drive Southbound	AM		88.2	###	88.2	F	<4	4.7					
		PM	Signal	OVERSAT	F	OVERSAT	F	50.1	70.9					
	Ivy Drive Southbound	PM		68.4	E	66.1	E	<4	<0.8					
20	Willow Road & O'Brien Drive[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8					
	O'Brien Drive Northbound	AM		72.6	E	66.4	E	<4	<0.8					
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8					
	O'Brien Drive Northbound	PM		>120	F	>120	F	<4	<0.8					
21	Willow Road & Newbridge Street[1]	AM	Signal	OVERSAT	F	OVERSAT	F	40.3	49.7	OVERSAT	F			
	Newbridge Street Southbound	AM		69.3	E	104.2	F	34.9	43.0	79.6	F			9.0
	Newbridge Street Northbound	AM		>120	F	>120	F	4.4	64.0	42.1	D			<0.8
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8	OVERSAT	F			
	Newbridge Street Southbound	PM		60.8	E	59.1	E	<4	1.5	74.5	E			26.0
	Newbridge Street Northbound	PM		>120	F	>120	F	<4	<0.8	51.3	D	<0.8		
22	Willow Road & US 101 Northbound Ramps[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	11.5					
		PM		OVERSAT	F	OVERSAT	F	<4	<0.8					
23	Willow Road & US 101 Southbound Ramps[1]	AM	Signal	OVERSAT	F	OVERSAT	F	18.3	<0.8	<i>No feasible Improvement</i>				
		PM		OVERSAT	F	OVERSAT	F	<4	<0.8					
24	Willow Road & Bay Road[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	38.3	OVERSAT	F			
	Bay Road Southbound	AM		104.3	F	>120	F	31.7	31.7	27.0	C			<0.8
		PM	Signal	OVERSAT	F	OVERSAT	F	6.6	6.7	OVERSAT	F			
	Bay Road Southbound	PM		49.2	D	53.5	D	4.3	4.3	23.9	C	<0.8		

**Table 16 (Continued)**  
**Near-Term (2025) Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Traffic Control	Near-Term (2025) Conditions							
				No Project		Project Conditions		With Improvement			
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS
25	Willow Road & Hospital Plaza/Durham Street[1]	AM	Signal	<b>OVERSAT</b>	<b>F</b>	<b>OVERSAT</b>	<b>F</b>	<4	<0.8		
	VA Medical Center Southbound	AM		73.2	E	69.5	E	<4	<0.8		
	Durham Street Northbound	AM		93.6	F	79.6	E	<4	<0.8		
		PM	Signal	<b>OVERSAT</b>	<b>F</b>	<b>OVERSAT</b>	<b>F</b>	<4	<0.8		
	VA Medical Center Southbound	PM		72.2	E	70.2	E	<4	<0.8		
	Durham Street Northbound	PM		84.6	F	79.8	E	<4	<0.8		
26	Willow Road & Coleman Avenue	AM	Signal	25.1	C	23.9	C	<4	<0.8		
		PM		11.0	B	10.8	B	<4	<0.8		
27	Willow Road & Gilbert Avenue	AM	Signal	20.0	C	19.9	B	<4	<0.8		
		PM		13.0	B	12.4	B	<4	<0.8		
28	Willow Road & Middlefield Road	AM	Signal	<b>62.3</b>	<b>E</b>	<b>62.5</b>	<b>E</b>	<4	<0.8		
	Middlefield Road Southbound	AM		69.8	E	70.1	E	<4	<0.8		
	Middlefield Road Northbound	AM		67.7	E	67.7	E	<4	<0.8		
		PM	Signal	34.5	C	34.7	C	<4	<0.8		
	Middlefield Road Southbound	PM		34.5	C	34.7	C	<4	<0.8		
	Middlefield Road Northbound	PM		34.3	C	34.7	C	<4	<0.8		
29	O'Brien Drive/Loop Road & Main Street/O'Brien Drive (future intersection)	AM	Roundabout	Project Intersection		7.4	A	7.4	7.4		
		PM				9.2	A	9.2	9.2		
30	O'Brien Drive & Kavanaugh Drive	AM	AWSC	12.7	B	<b>107.7</b>	<b>F</b>	<b>95.0</b>	<b>95.0</b>	Traffic signal potentially feasible	
		PM		29.6	D	<b>73.7</b>	<b>F</b>	<b>44.1</b>	<b>44.1</b>		
31	Adams Drive & Adams Court	AM	TWSC	11.5	B	11.6	B	<4	<0.8		
		PM		11.9	B	11.9	B	<4	<0.8		
32	Adams Drive & O'Brien Drive	AM	TWSC	17.6	C	<b>62.5</b>	<b>F</b>	<b>44.9</b>	<b>44.9</b>	Traffic signal potentially feasible	
		PM		34.0	D	>120	F	>120	>120		
33	University Avenue & Bayfront Expressway*	AM	Signal	13.9	B	12.1	B	<4	<0.8		
		PM		105.8	F	108.7	F	<4	3.0		

**Notes:**

\* Denotes CMP Intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control

<sup>1</sup> Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported

"OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.

[1]Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in average delay and critical delay calculated using

[2]The intersection is not considered as non-compliant under background plus project conditions because the critical movement of the local approach shifts with the addition of project traffic.

**Bold** indicates substandard level of service

**Boxed** indicates noncompliance. The project exceeds thresholds in the City of Menlo Park's TIA Guidelines.

**Table 17  
Near-Term (2025) Intersection Levels of Service (East Palo Alto)**

#	Intersection	Peak Hour	Traffic Control	Near-Term (2025) Conditions							
				No Project		with Project			With Improvement		
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg/Crit Delay (sec) <sup>1</sup>	Incr. in Critical V/C	Avg. Delay (sec) <sup>1</sup>	LOS
34	University Avenue & Purdue Avenue	AM	TWSC	19.7	C	29	D	0.9	0.118		
		PM		>120	F	>120	F	3.8	-0.033		
35	University Avenue & Adams Drive	AM	TWSC	91.5	F	>120	F	0.4	0.084		
		PM		>120	F	>120	F	-2.8	-0.070		
36	University Avenue & O'Brien Drive	AM	Signalized	9.5	A	28.9	C	26.1	0.261		
		PM		15.4	B	30.5	C	16.7	0.275		
37	University Avenue & Notre Dame Avenue	AM	Signalized	4.1	A	7.8	A	5.0	0.093		
		PM		9.4	A	10.2	B	1.4	0.012		
38	University Avenue & Kavanaugh Drive	AM	Signalized	6.9	A	7.9	A	1.3	0.014		
		PM		15.1	B	16.5	B	1.6	0.015		
39	University Avenue & Bay Road	AM	Signalized	52.4	D	54.7	D	6.7	0.046	40.4	D
		PM		60.9	E	70.6	E	18.6	0.063	57.0	E
40	University Avenue & Runnymede Street	AM	Signalized	6.4	A	6.6	A	1.5	0.053		
		PM		8.8	A	8.8	A	-0.1	-0.009		
41	University Avenue & Bell Street	AM	Signalized	11.7	B	11.6	B	0.0	0.006		
		PM		18.3	B	18.8	B	1.1	0.038		
42	University Avenue & Donohoe Street*	AM	Signalized	OVERSAT	F	OVERSAT	F	7.1	0.017		Corridor
		PM		OVERSAT	F	OVERSAT	F	3.0	0.008		Improvement
43	US 101 Northbound Off-Ramp & Donohoe Street*	AM	Signalized	OVERSAT	F	OVERSAT	F	71.7	0.171		Corridor
		PM		OVERSAT	F	OVERSAT	F	56.4	0.130		Improvement
44	Cooley Avenue & Donohoe Street*	AM	Signalized	OVERSAT	F	OVERSAT	F	8.7	0.091		Corridor
		PM		OVERSAT	F	OVERSAT	F	18.8	0.074		Improvement
45	University Avenue & US 101 Southbound Ramps*	AM	Signalized	OVERSAT	F	OVERSAT	F	7.8	0.019		Corridor
		PM		OVERSAT	F	OVERSAT	F	1.6	0.004		Improvement
46	University Avenue & Woodland Avenue*	AM	Signalized	OVERSAT	F	OVERSAT	F	0.1	0.000		Corridor
		PM		OVERSAT	F	OVERSAT	F	-7.8	-0.018		Improvement
47	E. Bayshore Road & Donahoe Street*	AM	Signalized	OVERSAT	F	>120	F	5.7	0.013		Corridor
		PM		OVERSAT	F	>120	F	5.8	0.015		Improvement

**Table 17 (Continued)**  
**Near-Term (2025) Intersection Levels of Service (East Palo Alto)**

#	Intersection	Peak Hour	Traffic Control	Near-Term (2025) Conditions							
				No Project		with Project				With Improvement	
				Avg. Delay (sec)	LOS	Avg. Delay (sec)*	LOS	Incr. in Avg/Crit Delay (sec)	Incr. in Critical V/C	Avg. Delay (sec)	LOS
48	E. Bayshore Road & Holland Street	AM	TWSC	8.8	A	8.8	A	0.0	0.000		
		PM		10	A	10	A	0.0	0.000		
49	Saratoga Avenue & Newbridge Street	AM	TWSC	17.9	C	18.2	C	0.9	0.074		
		PM		22.0	C	21.0	C	0.0	-0.024		
50	E. Bayshore Road & Euclid Avenue*	AM	AWSC	<b>OVERSAT</b>	<b>F</b>	<b>OVERSAT</b>	<b>F</b>	<b>3.6</b>	<b>0.028</b>	<i>Corridor Improvement</i>	
		PM		<b>OVERSAT</b>	<b>F</b>	<b>OVERSAT</b>	<b>F</b>	<b>-2.5</b>	<b>-0.016</b>		
51	Clarke Avenue & E. Bayshore Road	AM	Signalized	13.9	B	14	B	0.2	0.008		
		PM		10.7	B	12.5	B	1.7	0.031		
52	Pulgas Avenue & E. Bayshore Road	AM	Signalized	20.9	C	21.7	C	1.7	0.042		
		PM		33.1	C	37.6	D	5.7	0.034		

**Note:**

\* Denotes a CMP intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control

<sup>1</sup> Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.

"OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.

\* Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in critical delay and v/c calculated using Traffix.

**Bold** indicates substandard level of service

**Bold** indicates adverse effect

## **Adverse Effects and Recommended Improvements**

The intersection effects and recommended modifications to improve the intersections to pre-Project conditions or better are described below. It should be noted that the intersection analysis accounts for the Project's proposed trip reductions from gross ITE trip generation. The residential component's required TDM reduction to eliminate the VMT impact is partially accounted for as well (peak-hour trip generation assumed 10% active TDM reduction). The additional residential TDM reduction during the peak-hour resulting from the VMT impact mitigation would have resulted in approximately 50 (13 inbound and 37 outbound) fewer trips during the AM peak hour and 56 (34 inbound and 22 outbound) fewer trips during the PM peak hour. This level of trip reduction would not address any intersection adverse effects alone.

### **Marsh Road and Bayfront Expressway (#1)**

This intersection is expected to operate at an acceptable LOS D during the AM peak hour and LOS C during the PM peak hour under near term conditions. The addition of Project traffic would cause the level of service at the intersection to worsen to an unacceptable LOS E during the AM peak hour. The intersection would operate at an acceptable LOS D during the PM peak hour. The deterioration of LOS from D to E constitutes non-compliance during the AM peak hour according to the thresholds established by the City of Menlo Park.

The recommended modification for this location is to modify the southbound approach to a shared left-through lane, shared through-right lane, and a right turn only lane. With this improvement, the intersection would operate acceptably at LOS D during both peak hours under near-term plus project conditions. This improvement is in Menlo Park's traffic impact fee (TIF) program. With implementation of these intersection modifications, the intersection would be in compliance with the TIA Guidelines and address the Proposed Project's share of the non-compliant operation.

### **Chilco Street and Hamilton Avenue (#13)**

This intersection is expected to operate at an acceptable LOS B during the AM peak hour and LOS C during the PM peak hour under near term conditions. The addition of Project traffic would cause the level of service at the intersection to worsen to an unacceptable LOS E during the PM peak hour. The intersection would operate at an acceptable LOS B during the AM peak hour. The deterioration of LOS from C to E constitutes non-compliance during the PM peak hour according to the thresholds established by the City of Menlo Park.

Since the intersection currently operates as all-way-stop-controlled, potential modification to bring the intersection to pre-project conditions would be to signalize it. However, the intersection does not meet the signal warrant during either peak hour under near term plus project conditions. A traffic signal is not recommended for construction until signal warrants conducted with a future year's actual counts have been met. The recommended improvement includes conducting a signal warrant analyses for a period of five years after full Project completion to determine if a signal would be warranted and if warranted, install a new signal. This improvement is included in the City's TIF program.

Should the City pursue implementation of this improvement, the improvement would include new traffic signal and appropriate pedestrian and bicycle accommodation at this intersection including pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. Signalization of this intersection could also encourage cut-through traffic along Chilco Street and on Hamilton Avenue when regional routes such as Bayfront Expressway, Willow Road or US 101 become congested. Potential traffic calming measures should also be considered in conjunction with a traffic signal if signal warrants are met in a future year.



With implementation of these intersection modifications (e.g. signal warrant analysis, potential signal installation, and related bicycle and pedestrian accommodations), the intersection would be in compliance with the TIA Guidelines which would address the Proposed Project's share of the non-compliant operation.

**Willow Road Corridor (#16, #17, #18, #21, #23, #24)**

Willow Road between Bayfront Expressway and Hospital Plaza/Durham Street is expected to experience capacity issues due to unserved demand at the intersections. These intersections would operate unacceptably under near term conditions during both peak hours. With the addition of Project traffic, intersections along the corridor would continue to operate unacceptably during both peak hours.

The intersections of Willow Road and Bayfront Expressway and Willow Road and US 101 southbound ramps would experience an increase in delay of over four seconds with the addition of project traffic in the AM peak hour and PM peak hour, respectively, and would be non-compliant per Menlo Park's guidelines for state-controlled intersections.

The intersections of Hamilton Avenue and Newbridge Street at Willow Road would experience an increase in delay of over 0.8 seconds with the addition of project traffic on the local approach to the intersection in both peak hours and the intersection of Bay Road at Willow Road would experience an increase in delay of over 0.8 seconds with the addition of Project traffic on the local approach to the intersection during the AM peak hour and would be non-compliant per Menlo Park's guidelines. Willow Road and Park Street, which is a new intersection under project conditions is also assumed to be non-compliant during both peak hours due to unserved demand at this intersection as determined in the microsimulation model developed for this corridor and described in Chapter 3.

The City of Menlo Park is implementing an adaptive traffic signal coordination system on the Willow Road corridor to improve traffic flow. Adaptive traffic control is a technology that automatically adjusts traffic signal timing based on actual traffic demand at an intersection. This measure will improve the intersection operations and could reduce the intersection delay. The reduction in delay due to adaptive signal coordination is not expected to bring the corridor intersections into compliance with the City's TIA guidelines or to substantially reduce the delay caused by the Project.

Physical intersection improvements (identified in the City's TIF program) that would improve intersection operations at the non-compliant intersections are:

- **Willow Road and Newbridge Street (#21)**- The TIF program proposes to modify the signal timing to a protected left-turn phasing operation on Newbridge Street, provide a leading left-turn phase on the southbound movement and a lagging left-turn phase on the northbound movement, and optimize signal timing. With implementation of these intersection modifications under project conditions, the critical movement delay would be reduced for the northbound movement to lower than no project conditions. However, the improvement would not address the southbound deficiency. Further improvements to address the southbound deficiency are not feasible.

- **Willow Road and Bay Road (#24)** – The TIF program proposes to modify the southbound approach at this intersection to two left-turn lanes and one right-turn lane and to modify the westbound approach to add a right-turn lane. With these improvements under project conditions, the critical movement delay at the local approach would be reduced to lower than no project conditions. This improvement would address the adverse effect on the intersection due to Project traffic. With implementation of these intersection modifications, the Willow Road and Bay Road intersection would be in compliance with the TIA Guidelines which would address the Proposed Project’s share of the non-compliant operation. With implementation of the recommended improvements from the TIF program for the Willow Road and Bay Road intersection the deficiency attributable to the Proposed Project would be addressed. As mentioned previously, these improvements are included in the City’s TIF program.

The Metropolitan Transportation Commission (MTC) Dumbarton Forward project would restripe Bayfront Expressway to add bus-only lanes on the shoulders during peak periods and implement signal timing improvements. The bus-only lanes would generally help the progression of shuttles and buses along the corridor. The signal timing improvements are also assumed to help with the general progression along Bayfront. However, specific details are unknown at this time regarding the improvements at the Willow Road and Bayfront Expressway intersection. The improvements’ effectiveness in addressing the Project traffic generated adverse effect on traffic operations at this intersection cannot be determined. Furthermore, since this project is not led by the City of Menlo Park, implementation cannot be guaranteed.

Physical improvements are considered infeasible due to right-of-way constraints and/or adverse effects on pedestrian and bicycle travel at the intersections of Willow Road and Bayfront Expressway, Willow Road and US 101 southbound ramps, Willow Road and Hamilton Avenue, and Willow Road and Park Street.

The TIF program also proposes multimodal improvements along this section of Willow Road. These include an eastbound Willow Road one-way Class IV separated bikeway between Hamilton Avenue and the US 101/Willow Road Interchange, a westbound Willow Road one-way Class IV separated bikeway between the Dumbarton Rail Corridor and the US 101/Willow Road Interchange, high-visibility crosswalks and pedestrian signals on all legs at the intersection of Willow Road and O’Brien Drive, Class II bicycle lanes on eastbound Willow Road from O’Keefe Street to Bay Road, and Class II bicycle lanes on westbound Willow Road from Bay Road to Durham Street.

Implementing recommended multi-modal facilities along the corridor (from the City’s TIF program) could shift some motor vehicle traffic to alternative modes of travel and reduce congestion. With implementation of these multi-modal improvements, the intersection deficiencies could be further reduced and partially address the Proposed Project’s share of the non-compliant operations along Willow Road.

**O'Brien Drive and Kavanaugh Drive (#30)**

This intersection is expected to operate at an acceptable LOS B during the AM peak hour and an unacceptable LOS D during the PM peak hour under near term conditions. With the addition of project traffic, the intersection would operate at an unacceptable LOS F during both peak hours. This constitutes non-compliance during both peak hours according to the thresholds established by the City of Menlo Park.

Since the intersection currently operates as all-way-stop-controlled, potential modification to bring the intersection to pre-project conditions would be to signalize it. The intersection would meet the MUTCD signal warrant during both peak hours under project conditions (See Appendix F). The intersection lane configuration would need to be modified to a westbound left-turn lane and through lane, northbound left turn lane and right turn lane, and eastbound shared through-right lane. With this improvement, the intersection would operate acceptably at LOS B during the AM peak hour and LOS C during the PM peak hour under near term plus project conditions.

The recommended improvement to bring this intersection back to pre-Project conditions is the installation of the new traffic signal and appropriate pedestrian and bicycle accommodation. This includes the proposed Class II bicycle lanes along O'Brien Drive between Willow Road and University Avenue, pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. However, a decision for signalization should not be made until signal warrants conducted with a future year's actual counts have been met. It is important to note that the intersection would be located approximately 300 feet west of the proposed roundabout at O'Brien Drive and Loop Road. Prior to a decision for signalizing this intersection, further analysis should be conducted to ensure that queues resulting from the signal would not back into the roundabout and cause a gridlock situation.

Alternatively, traffic calming measures could be installed to discourage the use of Kavanaugh Drive, which is a residential street, and encourage vehicles to use O'Brien Drive and Adam's Drive instead. Kavanaugh Drive is located within the City of East Palo Alto, and the City of Menlo Park does not have jurisdiction to install traffic calming along this street. Other measures such as peak period turning movement restrictions could be considered to discourage traffic from using Kavanaugh Drive and improve intersection operations.

Monitoring of traffic operations at this intersection for a period of five years after full Project completion should be conducted to determine if signalization or alternative improvements are needed. If warranted, implementation of the new traffic signal would address the Proposed Project's share of the non-compliant operation and bring the intersection into compliance with the TIA Guidelines. If the alternative measures are implemented, the intersection may or may not be brought into compliance with the TIA Guidelines and address the Proposed Project's share of the non-compliant operation.

**Adams Drive and O'Brien Drive (#32)**

This intersection is expected to operate at an acceptable LOS C during the AM peak hour and an unacceptable LOS D during the PM peak hour under near term conditions. With the addition of Project traffic, the intersection would operate at an unacceptable LOS F during both peak hours. This constitutes non-compliance during both peak hours according to the thresholds established by the City of Menlo Park.

Since the intersection currently operates as two-way-stop-controlled, potential modification to bring the intersection to pre-project conditions would be to signalize it. The intersection would meet the MUTCD signal warrant during the PM peak hour under project conditions (see Appendix F). The intersection lane configuration would need to be modified to a westbound shared left-right lane, southbound left-turn lane and through lane, and northbound shared through-right lane. With this improvement, the intersection would operate acceptably at LOS B during the AM peak hour and LOS C during the PM peak hour under near term plus project conditions.

The recommended improvement to bring this intersection back to pre-Project conditions is the installation of the new traffic signal and appropriate pedestrian and bicycle accommodations at this intersection and within the vicinity. This includes the proposed Class II bicycle lanes along O'Brien Drive between Willow Road and University Avenue, pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops.

The expected intersection operational issues under background plus project conditions would be due to the increased through traffic on O'Brien Drive between the Project Site and University Avenue. Menlo Park's TIF program identifies an improvement to signalize the nearby intersection at University Avenue and Adams Drive in East Palo Alto. This improvement may provide an alternative route for Project vehicles to access the Project Site via University Avenue.

Monitoring of traffic operations at this intersection for a period of five years after full Project completion should be conducted to determine if signalization or alternative improvements are needed. If warranted, implementation of the new traffic signal would address the Proposed Project's share of the non-compliant operation and bring the intersection into compliance with the TIA Guidelines. If the alternative measures are implemented, the intersection may or may not be brought into compliance with the TIA Guidelines and address the Proposed Project's share of the non-compliant operation.

**University Avenue and Bay Road (#39)**

This intersection is expected to operate at an acceptable LOS D during the AM peak hour and an unacceptable LOS E during the PM peak hour under near term conditions. With the addition of Project traffic, the intersection would continue to operate acceptably in the AM peak hour. In the PM peak hour, the increase in the average critical delay would be greater than four seconds. This constitutes non-compliance during the PM peak hour according to the thresholds established by the City of East Palo Alto.

Potential modification to bring the intersection to pre-Project conditions would be to add an exclusive eastbound right-turn lane and a second eastbound left-turn lane on University Avenue, add a second northbound left-turn lane on Bay Road, add a second westbound left-turn lane on University Avenue, and modify signal phasing. This is also a mitigation measure identified in the Ravenswood/4 Corners TOD Specific Plan Environmental Impact Report (February 22, 2013), which would be implemented under cumulative conditions. With this improvement under project conditions, the average delay at the intersection would be better than under near term no project conditions. Since this intersection is located within the City of East Palo Alto, the recommended measure to bring the intersection back to pre-Project conditions and address the Project's share of the non-compliant operation would be to make a fair share (34%) contribution towards this improvement. Fair share is calculated as the percentage of net project traffic generated divided by the overall cumulative traffic growth at this intersection. The Menlo Park TIF includes improvements at the University Avenue and Bay Road intersection, but not sufficient improvements to bring the intersection back to pre-Project conditions, as described above. However, the Project's fair share contribution towards this intersection would be calculated considering credit from its TIF payment.

**US 101/University Avenue Interchange (#42, #43, #44, #45, #47)**

The US 101/University Avenue interchange is expected to experience capacity issues due to unserved demand at the intersections in its vicinity including University Avenue and Donohoe Street, US 101 northbound off-ramp and Donohoe Street, Cooley Avenue and Donohoe Street, University Avenue and US 101 southbound ramps, University Avenue and Woodland Avenue, E. Bayshore Road and Donohoe Street, and E. Bayshore Road and Euclid Avenue. These intersections would operate unacceptably under near term conditions during both peak hours. With the addition of Project traffic, these intersections would continue to operate unacceptably during both peak hours. The increase in delay is expected to be greater than four seconds, and the increase in the volume to capacity ratio is expected to be greater than 0.01 under project conditions at University Avenue and Donohoe Street in the AM peak hour, US 101 northbound off-ramp and Donohoe Street during both peak hours, Cooley Avenue and Donohoe Street during both peak hours, E. Bayshore Road and Donohoe Street during both peak hours, and University Avenue and US 101 southbound ramps in the AM peak hour. This constitutes non-compliance according to the thresholds established by the City of East Palo Alto.

East Palo Alto plans to widen the northbound approach on Donohoe Street at the US 101 northbound off-ramp to accommodate four through lanes to improve the vehicular throughput at this intersection. This improvement will require median modifications and narrowing the southbound Donohoe Street approach to Cooley Avenue to include two through lanes and a full length left-turn lane. In addition, the traffic signals will be coordinated with adjacent traffic signals on Donohoe Street.

East Palo Alto also plans to install a new traffic signal at the US 101 northbound on-ramp and Donohoe Street and Bayshore Road and Euclid Avenue to coordinate with other closely spaced traffic signals along Donohoe Street. Along with new traffic signals, appropriate pedestrian and bicycle accommodation will be provided. This includes pedestrian countdown timers, Americans with Disabilities Act (ADA) compliant curbs, and bicycle detection loops. In order to align with the proposed driveway for the University Plaza Phase II site on the north side of Donohoe Street, the US 101 on-ramp will be shifted approximately 30 feet to the south. In addition, the northbound approach on Donohoe Street will be restriped to accommodate a short exclusive left-turn pocket (approximately 60 feet in length), a shared left-through lane, and a shared through-right lane. These improvements would require widening of the US 101 northbound on-ramp to accommodate two lanes that taper down to a single lane before this ramp connects with the loop on-ramp from eastbound University Avenue. A northbound right turn only will also be added to Bayshore Road and Euclid Avenue. Planned Donohoe Street improvements are included in Appendix E.

With these improvements, average delay at these intersections would be below that under near term conditions without the Project. Since this intersection is located within the City of East Palo Alto, the recommended improvement measure to bring the intersection/interchange back to pre-Project conditions and address the Project's share of the non-compliant operation would be for the Project sponsor to make a fair share contribution towards these improvements. Because the improvements in this corridor are all interconnected and dependent on each other to work, the recommended improvement measure would be for the Project sponsor to contribute its fair share to improvements at all six intersections in this corridor. Fair share is calculated as the percentage of net project traffic generated of the overall cumulative traffic growth at this intersection.

- Donohoe Street & Cooley Avenue: 10% fair share
- Donohoe Street & US 101 Northbound Off-Ramp: 24% fair share
- Donohoe Street & University Avenue: 31% fair share
- Donohoe Street & US 101 Northbound On-Ramp: 8% fair share
- Donohoe Street/Bayshore Road & Euclid Avenue: 2% fair share
- US 101 Southbound Ramps & University Avenue: 33% fair share

The Menlo Park TIF includes improvements at the University Avenue and Donohoe Street and University Avenue and US 101 southbound ramps intersections, which funding would go toward the planned coordinated system of intersections. The Project's fair share contribution towards these two intersections would be calculated considering credit from its TIF payment.

## Cumulative (2040) Intersection Levels of Service

The results of the intersection level of service analysis under cumulative conditions are summarized in Tables 18 and 19. The Willow Road corridor and 101/University Avenue interchange were analyzed using the Simtraffic microsimulation model as described Chapter 2. The microsimulation model indicates that the intersections would experience capacity issues where the demand cannot be served by the intersections. Oversaturated conditions would operate at LOS F and are indicated using 'OVERSAT' in the tables below. Vistro and Traffix were used to calculate critical delay and volume to capacity ratio at the Willow Road and 101/University Avenue intersections, respectively. The intersection LOS calculation sheets are included in Appendix C. The following study intersections (see Figure 20) would operate at an unacceptable level of service during at least one peak hour:

1. Marsh Road and Bayfront Expressway (AM and PM peak hours)
2. Marsh Road and US 101 Northbound off-ramp (AM peak hour)
5. Marsh Road and Bohannon Drive/Florence Street (AM peak hour)
6. Marsh Road and Bay Road (AM peak hour)
8. Chilco Street and Bayfront Expressway (PM peak hour)
11. Chrysler Drive and Constitution Drive (AM and PM peak hours)
12. Chilco Street and Constitution Drive/MPK 22 Driveway (AM and PM peak hours)
13. Chilco Street and Hamilton Avenue (PM peak hour)
16. Willow Road and Bayfront Expressway (AM and PM peak hours)
17. Willow Road and Hamilton Avenue (AM and PM peak hours)
19. Willow Road and Ivy Drive (AM and PM peak hours)
20. Willow Road and O'Brien Drive (AM and PM peak hours)
21. Willow Road and Newbridge Street (AM and PM peak hours)
22. Willow Road and US 101 Northbound Ramps (AM and PM peak hours)
23. Willow Road and US 101 Southbound Ramps (AM and PM peak hours)
24. Willow Road and Bay Road (AM and PM peak hours)
25. Willow Road and Hospital Plaza/Durham Street (AM and PM peak hours)
28. Willow Road and Middlefield Road (AM peak hour)
30. O'Brien Drive and Kavanaugh Drive (AM and PM peak hours)
32. Adam's Drive and O'Brien Drive (AM and PM peak hours)
33. University Avenue and Bayfront Expressway (PM peak hour)
35. University Avenue and Adams Drive (AM and PM peak hours)
39. University Avenue and Bay Road (PM peak hour)
42. University Avenue and Donohoe Street (AM and PM peak hours)
43. US 101 Northbound Off-Ramp and Donohoe Street (AM and PM peak hours)
44. Cooley Avenue and Donohoe Street (AM and PM peak hours)
45. University Avenue and US 101 Southbound Ramps (AM and PM peak hours)
46. University Avenue and Woodland Avenue (AM and PM peak hours)
47. E. Bayshore Road and Donohoe Street (AM and PM peak hour)
49. Saratoga Avenue and Newbridge Street (AM and PM peak hours)
50. East Bayshore Road and Euclid Avenue (AM and PM peak hours)

## Cumulative (2040) Plus Project Intersection Levels of Service

The results of the intersection level of service analysis under near cumulative (2040) plus project conditions are summarized in Tables 18 and 19. The intersection LOS calculation sheets are included in Appendix C. Under cumulative plus project conditions, the following 17 intersections (see Figure 21) would be non-compliant with local policies during either the AM or the PM peak hour as compared to cumulative conditions. All of these intersections would already be operating at unacceptable levels of service under cumulative conditions.

### **5. Marsh Road and Bohannon Drive/Florence Street (AM peak hour)**

13. Chilco Street and Hamilton Avenue (AM and PM peak hours)

18. Willow Road and Park Street (AM and PM peak hours)

### **19. Willow Road and Ivy Drive (PM peak hour)**

21. Willow Road and Newbridge Street (AM and PM peak hours)

24. Willow Road and Bay Road (AM and PM peak hours)

### **25. Willow Road and Hospital Plaza/Durham Street (AM and PM peak hours)**

30. O'Brien Drive and Kavanaugh Drive (AM peak hour)

32. Adam's Drive and O'Brien Drive (AM and PM peak hours)

43. US 101 Northbound Off-Ramp and Donohoe Street (AM and PM peak hours)

44. Cooley Avenue and Donohoe Street (PM peak hour)

45. University Avenue and US 101 Southbound Ramps (PM peak hour)

### **46. University Avenue and Woodland Avenue (AM and PM peak hours)**

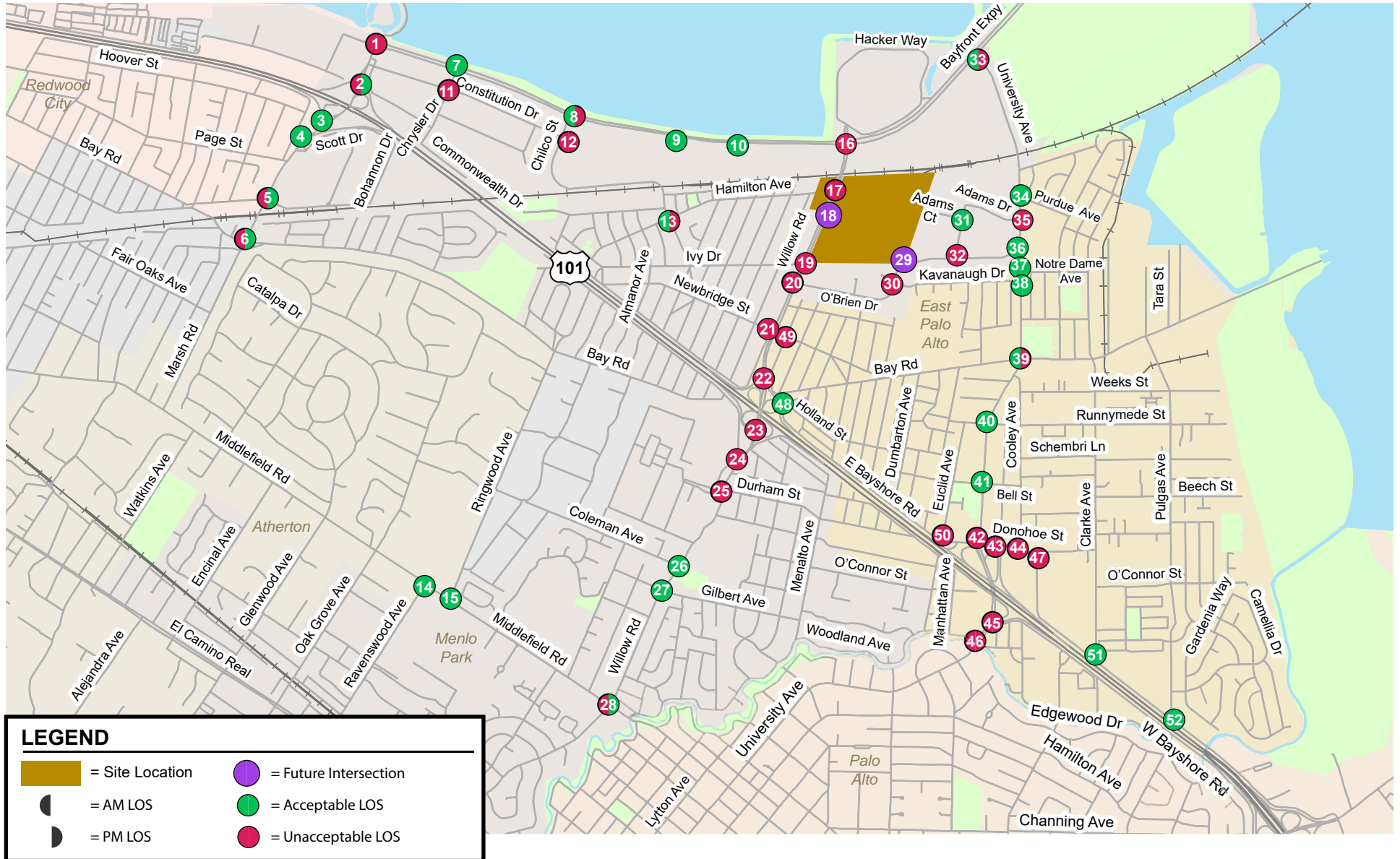
### **49. Saratoga Avenue and Newbridge Street (AM peak hour)**

### **50. East Bayshore Road and Euclid Avenue (AM peak hour)**

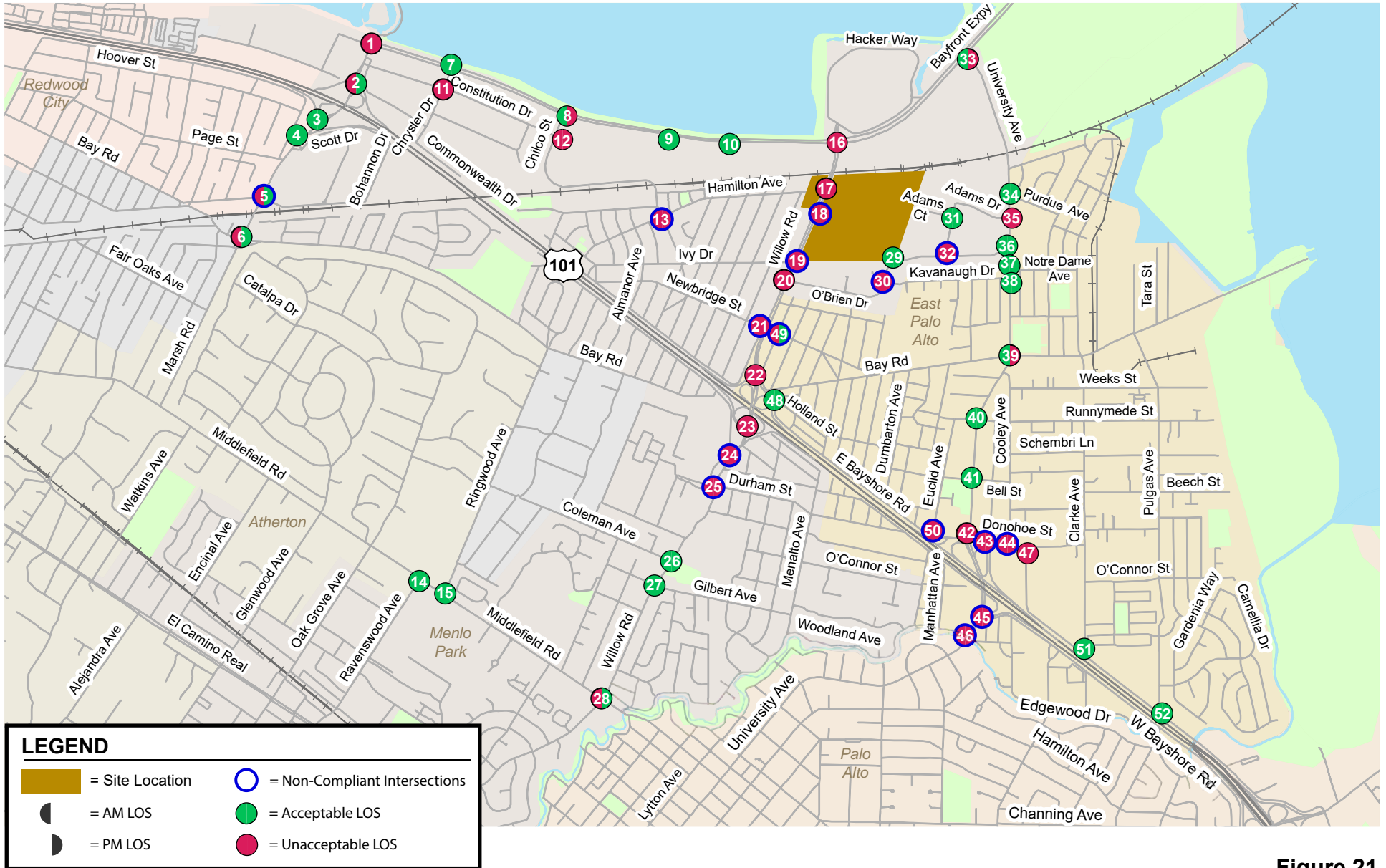
**Bold** denotes intersections that would be non-compliant under cumulative plus project conditions during either AM or PM peak hours but are compliant under near-term plus project conditions during both peak hours.

It should be noted that at some intersections the average delay is shown to decrease with the addition of Project traffic. This occurs because the intersection delay is a weighted average of all intersection movements. When traffic is added to movements with delays lower than the average intersection delay, the average delay for the entire intersection can decrease. Furthermore, the congestion and queue spillback at an adjacent intersection can constrain the traffic volume at some intersections resulting in a small decrease in average delay.





**Figure 20**  
**Cumulative (2040) Intersection Level of Service Summary**



**Figure 21**  
**Cumulative (2040) Plus Project Intersection Level of Service Summary**

**Table 18**  
**Cumulative (2040) Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions									
				General Plan Conditions		Project Conditions			With Improvement				
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Critical Delay	
1	Marsh Road & Bayfront Expressway*	AM	Signal	68.7	E	65.6	E	<4	<0.8				
	Haven Avenue Southbound	AM		71.2	E	73.4	E	<4	<0.8				
	Haven Avenue Southbound	PM	Signal	65.0	E	77.9	E	12.9	12.5				
	Haven Avenue Southbound	PM		67.7	E	67.7	E	<4	<0.8				
2	Marsh Road & US 101 Northbound Off-Ramp	AM	Signal	60.9	E	62.2	E	<4	1.5				
		PM		22.9	C	22.8	C	<4	<0.8				
3	Marsh Road & US 101 Southbound Off-Ramp	AM	Signal	22.8	C	24.4	C	<4	2.0				
		PM		19.2	B	18.8	B	<4	<0.8				
4	Marsh Road & Scott Drive	AM	Signal	31.9	C	31.8	C	<4	<0.8				
		PM		17.9	B	18.1	B	<4	<0.8				
5	Marsh Road & Bohannon Drive/Florence Street	AM	Signal	58.0	E	60.4	E	<4	4.9	56.7	E	<0.8	
		PM		52.5	D	53.6	D	<4	1.6	48.3	D	<0.8	
6	Marsh Road & Bay Road	AM	Signal	64.2	E	64.8	E	<4	<0.8				
		PM		47.6	D	54.9	D	7.3	14.4				
7	Chrysler Drive & Bayfront Expressway	AM	Signal	13.1	B	12.8	B	<4	6.4				
		PM		39.5	D	36.3	D	<4	<0.8				
8	Chilco Street & Bayfront Expressway Chilco Street Eastbound	AM	Signal	44.5	D	49.2	D	4.7	13.5				
		AM		112.4	F	108.9	F	<4	<0.8				
		PM		69.6	E	66.9	E	<4	<0.8				
9	MPK 21 Driveway & Bayfront Expressway	AM	Signal	5.7	A	5.6	A	<4	<0.8				
		PM		36.3	D	36.1	D	<4	<0.8				
10	MPK 20 Driveway (east) & Bayfront Expressway	AM	Signal	10.0	B	9.9	A	<4	<0.8				
		PM		18.7	B	18.8	B	<4	<0.8				
11	Chrysler Drive & Constitution Drive	AM	Signal	>120	F	>120	F	<4	<0.8				
		PM		>120	F	>120	F	<4	<0.8				
12	Chilco Street & Constitution Drive/MPK 22 Driveway[2]	AM	Signal	52.9	D	51.1	D	<4	<0.8				
		PM		113.5	F	101.8	F	<4	<0.8				
13	Chilco Street & Hamilton Avenue	AM	AWSC	24.5	C	27.1	D	<4	2.6				
		PM		>120	F	>120	F	24.7	24.7				Traffic signal potentially feasible
14	Ravenswood Avenue & Middlefield Road	AM	Signal	49.7	D	49.7	D	<4	<0.8				
		PM		20.2	C	19.5	B	<4	<0.8				

**Table 18 (continued)**  
**Cumulative (2040) Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions									
				General Plan Conditions		Project Conditions			With Improvement				
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Critical Delay	
15	Ringwood Avenue & Middlefield Road	AM	Signal	13.2	B	13.2	B	<4	<0.8				
		PM		21.0	C	21.1	C	<4	<0.8				
16	Willow Road & Bayfront Expressway*[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
		PM		OVERSAT	F	OVERSAT	F	<4	<0.8				
17	Willow Road & Hamilton Avenue[1][2]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
	Hamilton Avenue Southbound	AM		>120	F	>120	F	<4	<0.8				
	Main Street Northbound	AM		>120	F	>120	F	<4	<0.8				
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
	Hamilton Avenue Southbound	PM		>120	F	>120	F	<4	<0.8				
	Main Street Northbound	PM		>120	F	>120	F	<4	>120				
18	Willow Road & Park Street (future intersection)[1]	AM	Signal	Project Intersection		OVERSAT	F	34.2	49.1			No feasible Improvement	
		PM				OVERSAT	F	17.2	23.1				
19	Willow Road & Ivy Drive[1]	AM	Signal	OVERSAT	F	OVERSAT	F	46.2	98.7	OVERSAT	F		
	Ivy Drive Southbound	AM		70.9	E	69.6	E	<4	<0.8	61.2	E	<0.8	
		PM	Signal	OVERSAT	F	OVERSAT	F	80.8	102.4	OVERSAT	F		
	Ivy Drive Southbound	PM		68.1	E	71.7	E	<4	3.6	49.0	D	<0.8	
20	Willow Road & O'Brien Drive[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
	O'Brien Drive Northbound	AM		>120	F	80.4	F	<4	<0.8				
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
	O'Brien Drive Northbound	PM		>120	F	>120	F	<4	<0.8				
21	Willow Road & Newbridge Street[1]	AM	Signal	OVERSAT	F	OVERSAT	F	25.9	74.2	OVERSAT	F		
	Newbridge Street Southbound	AM		>120	F	108.8	F	<4	<0.8	>120	F	67.3	
	Newbridge Street Northbound	AM		>120	F	>120	F	101.4	>120	73.5	E	<0.8	
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8	OVERSAT	F		
	Newbridge Street Southbound	PM		84.3	F	>120	F	47.1	74.2	>120	F	>120	
	Newbridge Street Northbound	PM		>120	F	>120	F	<4	<0.8	50.7	D	<0.8	
22	Willow Road & US 101 Northbound Ramps[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
		PM		OVERSAT	F	OVERSAT	F	<4	<0.8				
23	Willow Road & US 101 Southbound Ramps[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
		PM		OVERSAT	F	OVERSAT	F	<4	<0.8				
24	Willow Road & Bay Road[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	5.4	OVERSAT	F		
	Bay Road Southbound	AM		>120	F	>120	F	30.3	30.3	27.8	C	<0.8	
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8	OVERSAT	F		
	Bay Road Southbound	PM		75.6	E	82.7	F	7.0	7.0	26.5	C	<0.8	

**Table 18 (continued)  
Cumulative (2040) Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions									
				General Plan Conditions		Project Conditions			With Improvement				
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Critical Delay	
25	Willow Road & Hospital Plaza/Durham Street[1]	AM	Signal	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<4	11.0	<b>OVERSAT</b>	F		
	VA Medical Center Southbound	AM		74.8	E	74.7	E	<4	<0.8	74.7	E	<0.8	
	Durham Street Northbound	AM		>120	F	>120	F	6.0	5.4	>120	F	<0.8	
		PM	Signal	<b>OVERSAT</b>	F	<b>OVERSAT</b>	F	<4	1.3	<b>OVERSAT</b>	F		
	VA Medical Center Southbound	PM		74.2	E	74.5	E	<4	<0.8	69.4	E	<0.8	
	Durham Street Northbound	PM		88.1	F	90.3	F	<4	2.8	59.9	E	<0.8	
26	Willow Road & Coleman Avenue	AM	Signal	34.9	C	34.3	C	<4	<0.8				
		PM		13.1	B	13.2	B	<4	<0.8				
27	Willow Road & Gilbert Avenue	AM	Signal	24.4	C	23.9	C	<4	<0.8				
		PM		14.2	B	14.1	B	<4	<0.8				
28	Willow Road & Middlefield Road	AM	Signal	<b>64.5</b>	E	<b>65.0</b>	E	<4	<0.8				
	Middlefield Road Southbound	AM		<b>69.9</b>	E	<b>70.4</b>	E	<4	<0.8				
	Middlefield Road Northbound	AM		<b>67.4</b>	E	<b>67.2</b>	E	<4	<0.8				
		PM	Signal	42.5	D	42.4	D	<4	<0.8				
	Middlefield Road Southbound	PM		42.1	D	42.2	D	<4	<0.8				
	Middlefield Road Northbound	PM		40.6	D	40.8	D	<4	<0.8				
29	O'Brien Drive/Loop Road & Main Street/O'Brien Drive (future intersection)	AM	Roundabout	Project		8.8	A	8.8	8.8				
		PM		Intersection		11.0	B	11.0	11.0				
30	O'Brien Drive & Kavanaugh Drive	AM	AWSC	>120	F	>120	F	105.8	105.8			Traffic signal potentially feasible	
		PM		>120	F	>120	F	<4	<0.8				
31	Adams Drive & Adams Court	AM	TWSC	20.1	C	17.8	C	<4	<0.8				
		PM		16.4	C	12.7	B	<4	<0.8				
32	Adams Drive & O'Brien Drive	AM	TWSC	<b>62.4</b>	F	>120	F	>120	>120			Traffic signal potentially feasible	
		PM		>120	F	>120	F	>120	>120				
33	University Avenue & Bayfront Expressway*	AM	Signal	14.8	B	13.3	B	<4	<0.8				
		PM		>120	F	>120	F	<4	2.9				

**Notes:**  
 \* Denotes CMP Intersection  
 AWSC - All Way Stop Control; TWSC - Two Way Stop Control  
<sup>1</sup> Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported  
 "OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.  
 [1] Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in average delay and critical delay calculated using Vistro.  
 [2] The intersection is not considered as non-compliant under cumulative plus project conditions because the critical movement of the local approach shifts with the addition of project traffic.  
**Bold** indicates substandard level of service  
**Bold** indicates noncompliance. The project exceeds thresholds in the City of Menlo Park's TIA Guidelines.

**Table 19**  
**Cumulative (2040) Intersection Levels of Service (East Palo Alto)**

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions							
				General Plan Conditions		with Project			With Improvement		
				Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C	Avg. Delay (sec)	LOS
34	University Avenue & Purdue Avenue	AM	Signalized	25.9	C	28	C	0.8	0.017		
		PM		37.1	D	40.8	D	4.2	0.031		
35	University Avenue & Adams Drive	AM	TWSC	>120	F	>120	F	1.4	0.253		
		PM		>120	F	>120	F	-7.3	-0.130		
36	University Avenue & O'Brien Drive	AM	Signalized	21.1	C	43.1	D	29.3	0.245		
		PM		21.3	C	32.6	C	14.1	0.175		
37	University Avenue & Notre Dame Avenue	AM	Signalized	8.0	A	10.6	B	3.1	0.070		
		PM		12.2	B	15.6	B	4.1	0.038		
38	University Avenue & Kavanaugh Drive	AM	Signalized	26.8	C	17.5	B	-12.1	-0.110		
		PM		23.1	C	24.8	C	0.8	0.009		
39	University Avenue & Bay Road	AM	Signalized	48.8	D	53.5	D	8.9	0.054		
		PM		68.3	E	69.0	E	-1.9	-0.008		
40	University Avenue & Runnymede Street	AM	Signalized	9.7	A	11.7	B	11	0.075		
		PM		8.9	A	8.9	A	3.6	0.102		
41	University Avenue & Bell Street	AM	Signalized	14.9	B	16.2	B	2	0.067		
		PM		26.4	C	34.8	C	13.4	0.069		
42	University Avenue & Donohoe Street*	AM	Signalized	OVERSAT	F	OVERSAT	F	-1.4	-0.002		Corridor
		PM		OVERSAT	F	OVERSAT	F	-4.9	-0.009		Improvement
43	US 101 Northbound Off-Ramp & Donohoe Street*	AM	Signalized	OVERSAT	F	OVERSAT	F	77.2	0.158		Corridor
		PM		OVERSAT	F	OVERSAT	F	46.5	0.102		Improvement
44	Cooley Avenue & Donohoe Street*	AM	Signalized	OVERSAT	F	OVERSAT	F	29.3	0.091		Corridor
		PM		OVERSAT	F	OVERSAT	F	63.7	0.143		Improvement
45	University Avenue & US 101 Southbound Ramps*	AM	Signalized	OVERSAT	F	OVERSAT	F	-2.0	-0.004		Corridor
		PM		OVERSAT	F	OVERSAT	F	6.7	0.016		Improvement
46	University Avenue & Woodland Avenue*	AM	Signalized	OVERSAT	F	OVERSAT	F	14.1	0.040		Corridor
		PM		OVERSAT	F	OVERSAT	F	19.1	0.045		Improvement
47	E. Bayshore Road & Donahoe Street*	AM	Signalized	>120	F	>120	F	-22.4	-0.048		Corridor
		PM		>120	F	>120	F	-5.3	-0.011		Improvement

**Table 19 (continued)**  
**Cumulative (2040) Intersection Levels of Service (East Palo Alto)**

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions							
				General Plan Conditions		with Project				With Improvement	
				Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C	Avg. Delay (sec)	LOS
48	E. Bayshore Road & Holland Street	AM	TWSC	8.8	A	8.8	A	0.0	0.000		
		PM		10.0	A	10.0	A	0.0	0.000		
49	Saratoga Avenue & Newbridge Street	AM	TWSC	<b>&gt;120</b>	<b>F</b>	<b>&gt;120</b>	<b>F</b>	<b>9.8</b>	<b>0.061</b>	<b>No Feasible Improvement</b>	<b>Corridor</b>
		PM		<b>40.0</b>	<b>E</b>	28.6	D	-2.2	-0.120		
50	E. Bayshore Road & Euclid Avenue*	AM	AWSC	<b>OVERSAT</b>	<b>F</b>	<b>OVERSAT</b>	<b>F</b>	<b>53.8</b>	<b>0.057</b>	<b>Improvement</b>	<b>Improvement</b>
		PM		<b>OVERSAT</b>	<b>F</b>	<b>OVERSAT</b>	<b>F</b>	-2.7	-0.009		
51	Clarke Avenue & E. Bayshore Road	AM	Signalized	14.1	B	14.2	B	0.2	0.014		
		PM		13.9	B	14.0	B	0.2	0.007		
52	Pulgas Avenue & E. Bayshore Road	AM	Signalized	25.4	C	26.5	C	1.4	0.017		
		PM		48.1	D	47.3	D	-0.4	-0.002		

Note:  
 \* Denotes a CMP intersection  
 AWSC - All Way Stop Control; TWSC - Two Way Stop Control  
<sup>1</sup> Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.  
 "OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.  
 \* Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in critical delay and v/c calculated using Traffix.  
**Bold** indicates substandard level of service  
**Bold** indicates adverse effect

## **Adverse Effects and Recommended Improvements**

For intersections that are non-compliant under both near-term plus project conditions and cumulative plus project conditions, the recommended improvements proposed under near term plus project conditions would be sufficient to address cumulative non-compliance. Improvements for intersections that are non-compliant only under cumulative plus project conditions are described below.

### **Marsh Road and Bohannon Drive/Florence Street (#5)**

This intersection is expected to operate at an unacceptable LOS E during the AM peak hour and an acceptable LOS D during the PM peak hour under cumulative conditions. The addition of Project traffic would cause the average critical delay to increase by more than 0.8 during the AM peak hour. The intersection would continue to operate at an acceptable LOS D during the PM peak hour. This constitutes non-compliance during the AM peak hour according to the thresholds established by the City of Menlo Park.

Modification of the westbound approach at this intersection to a left-turn lane, two through lanes, and a right-turn lane would improve the average delay to better than cumulative no project conditions. Menlo Park's TIF program proposes Class II buffered bike lanes along Marsh Road from Bay Road to Scott Road in both directions and the removal of on-street parking in the eastbound direction. The restriping of the vehicle travel lanes to include a westbound right-turn only lane and the proposed Class II buffered bike lane would require narrowing the travel lanes to 11 feet and removal of the median. While this is possible, removal of the median would require removing at least one tree as well as the signal pole in the median. Upgrades to at least one mast arm would be required to replace the removed median signal. Physical improvements at this intersection are considered infeasible due to right-of-way constraints and/or adverse effects on pedestrian and bicycle travel. The City's TIF program includes multi-modal improvements along the Marsh Road corridor such as Class II buffered bike lanes along Marsh Road from Bay Road to Scott Road, and installing sidewalks along the north-side of Marsh Road between Page Street and Bohannon Drive/Florence Street. Implementing recommended multi-modal facilities along the corridor (from the City's TIF program) could shift some motor vehicle traffic to alternative modes of travel and reduce congestion. With implementation of these multi-modal improvements, the intersection deficiencies could be further reduced and partially address the Proposed Project's share of the non-compliant operations at this intersection.

### **Willow Road and Ivy Drive (#19)**

Willow Road and Ivy Drive is an intersection on the Willow Road Corridor, which is expected to experience capacity issues due to unserved demand at the intersections. This intersection would operate unacceptably under cumulative conditions during both peak hours. With the addition of Project traffic, it would continue to operate unacceptably during both peak hours. In the PM peak hour, the increase in the critical movement delay of the local approach would be greater than 0.8 seconds. This constitutes non-compliance during the PM peak hour according to the thresholds established by the City of Menlo Park.

The Menlo Park TIF proposes to install a right-turn overlap phase on southbound Ivy Drive and restrict eastbound Willow Road U-turns. This would improve the critical movement delay of the local approach to better than cumulative no project conditions. The Project is required to pay traffic impact fees according to the City's current TIF schedule.



**Willow Road and Hospital Plaza/Durham Street (#25)**

Willow Road and Hospital Plaza/Durham Street is an intersection on the Willow Road Corridor, which is expected to experience capacity issues due to unserved demand at the intersections. This intersection would operate unacceptably under cumulative conditions during both peak hours. With the addition of Project traffic, it would continue to operate unacceptably during both peak hours. In the AM and PM peak hour, the increase in the critical movement delay of the local approach would be greater than 0.8 seconds. This constitutes non-compliance during both peak hours according to the thresholds established by the City of Menlo Park.

The recommended improvement measure for this intersection is restriping northbound Durham Street as a shared left-through lane and right-turn lane, and adding a northbound right turn overlap phase. With this improvement, the critical movement delay of the local approach would improve to better than cumulative no project conditions in the AM peak hour. The PM peak hour would continue to be non-compliant. If this recommended improvement measure is implemented, the Project should contribute its fair share (25%) towards the improvement. Fair share is calculated as the percentage of net project traffic generated of the overall cumulative traffic growth at this intersection.

**University Avenue and Woodland Avenue (#46)**

University Avenue and Woodland Avenue is in the vicinity of the US 101/University Avenue interchange and is expected to experience capacity issues due to unserved demand at the intersections. This intersection would operate unacceptably under cumulative conditions during both peak hours. With the addition of Project traffic, it would continue to operate unacceptably during both peak hours. In the AM and PM peak hour, the increase in the average critical delay would be greater than four seconds and the increase in the volume to capacity ratio would be greater than 0.01. This constitutes non-compliance during both peak hours according to the thresholds established by the City of East Palo Alto.

The recommended Donohoe Street improvements (see Appendix E) at Euclid Avenue and at the US 101 northbound on-ramp would improve traffic flow on University Avenue and eliminate the queue spillback that extends from Donohoe Street past Woodland Avenue. While the University Avenue and Woodland Avenue intersection is expected to continue to operate at LOS F during both peak hours, the Donohoe Street improvements would reduce the average delay at the intersection below cumulative conditions without the Project. With these improvements, the intersection would comply with the City of East Palo Alto's level of service policy. As discussed under the background plus Project discussion above, the project would pay its fair share costs towards the intersection improvements at the 6 intersections of the University Avenue/Donohoe Street/US 101 corridor.

**Saratoga Avenue and Newbridge Street (#49)**

This intersection is expected to operate at an acceptable LOS F during the AM peak hour and an unacceptable LOS E during the PM peak hour under cumulative conditions. With the addition of Project traffic, the intersection average critical delay at the intersection would increase by four seconds and the volume to capacity ratio would increase by 0.01 during the AM peak hour. This constitutes as non-compliance during the AM peak hour according to the thresholds established by the City of East Palo Alto.

Since the intersection currently operates as two-way-stop-controlled, potential modification to bring the intersection to pre-project conditions would be to signalize it. The intersection would meet the MUTCD signal warrant during both peak hours under project conditions (see Appendix F). With this improvement, the intersection would operate acceptably at LOS C during the AM peak hour and LOS B during the PM peak hour under cumulative plus project conditions. However, since the intersection is located only 200 feet south of Willow Road, signalization is not recommended. Short of signalization, no other improvements are feasible. Furthermore, given this intersection is located outside of the City of Menlo Park, the City cannot ensure implementation of any improvements. This intersection is also not listed with improvements in the City of East Palo Alto TIF.

**Bayshore Road and Euclid Avenue (#50)**

Bayshore Road and Euclid Avenue is in the vicinity of the US 101/University Avenue interchange and is expected to experience capacity issues due to unserved demand at the intersections. This intersection would operate unacceptably under cumulative conditions during both peak hours. With the addition of Project traffic, it would continue to operate unacceptably during both peak hours. In the AM peak hour, the increase in the average critical delay would be greater than four seconds and the increase in the volume to capacity ratio would be greater than 0.01. This constitutes non-compliance during the AM peak hour according to the thresholds established by the City of East Palo Alto.

Since the intersection currently operates as all-way-stop-controlled, potential modification to bring the intersection to pre-project conditions would be to signalize it and add a westbound right turn only lane. This improvement is included in the recommended Donohoe Street improvements (see Appendix E, Transportation/Traffic, of this EIR). The proposed improvements at Euclid Avenue and at the US 101 northbound on-ramp would improve traffic flow on University Avenue and eliminate the queue spillback that extends from Donohoe Street past Woodland Avenue. This would reduce the average delay at the intersection below cumulative conditions without the project. With these improvements, the intersection would be in compliance with the City of East Palo Alto's level of service policy. As discussed under the background plus project discussion above, the Project would pay its fair share costs towards the intersection improvements at the 6 intersections of the University Avenue/Donohoe Street/US 101 corridor, which includes the intersection at Bayshore Road and Euclid Avenue.

## Cumulative (2040) Plus Dumbarton Rail Intersection Levels of Service

The results of the intersection level of service analysis under cumulative conditions with the Dumbarton Rail are summarized in Table 20 and 21. All study intersections are expected to operate better cumulative conditions with the Dumbarton rail than without the Dumbarton rail. The intersection LOS calculation sheets are included in Appendix C. The following study intersection would improve to acceptable LOS with the Dumbarton Rail during at least one peak hour:

6. Marsh Road and Bay Road (AM peak hour)

## Cumulative (2040) Plus Project with Dumbarton Rail Intersection Levels of Service

The results of the intersection level of service analysis under cumulative (2040) plus project conditions with the Dumbarton rail are summarized in Tables 20 and 21. Compared to cumulative plus project conditions without the Dumbarton Rail, the delay at all of the intersections would improve with Dumbarton Rail. While the overall motor vehicle operations would experience reduced delay with Dumbarton Rail, when evaluating for intersection LOS compliance, the determination is based on the relative increase in delay due to the Project compared to no project conditions (cumulative conditions with Dumbarton Rail). Comparing “cumulative plus project with Dumbarton Rail” conditions to “cumulative plus project without Dumbarton Rail” conditions, the following study intersection would no longer be non-compliant:

25. Willow Road & Durham Street

The following additional study intersections would be non-compliant under cumulative plus project conditions with the Dumbarton rail as compared to cumulative plus project conditions without the Dumbarton Rail:

6. Marsh Road and Bay Road (AM peak hour)
11. Chrysler Drive and Constitution Drive (AM peak hour)
16. Willow Road and Bayfront Expressway (AM peak hour)

Under cumulative conditions with or without the Project, the road network is over saturated. Since the Dumbarton rail would reduce vehicular traffic in the area due to the increase in transit mode share, the Menlo Park Travel Demand model assigns more Project-generated traffic at some intersections where vehicular capacity is now available. Menlo Park’s level of service standards and adverse effect criteria are very stringent where a small change in traffic can trigger a non-compliance at an intersection. Therefore, the relative increase in delay due to the Project at some intersections between “cumulative with Dumbarton Rail” and “cumulative plus project with Dumbarton Rail” would be greater than the Menlo Park’s threshold, causing additional intersections to be non-compliant under cumulative plus project conditions with the Dumbarton rail.

## **Adverse Effects and Recommended Improvements**

For intersections that are non-compliant under cumulative plus project conditions and cumulative plus project with Dumbarton rail conditions, the improvements proposed under cumulative plus project conditions would be sufficient to address cumulative non-compliance. Improvements for intersections that are non-compliant only under cumulative plus project with Dumbarton rail conditions are described below. As noted below, no additional feasible improvements are identified and the improvement measures identified below are for informational purposes only.

### **Marsh Road and Bay Road (#6)**

This intersection is expected to operate at an acceptable LOS D during both peak hours under cumulative conditions with the Dumbarton rail. The addition of Project traffic would cause the intersection to operate at LOS E during the AM peak hour. The intersection would continue to operate at an acceptable LOS D during the PM peak hour. This constitutes non-compliance during the AM peak hour according to the thresholds established by the City of Menlo Park.

Physical improvements at this intersection are considered infeasible due to right-of-way constraints and/or adverse effects on pedestrian and bicycle travel. Menlo Park's TIF program proposes Class II buffered bike lanes along Marsh Road from Bay Road to Scott Road in both directions. The improvement may lead to an overall increase in bicycle mode share but would not offset the Project traffic.

### **Chrysler Drive and Constitution Drive (#11)**

This intersection is expected to operate at an unacceptable LOS F during both peak hours under cumulative conditions with Dumbarton rail. With the addition of Project traffic, the average critical delay would increase by more than 0.8 seconds during the AM peak hour. The intersection would continue to operate acceptably during the PM peak hour. This constitutes non-compliance during the AM peak hour according to the thresholds established by the City of Menlo Park.

Physical improvements at this intersection are considered infeasible due to right-of-way constraints and/or adverse effects on pedestrian and bicycle travel.

### **Willow Road and Bayfront Expressway 9#16)**

Improvements for this intersection are discussed under the near term plus project section as part of the Willow Road corridor improvements, and is not repeated here.

**Table 20**  
**Cumulative (2040) With Dumbarton Rail Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Traffic Control	Cumulative Conditions (With Dumbarton Rail)								
				No Project Conditions		Project Conditions			With Improvement			
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Critical Delay
1	Marsh Road & Bayfront Expressway*	AM	Signal	68.5	E	65.3	E	<4	<0.8			
	Haven Avenue Southbound	AM		70.5	E	71.7	E	<4	<0.8			
	Haven Avenue Southbound	PM	Signal	63.2	E	72.8	E	9.6	11.4			
	Haven Avenue Southbound	PM		67.6	E	67.6	E	<4	<0.8			
2	Marsh Road & US 101 Northbound Off-Ramp	AM	Signal	60.7	E	61.9	E	<4	1.4			
		PM		22.9	C	22.7	C	<4	<0.8			
3	Marsh Road & US 101 Southbound Off-Ramp	AM	Signal	22.8	C	22.6	C	<4	<0.8			
		PM		19.2	B	18.7	B	<4	<0.8			
4	Marsh Road & Scott Drive	AM	Signal	31.2	C	30.4	C	<4	<0.8			
		PM		17.8	B	17.8	B	<4	<0.8			
5	Marsh Road & Bohannon Drive/Florence Street	AM	Signal	57.8	E	58.7	E	<4	2.7	55.1	E	<0.8
		PM		51.5	D	53.1	D	<4	2.7	48.1	D	<0.8
6	Marsh Road & Bay Road	AM	Signal	54.5	D	63.5	E	9.0	18.9	<i>No feasible Improvement</i>		
		PM		47.9	D	51.2	D	<4	6.8			
7	Chrysler Drive & Bayfront Expressway	AM	Signal	13.0	B	12.5	B	<4	6.0			
		PM		38.3	D	33.5	C	<4	<0.8			
8	Chilco Street & Bayfront Expressway	AM	Signal	43.2	D	45.5	D	<4	7.3			
	Chilco Street Eastbound	AM		116.3	F	108.8	F	<4	<0.8			
	Chilco Street Eastbound	PM		68.3	E	65.6	E	<4	<0.8			
9	MPK 21 Driveway & Bayfront Expressway	AM	Signal	5.7	A	5.6	A	<4	<0.8			
		PM		36.3	D	36.1	D	<4	<0.8			
10	MPK 20 Driveway (east) & Bayfront Expressway	AM	Signal	10.1	B	9.9	A	<4	<0.8			
		PM		18.6	B	18.8	B	<4	<0.8			
11	Chrysler Drive & Constitution Drive	AM	Signal	>120	F	>120	F	31.2	50.3	<i>No feasible Improvement</i>		
		PM		>120	F	>120	F	<4	<0.8			
12	Chilco Street & Constitution Drive/MPK 22 Driveway[2]	AM	Signal	50.1	D	53.9	D	<4	<0.8			
		PM		111.8	F	99.2	F	<4	<0.8			
13	Chilco Street & Hamilton Avenue	AM	AWSC	23.6	C	24.3	C	<4	<0.8	<i>Traffic signal potentially feasible</i>		
		PM		>120	F	>120	F	18.2	18.2			
14	Ravenswood Avenue & Middlefield Road	AM	Signal	49.7	D	49.7	D	<4	<0.8			
		PM		20.3	C	19.5	B	<4	<0.8			

**Table 20 (continued)**  
**Cumulative (2040) with Dumbarton Rail Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Traffic Control	Cumulative Conditions (With Dumbarton Rail)									
				No Project Conditions		Project Conditions			With Improvement				
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Critical Delay	
15	Ringwood Avenue & Middlefield Road	AM	Signal	13.2	B	13.2	B	<4	<0.8				
		PM		21.0	C	21.1	C	<4	<0.8				
16	Willow Road & Bayfront Expressway*[1]	AM	Signal	OVERSAT	F	OVERSAT	F	5.3	<0.8	<b>No feasible Improvement</b>			
		PM		OVERSAT	F	OVERSAT	F	<4	<0.8				
17	Willow Road & Hamilton Avenue[1][2]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
	Hamilton Avenue Southbound	AM		>120	F	>120	F	<4	<0.8				
	Main Street Northbound	AM		>120	F	>120	F	<4	<0.8				
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
	Hamilton Avenue Southbound	PM		>120	F	>120	F	27.4	<0.8				
	Main Street Northbound	PM		>120	F	>120	F	<4	>120				
18	Willow Road & Park Street (future intersection)[1]	AM	Signal	Project Intersection		OVERSAT	F	33.6	47.8	<b>No feasible Improvement</b>			
		PM				OVERSAT	F	16.2	21.7				
19	Willow Road & Ivy Drive[1]	AM	Signal	OVERSAT	F	OVERSAT	F	52.0	105.8	OVERSAT	F		
	Ivy Drive Southbound	AM		72.8	E	69.6	E	<4	<0.8	61.3	E	<0.8	
		PM	Signal	OVERSAT	F	OVERSAT	F	85.2	107.3	OVERSAT	F		
	Ivy Drive Southbound	PM		65.2	E	71.7	E	6.5	7.9	60.4	E	<0.8	
20	Willow Road & O'Brien Drive[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
	O'Brien Drive Northbound	AM		108.2	F	80.4	F	<4	<0.8				
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
	O'Brien Drive Northbound	PM		>120	F	>120	F	<4	<0.8				
21	Willow Road & Newbridge Street[1]	AM	Signal	OVERSAT	F	OVERSAT	F	31.5	97.3	OVERSAT	F		
	Newbridge Street Southbound	AM		115.1	F	108.8	F	<4	<0.8	>120	F	103.1	
	Newbridge Street Northbound	AM		>120	F	>120	F	>120	>120	23.2	C	<0.8	
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8	OVERSAT	F		
	Newbridge Street Southbound	PM		83.5	F	>120	F	42.8	67.4	>120	F	101.1	
	Newbridge Street Northbound	PM		>120	F	>120	F	<4	<0.8	31.2	C	<0.8	
22	Willow Road & US 101 Northbound Ramps[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
		PM		OVERSAT	F	OVERSAT	F	<4	<0.8				
23	Willow Road & US 101 Southbound Ramps[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8				
		PM		OVERSAT	F	OVERSAT	F	<4	<0.8				
24	Willow Road & Bay Road[1]	AM	Signal	OVERSAT	F	OVERSAT	F	<4	6.7	OVERSAT	F		
	Bay Road Southbound	AM		>120	F	>120	F	36.1	36.1	27.6	C	<0.8	
		PM	Signal	OVERSAT	F	OVERSAT	F	<4	<0.8	OVERSAT	F		
	Bay Road Southbound	PM		74.5	E	81.7	F	7.2	7.2	26.5	C	<0.8	

**Table 20 (continued)  
Cumulative (2040) With Dumbarton Rail Intersection Levels of Service (Menlo Park)**

#	Intersection	Peak Hour	Traffic Control	Cumulative Conditions (With Dumbarton Rail)								
				No Project Conditions		Project Conditions			With Improvement			
				Avg. Delay (sec) <sup>1</sup>	LOS	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Delay	Incr. in Avg. Critical Delay	Avg. Delay (sec) <sup>1</sup>	LOS	Incr. in Avg. Critical Delay
25	Willow Road & Hospital Plaza/Durham Street[1]	AM	Signal	<b>OVERSAT</b>	<b>F</b>	<b>OVERSAT</b>	<b>F</b>	<4	<0.8			
	VA Medical Center Southbound	AM		<b>74.7</b>	<b>E</b>	<b>74.7</b>	<b>E</b>	<4	<0.8			
	Durham Street Northbound	AM		<b>&gt;120</b>	<b>F</b>	<b>&gt;120</b>	<b>F</b>	<4	<0.8			
		PM	Signal	<b>OVERSAT</b>	<b>F</b>	<b>OVERSAT</b>	<b>F</b>	<4	<0.8			
	VA Medical Center Southbound	PM		<b>74.2</b>	<b>E</b>	<b>74.0</b>	<b>E</b>	<4	<0.8			
	Durham Street Northbound	PM		<b>88.1</b>	<b>F</b>	<b>88.1</b>	<b>F</b>	<4	<0.8			
26	Willow Road & Coleman Avenue	AM	Signal	33.9	C	33.6	C	<4	3.4			
		PM		13.1	B	13.2	B	<4	<0.8			
27	Willow Road & Gilbert Avenue	AM	Signal	23.7	C	23.4	C	<4	<0.8			
		PM		14.1	B	13.9	B	<4	<0.8			
28	Willow Road & Middlefield Road	AM	Signal	<b>64.4</b>	<b>E</b>	<b>64.8</b>	<b>E</b>	<4	<b>0.8</b>			
	Middlefield Road Southbound	AM		<b>69.8</b>	<b>E</b>	<b>70.0</b>	<b>E</b>	<4	<0.8			
	Middlefield Road Northbound	AM		<b>67.4</b>	<b>E</b>	<b>67.2</b>	<b>E</b>	<4	<0.8			
		PM	Signal	42.5	D	42.3	D	<4	<0.8			
	Middlefield Road Southbound	PM		42.1	D	42.1	D	<4	<0.8			
	Middlefield Road Northbound	PM		40.6	D	40.7	D	<4	<0.8			
29	O'Brien Drive/Loop Road & Main Street/O'Brien Drive (future intersection)	AM	Roundabout	Project		8.4	A	8.4	8.4			
		PM		Intersection		10.2	B	10.2	10.2			
30	O'Brien Drive & Kavanaugh Drive	AM	AWSC	>120	F	>120	F	>120	>120			Traffic signal potentially feasible
		PM		>120	F	>120	F	10.9	10.9			
31	Adams Drive & Adams Court	AM	TWSC	18.9	C	17.3	C	<4	<0.8			
		PM		15.8	C	12.6	B	<4	<0.8			
32	Adams Drive & O'Brien Drive	AM	TWSC	<b>47.2</b>	<b>E</b>	>120	F	>120	>120			Traffic signal potentially feasible
		PM		>120	F	>120	F	>120	>120			
33	University Avenue & Bayfront Expressway*	AM	Signal	14.7	B	13.1	B	<4	<0.8			
		PM		>120	F	>120	F	<4	<0.8			

**Notes:**

\* Denotes CMP Intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control

<sup>1</sup> Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported

"OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.

[1] Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in average delay and critical delay calculated using Vistro.

[2] The intersection is not considered as non-compliant under cumulative plus project conditions because the critical movement of the local approach shifts with the addition of project traffic.

**Bold** indicates substandard level of service

**Bold** indicates noncompliance. The project exceeds thresholds in the City of Menlo Park's TIA Guidelines.

**Table 21**  
**Cumulative (2040) With Dumbarton Rail Intersection Levels of Service (East Palo Alto)**

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions (Dumbarton Rail)							
				No Project		with Project				With Improvement	
				Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C	Avg. Delay (sec)	LOS
34	University Avenue & Purdue Avenue	AM	Signalized	25.9	C	22.3	C	-3.8	-0.071		
		PM		28.0	C	24.2	C	-3.6	-0.081		
35	University Avenue & Adams Drive	AM	TWSC	>120	F	>120	F	1.5	0.322		
		PM		>120	F	>120	F	-6.9	-0.122		
36	University Avenue & O'Brien Drive	AM	Signalized	20.4	C	38.7	D	24.3	0.225		
		PM		20.1	C	31.4	C	14.4	0.176		
37	University Avenue & Notre Dame Avenue	AM	Signalized	8.0	A	10.6	B	3.1	0.070		
		PM		11.3	B	14.8	B	4.1	0.036		
38	University Avenue & Kavanaugh Drive	AM	Signalized	24.7	C	17.5	B	3.1	0.070		
		PM		22.7	C	23.5	C	4.4	0.039		
39	University Avenue & Bay Road	AM	Signalized	47.4	D	52	D	8.4	0.056		
		PM		64.0	E	67.7	E	3.7	0.012		
40	University Avenue & Runnymede Street	AM	Signalized	9.4	A	10.9	B	8.1	0.062		
		PM		8.9	A	8.9	A	3.5	0.100		
41	University Avenue & Bell Street	AM	Signalized	14.9	B	15.9	B	1.6	0.055		
		PM		26.1	C	32.9	C	10.9	0.062		
42	University Avenue & Donohoe Street*	AM	Signalized	OVERSAT	F	OVERSAT	F	4.6	0.011		Corridor
		PM		OVERSAT	F	OVERSAT	F	-4.9	-0.009		Improvement
43	US 101 Northbound Off-Ramp & Donohoe Street**	AM	Signalized	OVERSAT	F	OVERSAT	F	77.2	0.158		Corridor
		PM		OVERSAT	F	OVERSAT	F	48.9	0.108		Improvement
44	Cooley Avenue & Donohoe Street*	AM	Signalized	OVERSAT	F	OVERSAT	F	27.2	0.085		Corridor
		PM		OVERSAT	F	OVERSAT	F	62.9	0.143		Improvement
45	University Avenue & US 101 Southbound Ramps**	AM	Signalized	OVERSAT	F	OVERSAT	F	-2.5	-0.005		Corridor
		PM		OVERSAT	F	OVERSAT	F	7.0	0.017		Improvement
46	University Avenue & Woodland Avenue*	AM	Signalized	OVERSAT	E	OVERSAT	E	14.1	0.040		Corridor
		PM		OVERSAT	F	OVERSAT	F	12.0	0.028		Improvement
47	E. Bayshore Road & Donahoe Street*	AM	Signalized	>120	F	>120	F	-8.8	-0.019		Corridor
		PM		>120	F	>120	F	-4.9	-0.010		Improvement



**Table 21 (continued)  
Cumulative (2040) With Dumbarton Rail Intersection Levels of Service (East Palo Alto)**

#	Intersection	Peak Hour	Traffic Control	Cumulative (2040) Conditions (Dumbarton Rail)							
				No Project		with Project			With Improvement		
				Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Critical Delay (sec)	Incr. in Critical V/C	Avg. Delay (sec)	LOS
48	E. Bayshore Road & Holland Street	AM	TWSC	8.8	A	8.8	A	0.0	0.000		
		PM		10.0	A	10.0	A	0.0	0.000		
49	Saratoga Avenue & Newbridge Street	AM	TWSC	>120	F	>120	F	4.7	0.075	<b>No Feasible Improvement</b>	
		PM		37.2	E	25.0	D	-2.6	-0.103		
50	E. Bayshore Road & Euclid Avenue*	AM	AWSC	OVERSAT	F	OVERSAT	F	42.4	0.062	<b>Corridor Improvement</b>	
		PM		OVERSAT	F	OVERSAT	F	-5.7	-0.016		
51	Clarke Avenue & E. Bayshore Road	AM	Signalized	14.1	B	14.2	B	0.1	0.008		
		PM		13.9	B	14.0	B	0.1	0.007		
52	Pulgas Avenue & E. Bayshore Road	AM	Signalized	25.4	C	26.2	C	1.1	0.013		
		PM		47.4	D	47.2	D	0.2	0.001		

**Note:**

\* Denotes a CMP intersection

AWSC - All Way Stop Control; TWSC - Two Way Stop Control

<sup>1</sup> Average delay is reported for signalized and AWSC intersections. For TWSC intersections, the delay for the worst stop-controlled movement is reported.

"OVERSAT" indicates that the SimTraffic microsimulation model indicates that the intersection would experience capacity issues where the demand cannot be served by the intersection. Oversaturated intersections would operate at LOS F.

\* Intersections were analyzed using Synchro/SimTraffic software due to the close proximity of these intersections. Changes in critical delay and v/c calculated using Traffix.

**Bold** indicates substandard level of service

**Bold** indicates adverse effect

## Intersection Vehicle Queuing

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis for intersection left-turning movements where the proposed project would add significant trips per lane in the vicinity of the Project Site and affect intersection operations (see Figure 22). This analysis provides a basis for estimating future storage requirements at these intersections (see Table 22). Vehicle queues were estimated using the methodology described in Chapter 1. The following turn movements were selected for evaluation:

- Northbound left-turn at Marsh Road and Bayfront Expressway
- Eastbound left-turn at Willow Road and Bayfront Expressway
- Eastbound left-turn and Southbound left-turn at Willow Road and Ivy Drive
- Southbound left-turn at Willow Road and US 101 southbound ramps
- Southbound left-turn at Willow Road and Bay Road
- Westbound shared left-through lane and Eastbound shared through-right lane at O'Brien Drive and Kavanaugh Drive
- Southbound shared left/through lane at Adams Drive and O'Brien Drive
- Eastbound left-turn and Southbound left-turn at University Avenue and O'Brien Drive
- Eastbound left-turn at University Avenue and Kavanaugh Drive

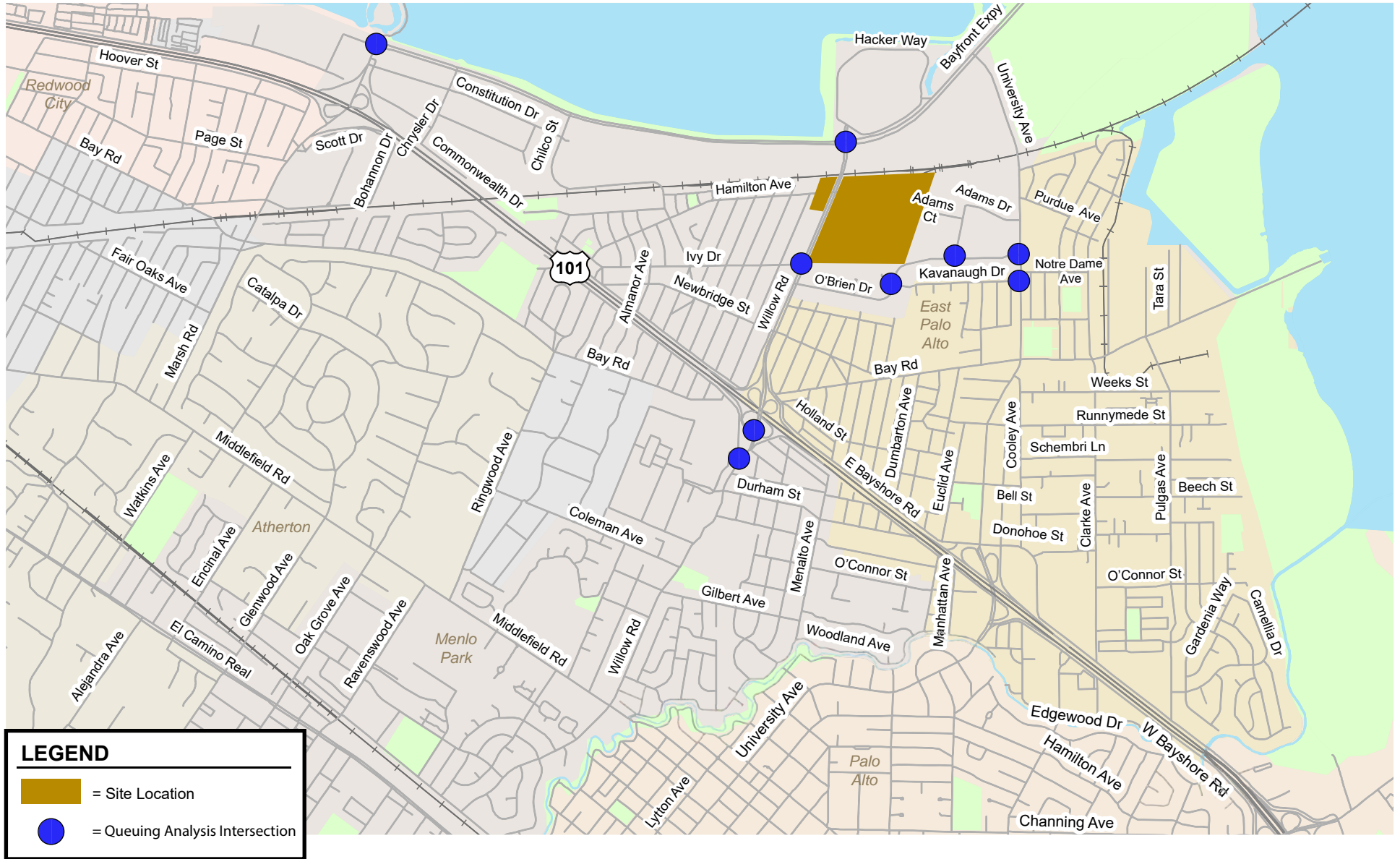
Locations where the estimated 95th percentile queues would exceed the available storage capacity for the movement are discussed below. Queuing issues are operational issues resulting from signal timing and queue storage provisions. Queuing issues are not considered a CEQA issue related to hazards.

### Eastbound Left-turn at Willow Road and Bayfront Expressway (#16)

The existing vehicle storage for the eastbound left turn pocket on Willow Road at Bayfront Expressway is 300 feet, which provides enough space for about 12 vehicles. Under existing conditions, the 95th percentile queue would exceed the storage of the left turn pocket by 12 vehicles in the AM peak hour. Under near-term conditions, the 95th percentile queue would exceed the storage length of the turn pocket by 15 vehicles during the AM peak hour and four vehicles during the PM peak hour. The Proposed Project would add three vehicles to the 95th percentile queue during the AM peak hour and PM peak hour. There is no room to extend the left turn pocket due to the emergency vehicle only lane cut in the median.

### Eastbound Left-turn at Willow Road and Ivy Drive (#19)

The existing vehicle storage for the eastbound left turn pocket on Willow Road at Ivy Drive is 125 feet, which provides enough space for about 5 vehicles. Under existing conditions, the 95th percentile queue would be accommodated by the left turn pocket. Under near-term conditions, the 95th percentile queue exceeds the storage length of the turn pocket by three vehicles during the AM peak hour. The Proposed Project would add one vehicle to the 95th percentile queue during the AM peak hour and one vehicle during the PM peak hour. There is no room to further extend this left-turn.



**Figure 22**  
Queuing Analysis Locations

**Southbound Left-turn at Willow Road and Bay Road (#24)**

The existing vehicle storage for the southbound left turn pocket on Willow Road at Bay Road is 250 feet, which provides enough space for about 10 vehicles. Under existing conditions, the 95th percentile queue would exceed the storage length of the left turn pocket by 6 vehicles. Under near-term conditions, the 95th percentile queue exceeds the storage length of the turn pocket by 13 vehicles during the AM peak hour and one vehicle during the PM peak hour. The Proposed Project would add six vehicles to the 95th percentile queue during the AM peak hour and three vehicles during the PM peak hour. Menlo Park's TIF has a project to add a second left-turn lane to this intersection, which would add additional storage for left-turning vehicles. The exact length of the addition will be determined during the design phase for the intersection improvement. Construction of the recommended improvement would reduce the queuing deficiency created by the Proposed Project.

**Eastbound Left-turn and Southbound left-turn at University Avenue and O'Brien Drive (#36)**

The existing vehicle storage for the eastbound left turn pocket on University Avenue at O'Brien Drive is 125 feet, which provides enough spaces for about 5 vehicles. Under existing conditions, the 95th percentile queue exceeds the storage length of the turn pocket by 3 vehicles during the AM peak hour. The Proposed Project would add 22 vehicles to the 95th percentile queue during the AM peak hour. There is no room to lengthen the eastbound left turn pocket.

The existing vehicle storage for the southbound left turn pocket on O'Brien Drive at University Avenue is 60 feet, which provides enough spaces for 2 vehicles. Under existing conditions, the 95th percentile queue exceeds the storage length of the turn pocket by one vehicle during the AM peak hour and 11 vehicles during the PM peak hour. The Project would add one vehicle to the 95th percentile queue during the AM peak hour. There would be no increase to the 95th percentile queue length during the PM peak hour. There is room to extend the left turn pocket to accommodate the estimated 95<sup>th</sup> percentile queue of 325 feet.

Menlo Park's Traffic Impact Fee (TIF) program identifies an improvement to signalize the nearby intersection at University Avenue and Adams Drive in East Palo Alto. This improvement may provide an alternative route for Project vehicles to access the Project Site via University Avenue, and alleviate potential queuing issues at this intersection.

**Table 22**  
**Intersection Vehicle Queuing Results**

Intersection Movement Peak Hour Period	Marsh Road & Bayfront Expressway <sup>4</sup>		Willow Road & Bayfront Expressway <sup>4</sup>		Willow Road & Ivy Drive <sup>4</sup>			
	NBLT		EBLT		EBLT		SBLT	
	AM	PM	AM	PM	AM	PM	AM	PM
<b>Existing</b>								
Cycle/Delay <sup>1</sup> (sec)	160	160	140	140	130	130	130	130
Lanes	3	3	1	1	1	1	1	1
Volume (vph)	1931	1822	195	88	49	44	11	32
95th% Queue (veh/ln)	36	29	24	5	4	3	1	2
95th% Queue (ft/ln)	900	725	600	125	100	75	25	50
Storage (ft/ ln)	1350	1350	300	300	125	125	125	125
Adequate (Y/N)	Y	Y	<b>N</b>	Y	Y	Y	Y	Y
<b>Near-Term</b>								
Cycle/Delay <sup>1</sup> (sec)	160	160	140	140	130	130	130	130
Lanes	3	3	1	1	1	1	1	1
Volume (vph)	1931	2034	210	151	81	80	11	35
95th% Queue (veh/ln)	36	34	27	8	8	5	1	2
95th% Queue (ft/ln)	900	850	675	200	200	125	25	50
Storage (ft/ ln)	1350	1350	300	300	125	125	125	125
Adequate (Y/N)	Y	Y	<b>N</b>	Y	<b>N</b>	Y	Y	Y
<b>Near-Term Plus Project</b>								
Cycle/Delay <sup>1</sup> (sec)	160	160	140	140	130	130	130	130
Lanes	3	3	1	1	1	1	1	1
Volume (vph)	2028	2225	225	189	91	83	65	71
95th% Queue (veh/ln)	41	40	30	9	11	6	4	4
95th% Queue (ft/ln)	1025	1000	750	225	275	150	100	100
Storage (ft/ ln)	1350	1350	300	300	125	125	125	125
Adequate (Y/N)	Y	Y	<b>N</b>	Y	<b>N</b>	<b>N</b>	Y	Y
<b>Notes:</b>								
NB = northbound; SB = southbound; WB = westbound; EB = eastbound; L/T/R = shared left-through-right; RT = right turn movement; LT = left turn movement								
<sup>1</sup> Vehicle queue calculations based on cycle length for signalized intersections and delay for the approach for unsignalized intersections.								
<sup>2</sup> Assumes 25 feet per vehicle queued.								
<sup>3</sup> Intersection is all-way-stop-controlled under existing conditions and signalized under background conditions.								
<sup>4</sup> 95th Percentile queue length used from Vistro software.								
<sup>5</sup> 95th Percentile queue length developed using Poisson Distribution.								

**Table 22  
Intersection Vehicle Queuing Results (Continued)**

Intersection Movement Peak Hour Period	Willow Road & US 101 Southbound Ramps <sup>4</sup>		Willow Road & Bay Road <sup>4</sup>		O'Brien Drive & Kavanaugh Drive <sup>4</sup>			
	SBLT		SBLT		WBL/T		EBT/R	
	AM	PM	AM	PM	AM	PM	AM	PM
<b>Existing</b>								
Cycle/Delay <sup>1</sup> (sec)	80	80	48	48	12.7	10.1	11.4	17.9
Lanes	2	2	1	1	1	1	1	1
Volume (vph)	472	285	352	241	328	203	296	529
95th% Queue (veh/ln)	8	3	16	7	3	2	3	7
95th% Queue (ft/ln)	200	75	400	175	75	50	75	175
Storage (ft/ ln)	400	400	250	250	330	330	1800	1800
Adequate (Y/N)	Y	Y	<b>N</b>	Y	Y	Y	Y	Y
<b>Near-Term</b>								
Cycle/Delay <sup>1</sup> (sec)	80	80	48	48	13.6	11.8	12.4	39
Lanes	2	2	1	1	1	1	1	1
Volume (vph)	689	612	406	283	330	242	315	648
95th% Queue (veh/ln)	10	8	23	11	3	2	3	14
95th% Queue (ft/ln)	250	200	575	275	75	50	75	350
Storage (ft/ ln)	400	400	250	250	330	330	1800	1800
Adequate (Y/N)	Y	Y	<b>N</b>	<b>N</b>	Y	Y	Y	Y
<b>Near-Term Plus Project</b>								
Cycle/Delay <sup>1</sup> (sec)	80	80	48	48	28.6	22.4	190.5	129.2
Lanes	2	2	1	1	1	1	1	1
Volume (vph)	937	726	438	301	395	319	713	625
95th% Queue (veh/ln)	13	9	29	13	7	5	35	26
95th% Queue (ft/ln)	325	225	725	325	175	125	875	650
Storage (ft/ ln)	400	400	250	250	330	330	1800	1800
Adequate (Y/N)	Y	Y	<b>N</b>	<b>N</b>	Y	Y	Y	Y
<b>Notes:</b>								
NB = northbound; SB = southbound; WB = westbound; EB = eastbound; L/T/R = shared left-through-right; RT = right turn movement; LT = left turn movement								
<sup>1</sup> Vehicle queue calculations based on cycle length for signalized intersections and delay for the approach for unsignalized intersections.								
<sup>2</sup> Assumes 25 feet per vehicle queued.								
<sup>3</sup> Intersection is all-way-stop-controlled under existing conditions and signalized under background conditions.								
<sup>4</sup> 95th Percentile queue length used from Vistro software.								
<sup>5</sup> 95th Percentile queue length developed using Poisson Distribution.								

**Table 22  
Intersection Vehicle Queuing Results (Continued)**

Intersection Movement Peak Hour Period	Adams Drive and O'Brien					
	Drive <sup>4</sup>		University Avenue & Purdue Avenue <sup>5</sup>			
	SBL/T		WBLT		NBLT	
	AM	PM	AM	PM	AM	PM
<b>Existing</b>						
Cycle/Delay <sup>1</sup> (sec)	4.4	4.1	16.5	16.5	16.5	16.5
Lanes	1	1	1	1	1	1
Volume (vph)	166	440	99	20	26	29
95th% Queue (veh/ln)	1	1	2	1	1	1
95th% Queue (ft/ln)	25	25	50	25	25	25
Storage (ft/ ln)	625	625	75	75	50	50
Adequate (Y/N)	Y	Y	Y	Y	Y	Y
<b>Near-Term</b>						
Cycle/Delay <sup>1</sup> (sec)	4.5	3.9	16.5	16.5	16.5	16.5
Lanes	1	1	1	1	1	1
Volume (vph)	170	481	209	46	27	46
95th% Queue (veh/ln)	1	1	3	1	1	1
95th% Queue (ft/ln)	25	25	75	25	25	25
Storage (ft/ ln)	625	625	75	75	50	50
Adequate (Y/N)	Y	Y	Y	Y	Y	Y
<b>Near-Term Plus Project</b>						
Cycle/Delay <sup>1</sup> (sec)	3.9	1.2	16.5	16.5	16.5	16.5
Lanes	1	1	1	1	1	1
Volume (vph)	250	952	214	65	54	69
95th% Queue (veh/ln)	1	1	3	1	1	1
95th% Queue (ft/ln)	25	25	75	25	25	25
Storage (ft/ ln)	625	625	75	75	50	50
Adequate (Y/N)	Y	Y	Y	Y	Y	Y
<b>Notes:</b>						
NB = northbound; SB = southbound; WB = westbound; EB = eastbound; L/T/R = shared left-through-right; RT = right turn movement; LT = left turn movement						
<sup>1</sup> Vehicle queue calculations based on cycle length for signalized intersections and delay for the approach for unsignalized intersections.						
<sup>2</sup> Assumes 25 feet per vehicle queued.						
<sup>3</sup> Intersection is all-way-stop-controlled under existing conditions and signalized under background conditions.						
<sup>4</sup> 95th Percentile queue length used from Vistro software.						
<sup>5</sup> 95th Percentile queue length developed using Poisson Distribution.						

**Table 22  
Intersection Vehicle Queuing Results (Continued)**

Intersection Movement Peak Hour Period	University Avenue & O'Brien Drive <sup>5</sup>				University Avenue & Kavanaugh Drive <sup>5</sup>	
	EBLT		SBLT		EBLT	
	AM	PM	AM	PM	AM	PM
<b>Existing</b>						
Cycle/Delay <sup>1</sup> (sec)	150	150	150	150	150	150
Lanes	1	1	1	1	1	1
Volume (vph)	110	6	32	185	44	11
95th% Queue (veh/ln)	8	1	3	13	4	2
95th% Queue (ft/ln)	200	25	75	325	100	50
Storage (ft/ ln)	125	125	50	50	100	100
Adequate (Y/N)	<b>N</b>	Y	<b>N</b>	<b>N</b>	Y	Y
<b>Near-Term</b>						
Cycle/Delay <sup>1</sup> (sec)	150	150	150	150	150	150
Lanes	1	1	1	1	1	1
Volume (vph)	110	6	33	185	56	19
95th% Queue (veh/ln)	8	1	4	13	5	2
95th% Queue (ft/ln)	200	25	100	325	125	50
Storage (ft/ ln)	125	125	50	50	100	100
Adequate (Y/N)	<b>N</b>	Y	<b>N</b>	<b>N</b>	<b>N</b>	Y
<b>Near-Term Plus Project</b>						
Cycle/Delay <sup>1</sup> (sec)	150	150	150	150	150	150
Lanes	1	1	1	1	1	1
Volume (vph)	525	22	58	185	44	35
95th% Queue (veh/ln)	30	3	5	13	4	4
95th% Queue (ft/ln)	750	75	125	325	100	100
Storage (ft/ ln)	125	125	50	50	100	100
Adequate (Y/N)	<b>N</b>	Y	<b>N</b>	<b>N</b>	Y	Y
<b>Notes:</b>						
NB = northbound; SB = southbound; WB = westbound; EB = eastbound; L/T/R = shared left-through-right; RT = right turn movement; LT = left turn movement						
<sup>1</sup> Vehicle queue calculations based on cycle length for signalized intersections and delay for the approach for unsignalized intersections.						
<sup>2</sup> Assumes 25 feet per vehicle queued.						
<sup>3</sup> Intersection is all-way-stop-controlled under existing conditions and signalized under background conditions.						
<sup>4</sup> 95th Percentile queue length used from Vistro software.						
<sup>5</sup> 95th Percentile queue length developed using Poisson Distribution.						



## Freeway Facilities Analysis

In analyzing the freeway segments, the citywide travel demand forecast model was used to forecast the increase in traffic volumes between existing and near term plus project conditions. For the purpose of this study, freeway levels of service under cumulative conditions are calculated based on volume to capacity (V/C) ratio. A freeway segment is assumed to operate at LOS F under future conditions if,

- The freeway segment already operates at LOS F under existing conditions, or
- The ConnectMenlo model forecasts the freeway segment to operate at a V/C ratio above 1 under future conditions.

### Definition of Adverse Freeway Effects

#### San Mateo County

Within San Mateo County, the project is said to create an adverse effect on traffic conditions on a freeway segment if for either peak hour:

1. The analysis indicates that the combination of the proposed project and future traffic demand will result in the freeway segment operating at a level of service that exceeds the standard adopted by the current CMP and the proposed project increases traffic demand on the freeway segment by an amount equal to one percent (1%) or more of the segment capacity, or
2. The project will add traffic demand equal to one percent (1%) or more of the segment capacity if the freeway segment is currently not in compliance with the adopted LOS standard.

#### Santa Clara County

VTA CMP guidelines define that a project would cause an adverse effect on freeway operations if for either peak hour:

1. The project would deteriorate freeway levels of service from an acceptable level to an unacceptable level, or
2. If the freeway already operates at an unacceptable level under existing conditions, and the project would add traffic exceeding one percent (1%) of the freeway capacity.

#### Alameda County

The Alameda County CMP does not have a policy for determining a threshold of significance for CMP requirements. The freeway segment analysis (see Table 25 below) is provided only for information.

### Freeway Analysis

To determine the Proposed Project's potential freeway adverse effects, a select-zone analysis within the Menlo Park model was performed to estimate the increase in project traffic volume between existing conditions and near term with project conditions. Freeway segments that would experience a freeway adverse effect generated by the Proposed Project are identified below.

### **San Mateo County**

As shown on Table 23, the proposed project would add traffic greater than 1% capacity to the following study freeway segments operating below its LOS standard:

- SR 84 – from Willow Road to Alameda County Line – PM Peak Hour
- SR 84 – from Alameda County Line to Willow Road – AM Peak Hour
- US 101 – between Santa Clara County Line and Whipple Avenue – AM & PM Peak Hours
- US 101 – from Whipple Avenue to SR 92 – PM Peak Hour
- US 101 – from SR 92 to Whipple Avenue – AM Peak Hour

### **Santa Clara County**

As shown on Table 24, the proposed project would add traffic greater than 1% capacity to the following mixed-flow freeway segments operating below its LOS standard:

- US 101 – from SR 85 to Embarcadero Road – AM & PM Peak Hours
- US 101 – from Embarcadero Road to SR 85 – PM Peak hour

The proposed project would add traffic greater than 1% capacity to the following HOV freeway segment operating below its LOS standard:

- US 101 – from Oregon Expressway to Embarcadero Road – AM Peak Hour

### **Freeway Improvements**

It should be noted that the near term plus project conditions model run assumed the US 101 express lane project in San Mateo County. Improvements to eliminate the adverse freeway effects on US 101 and on SR 84 within San Mateo County would require additional capacity improvements and/or additional TDM measures that would reduce peak-hour vehicle trip-making by more than 70%. San Mateo County currently has no plans to further improve US 101 beyond the identified express lane projects. There are also no identified plans to improve the Bayfront Expressway (SR 84) corridor. Such an aggressive TDM plan would also not be feasible.

Within Santa Clara County, Valley Transportation Authority's Valley Transportation Plan 2040 identifies freeway express lane projects along US 101 that would convert the existing HOV lanes to express lanes and add a second express lane in each direction. This improvement would increase the capacity of the freeway and would adequately address the freeway impacts.

The potential Dumbarton Rail corridor would slightly reduce the Project contribution to the identified adverse effects but would not eliminate any. Therefore, the Project's adverse effects on US 101 and on SR 84 freeway segments in San Mateo County would remain.

**Table 23**  
**Freeway Analysis – San Mateo County**

CMP Facility	Roadway Segment	Dir.	Pk Hr	LOS Standard	Capacity	Existing LOS	Near Term + Project	
							LOS	% Project Added
SR 84	US 101 to Willow Rd	SB	AM	D	1,100	C	C	0.0%
		SB	PM	D	1,100	B	D	2.2%
SR 84	Willow Rd to US 101	NB	AM	D	1,100	C	D	4.3%
		NB	PM	D	1,100	B	B	2.1%
SR 84	Willow Rd to University Ave	SB	AM	E	1,100	F	<b>F</b>	<b>0.9%</b>
		SB	PM	E	1,100	E	<b>F</b>	<b>4.0%</b>
SR 84	University Ave to Willow Rd	NB	AM	E	1,100	<b>F</b>	<b>F</b>	<b>3.2%</b>
		NB	PM	E	1,100	E	E	1.0%
SR 84	University Ave to Alameda County Line	SB	AM	F	2,100	<b>F</b>	<b>F</b>	<b>0.5%</b>
		SB	PM	F	2,100	<b>F</b>	<b>F</b>	<b>2.1%</b>
SR 84	Alameda County Line to University Ave	NB	AM	F	2,100	<b>F</b>	<b>F</b>	<b>1.7%</b>
		NB	PM	F	2,100	<b>F</b>	<b>F</b>	<b>0.5%</b>
US 101	Santa Clara County Line to Whipple Ave	NB	AM	F	2,300	<b>F</b>	<b>F</b>	<b>1.1%</b>
		NB	PM	F	2,300	<b>F</b>	<b>F</b>	<b>2.7%</b>
US 101	Whipple Ave to Santa Clara County Line	SB	AM	F	2,300	<b>F</b>	<b>F</b>	<b>2.3%</b>
		SB	PM	F	2,300	<b>F</b>	<b>F</b>	<b>1.4%</b>
US 101	Whipple Ave to SR 92	NB	AM	E	2,300	<b>F</b>	<b>F</b>	<b>0.7%</b>
		NB	PM	E	2,300	<b>F</b>	<b>F</b>	<b>1.6%</b>
US 101	SR 92 to Whipple Ave	SB	AM	E	2,300	<b>F</b>	<b>F</b>	<b>1.2%</b>
		SB	PM	E	2,300	<b>F</b>	<b>F</b>	<b>0.9%</b>
SR 109 (University Ave)	Kavanaugh Dr to SR 84	EB	AM	E	1,100	C	C	0.0%
		EB	PM	E	1,100	C	D	0.1%
SR 109 (University Ave)	SR 84 to Kavanaugh Dr	WB	AM	E	1,100	<b>F</b>	<b>F</b>	<b>0.1%</b>
		WB	PM	E	1,100	<b>F</b>	<b>F</b>	<b>0.0%</b>
SR 114 (Willow Rd)	US 101 to SR 84	EB	AM	E	1,100	B	B	9.6%
		EB	PM	E	1,100	B	B	9.6%
SR 114 (Willow Rd)	SR 84 to US 101	WB	AM	E	1,100	C	C	5.2%
		WB	PM	E	1,100	C	C	5.7%

**Notes:**  
Data referenced San Mateo County City/County Association of Governments *Congestion Management Program 2019*.  
**Bold** indicates non-compliant LOS  
**box and BOLD** indicates adverse effect

**Table 24  
Freeway Analysis – Santa Clara County**

Freeway Segment	Peak Dir	Hour	Existing Conditions						Near Term + Project Conditions					
			Mixed-Flow			HOV Lane			Mixed Flow			HOV		
			Capacity <sup>1</sup>	Volume <sup>2</sup> (pc/hr/ln)	LOS <sup>2</sup>	Capacity <sup>1</sup>	Volume <sup>2</sup> (pc/hr/ln)	LOS <sup>2</sup>	LOS	Project added	% Capacity	LOS	Project added	% Capacity
US 101 SR 85 to N. Shoreline Blvd	NB	AM	9,200	1,512	F	1,650	1,751	E	F	<b>187</b>	<b>2.0%</b>	E	8	0.5%
		PM	9,200	1,358	F	1,650	1,635	D	F	<b>118</b>	<b>1.3%</b>	D	6	0.4%
US 101 N. Shoreline Blvd to Rengstorff Ave	NB	AM	6,900	1,660	F	3,300	1,730	D	F	<b>198</b>	<b>2.9%</b>	D	16	0.5%
		PM	6,900	1,298	F	3,300	1,683	D	F	<b>124</b>	<b>1.8%</b>	D	12	0.4%
US 101 Rengstorff Ave to San Antonio Ave	NB	AM	6,900	1,747	E	3,300	1,716	D	F	<b>208</b>	<b>3.0%</b>	D	17	0.5%
		PM	6,900	1,333	F	3,300	1,646	D	F	<b>132</b>	<b>1.9%</b>	D	14	0.4%
US 101 San Antonio Ave to Oregon Expwy	NB	AM	6,900	1,262	F	3,300	1,693	D	F	<b>232</b>	<b>3.4%</b>	D	12	0.4%
		PM	6,900	1,083	F	3,300	1,482	F	F	<b>152</b>	<b>2.2%</b>	F	<b>15</b>	<b>0.4%</b>
US 101 Oregon Expwy to Embarcadero Rd	NB	AM	6,900	1,367	F	1,650	1,693	F	F	<b>224</b>	<b>3.3%</b>	F	<b>19</b>	<b>1.1%</b>
		PM	6,900	1,271	F	1,650	1,588	F	F	<b>151</b>	<b>2.2%</b>	F	<b>16</b>	<b>0.9%</b>
US 101 Embarcadero Rd to Oregon Expwy	SB	AM	6,900	1,991	D	1,650	n/a	A	D	118	1.7%	C	11	0.7%
		PM	6,900	1,135	F	1,650	1,627	D	F	<b>190</b>	<b>2.8%</b>	D	17	1.0%
US 101 Oregon Expwy to San Antonio Ave	SB	AM	6,900	1,989	D	3,300	919	A	D	118	1.7%	B	11	0.3%
		PM	6,900	1,050	F	3,300	1,693	D	F	<b>191</b>	<b>2.8%</b>	D	17	0.5%
US 101 San Antonio Ave to Rengstorff Ave	SB	AM	6,900	1,890	E	3,300	780	A	E	104	1.5%	B	10	0.3%
		PM	6,900	1,125	F	3,300	1,610	D	F	<b>201</b>	<b>2.9%</b>	D	15	0.5%
US 101 Rengstorff Ave to N. Shoreline Blvd	SB	AM	6,900	1,976	D	3,300	1,369	C	D	101	1.5%	C	10	0.3%
		PM	6,900	1,072	F	3,300	1,508	D	F	<b>195</b>	<b>2.8%</b>	D	15	0.4%
US 101 N. Shoreline Blvd to SR 85	SB	AM	6,900	1,950	D	1,650	1,068	A	E	56	0.8%	A	4	0.3%
		PM	6,900	1,115	F	1,650	1,752	E	F	<b>93</b>	<b>1.3%</b>	E	7	0.4%

**Notes:**  
 HOV = high-occupancy vehicle; LOS = level of service  
 1. Capacity is based on the capacities cited in VTA's *Transportation Impact Analysis Guidelines* (2014).  
 2. Volume, and Level of service (LOS) on each segment are taken from VTA's *2018 CMP Monitoring Report*. VTA did not report volume and density for segments with speed above 75.2  
**Bold** indicates a substandard level of service.  
**Outline** indicates an adverse effect

**Table 25**  
**Freeway Analysis – Alameda County**

CMP Facility	Roadway Segment	Dir.	Pk Hr	Capacity	Existing LOS	Near Term + Project Conditions	
						Project Traffic	%Capacity
SR 84	San Mateo County Line to Toll Plaza	EB	AM	2,200	A	30	0.5%
		EB	PM	2,200	C	131	2.0%
SR 84	Toll Plaza to San Mateo County Line	WB	AM	2,200	F	109	1.7%
		WB	PM	2,200	A	33	0.5%
SR 84	Toll Plaza to Thornton Ave	EB	AM	2,200	A	30	0.5%
		EB	PM	2,200	B	131	2.0%
SR 84	Paseo Padre Pkwy to Toll Plaza	WB	AM	2,200	F	108	1.2%
		WB	PM	2,200	C	33	0.4%
SR 84	Thornton Ave to Newark Blvd	EB	AM	2,200	A	21	0.3%
		EB	PM	2,200	C	99	1.5%
SR 84	Newark Blvd to Paseo Padre Pkwy	WB	AM	2,200	E	74	0.8%
		WB	PM	2,200	A	25	0.3%
SR 84	Newark Blvd to I-880	EB	AM	2,200	D	17	0.3%
		EB	PM	2,200	F	75	1.1%
SR 84	I-880 to Newark Blvd	WB	AM	2,200	D	57	0.6%
		WB	PM	2,200	D	22	0.3%

**Notes:**  
Data referenced the Alameda County Transportation Commission 2018 LOS Monitoring Report, Appendix B.

## Freeway Ramp Analysis

A freeway ramp analysis is conducted under near term plus project conditions to determine whether freeway ramps would continue to have sufficient capacity to serve the forecasted traffic demand. For the purpose of this study, the project is said to create an adverse effect on a freeway ramp if:

- The project would cause the volume-to-capacity (V/C) ratio of the freeway ramp to exceed 1.0;  
or
- The project would increase the amount of traffic on a freeway ramp that is already exceeding its capacity by more than one percent (1%) of the ramp's capacity.

As shown on Table 26, under near term plus project conditions, all study freeway ramps would continue to have sufficient capacity to serve the anticipated demand.

**Table 26  
Freeway Ramp Capacity Analysis**

Interchange	Ramp	Peak Hour	Lanes				Existing Conditions		Near Term + Project Conditions		
			Type	Mixed	HOV	Meter <sup>1</sup>	Capacity <sup>2</sup>	Volume <sup>3</sup>	V/C	Volume	V/C
US 101/Marsh Road	SB Off-ramp to Marsh Road	AM	Diagonal	2	-	-	3,800	1,332	0.35	1,441	0.38
		PM	Diagonal	2	-	-	3,800	1,156	0.30	1,212	0.32
US 101/Marsh Road	NB on-ramp from WB Marsh Road	AM	Diagonal	2	1	YES	1,800	1,559	0.87	1,738	0.97
		PM	Diagonal	2	-	-	2,000	1,472	0.74	1,612	0.81
US 101/Willow Road	NB off-ramp to Willow Road	AM	Diagonal	2	-	-	3,800	1,153	0.30	1,282	0.34
		PM	Diagonal	2	-	-	3,800	1,055	0.28	1,142	0.30
	NB on-ramp from WB Willow Road	AM	Diagonal	1	1	YES	1,800	424	0.24	424	0.24
		PM	Diagonal	1	-	-	2,000	495	0.25	729	0.36
	SB on-ramp from WB Willow Road	AM	Loop	1	-	-	1,900	739	0.39	874	0.46
		PM	Loop	1	-	YES	900	633	0.70	674	0.75
SB off-ramp to Willow Road	AM	Diagonal	2	-	-	3,800	863	0.23	1,328	0.35	
	PM	Diagonal	2	-	-	3,800	637	0.17	1,078	0.28	
US 101/University Avenue	NB off-ramp to Donohoe Street	AM	Diagonal	1	-	-	2,000	857	0.43	1,162	0.58
		PM	Diagonal	1	-	-	2,000	1,326	0.66	1,547	0.77
	SB on-ramp from University Avenue	AM	Diagonal	2	-	-	1,800	1,143	0.64	1,167	0.65
		PM	Diagonal	2	-	YES	900	744	0.83	810	0.90

**Notes:**  
 NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound  
 1. Northbound on-ramps are assumed metered during the AM peak hour. Southbound on-ramps are assumed metered during the PM peak hour.  
 2. Ramp capacities were obtained from *Highway Capacity Manual 2000*, and considered the free-flow speed, the number of lanes on the ramp, and ramp metering.  
 3. Existing volumes referenced intersection counts collected in 2019.

## Roadway ADT Analysis

This analysis included the evaluation of roadway average daily traffic (ADT) for 10 roadway segments (see Table 27 below) to determine the project’s effect on City street segments. According to the City of Menlo Park *Transportation Impact Analysis Guidelines* published in July 2020, a project-generated traffic impact on City street segments would be considered potentially noncompliant if:

1. On Main Street, Avenue-Mixed Use, and Avenue-Neighborhood, a traffic impact may be considered potentially noncompliant if the existing ADT is:
  - 1) Greater than 19,000, and there is a net increase of 100 trips or more in ADT due to project related traffic;
  - 2) The ADT is greater than 10,000 but less than 18,000, and the project related traffic increases the ADT by 12.5%, or the ADT becomes 18,000 or more; or
  - 3) The ADT is less than 10,000, and the project related traffic increases the ADT by 25%.
2. On Mixed-Use Collector, and Neighborhood Collector, a traffic impact may be considered potentially noncompliant if the existing ADT is:
  - 1) Greater than 9,000, and there is a net increase of 50 trips or more in ADT due to project related traffic;
  - 2) The ADT is greater than 5,000 but less than 9,000, and the project related traffic increases the ADT by 12.5% or the ADT becomes 9,000 or more; or
  - 3) The ADT is less than 5,000, and the project related traffic increases the ADT by 25%.
3. On Neighborhood Connector, Bicycle Boulevard, and Local Access, a traffic impact may be considered potentially noncompliant if the existing ADT is:
  - 1) Greater than 1,350, and there is a net increase of 25 trips or more in ADT due to project related traffic;
  - 2) The ADT is greater than 750 but less than 1,350, and the project related traffic increases the ADT by 12.5% or the ADT becomes 1,350; or
  - 3) The ADT is less than 740, and the project related traffic increases the ADT by 25%.

The roadway ADT analysis was conducted under cumulative with project conditions. To determine net Project added traffic, a select zone analysis was conducted using the Menlo Park model under cumulative with project conditions and existing conditions. As shown on Table 27, the Project would generate non-compliance at the following roadway segments:

- Willow Road, east of Durham Street
- Willow Road, east of Blackburn Avenue
- Middlefield Road, south of Willow Road
- Marsh Road, east of Bohannon Drive
- O'Brien Drive, south of Willow Road
- O'Brien Drive, north of University Avenue
- Bay Road, north of Willow Road

**Table 27**  
**Roadway ADT Analysis**

Roadway	Classification	Average Daily Traffic			Compliance Analysis	
		Existing <sup>1</sup>	Cumulative with Project	Net Increase in Project Traffic	Applicable Criteria	Compliant?
Willow Road, east of Durham Street	Avenue - Mixed Use	28,875	31,400	550	7.B.1(1)	<b>No</b>
Willow Road, east of Blackburn Avenue	Avenue - Mixed Use	22,962	24,050	410	7.B.1(1)	<b>No</b>
Middlefield Road, north of Willow Road	Avenue - Mixed Use	18,188	20,037	64	7.B.1(1)	Yes
Middlefield Road, south of Willow Road	Avenue - Mixed Use	21,058	23,687	285	7.B.1(1)	<b>No</b>
Marsh Road, east of Bohannon Drive	Mixed Use Collector	33,128	39,213	669	7.B.2(1)	<b>No</b>
Hamilton Avenue, south of Madera Avenue	Neighborhood Collector	2,866	3,589	265	7.B.2(3)	Yes
O'Brien Drive, south of Willow Road	Mixed Use Collector	7,409	13,942	2,600	7.B.2(2)	<b>No</b>
O'Brien Drive, north of University Avenue	Mixed Use Collector	4,635	16,232	6,457	7.B.2(3)	<b>No</b>
Adams Drive, north of University Avenue <sup>2</sup>	Mixed Use Collector	3,265	3,763	84	7.B.2(3)	Yes
Bay Road, north of Willow Road	Neighborhood Collector	6,362	12,637	841	7.B.2(2)	<b>No</b>

**Notes:**  
<sup>1</sup> Average Daily Traffic data was obtained from the City of Menlo Park  
<sup>2</sup> Average Daily Traffic was estimated using factors derived from ADT data and peak hour counts  
**Bold** indicates a project-generated non-compliance for study roadway

## Internal Site Access, Circulation, and Parking

Appendix H includes the analysis of the main Willow Village site as well as the Hamilton parcels. The site plan review evaluated the internal site's intersection operations, potential queuing issues, and general site access and circulation for the proposed seven new internal streets, 14 parking garage driveways, and 20 new intersections. The results of the level of service analysis show that the intersection of Driveway B & East Loop Road would operate at LOS D during the AM peak hour. Vehicles turning left out of Driveway B would be expected to experience an average delay of 31 seconds while waiting for a sufficient opening on East Loop Road. During the AM peak hour, approximately 101 vehicles (16 heading eastbound and 85 heading westbound) would be expected to exit the garage, which would be one to two vehicles per minute. Therefore, although exiting drivers would experience some wait time, operations at Driveway B are expected to be adequate. The results of the queuing analysis show that the intersection of Hamilton Avenue/Main Street & Willow Road is expected to have insufficient turn lane storage to accommodate the anticipated traffic volumes under near-term plus project conditions. However, it is assumed that vehicles would choose to instead enter the project site via Park Street. Hexagon recommends the following regarding the internal project circulation:

### **Circulation Related Recommendations**

- To prevent southbound queues from spilling back onto Willow Road on Park Street and Main Street, Hexagon recommends coordinating the adjacent signals.

### **Sight Distance Related Recommendations**

- As discussed under Mitigation Measure TRA-3 (see Transportation Chapter of the draft EIR), prior to issuance of the building permit for the North Garage, the applicant shall revise the access design to provide adequate sight distance for the eastern driveway or other design solutions to reduce hazards to a less than significant level, to the satisfaction of the Public Works Director. Potential solutions that would reduce hazards to a less than significant level include restricting the eastern driveway to inbound vehicles only or prohibiting exiting left turns, modifying landscaping or relocating the driveway to the west to allow for adequate sight distance for exiting vehicles, or installing an all-way stop or signal. If driveway A were restricted to inbound vehicles only, all outbound vehicles would use Driveway B, which would provide adequate sight distance for vehicles exiting the north office garage. Driveway B might need multiple exiting lanes to limit queuing inside the garage for exiting vehicles. Alternatively, Driveway A could be moved farther west on East Loop Road so that adequate sight distance could be provided.
- Prior to final design, the project applicant should ensure that landscaping and vegetation would not obstruct visibility at the parking garage driveways.
- Hexagon recommends including 30 feet of red curb on both sides of all garage driveways to prevent vehicles from parking and obstructing the vision of exiting drivers.
- If vehicles exiting the garages cannot see oncoming pedestrians on the sidewalk, Hexagon recommends installing warning signs to alert pedestrians when vehicles are exiting the garages.
- If any driveways are moved from their position on the current site plan, sight distance should be reevaluated.



**Parking Garage Circulation Related Recommendations**

- Prior to final design, it is recommended that all driveway widths meet the City's requirements.
- At garage driveways where gates and garage doors are proposed, Hexagon recommends conducting an operational analysis to ensure that gate opening and closing times would not create queuing issues or cause vehicles to spill onto the roadway network.
- Prior to final design, the residential parking on level P1 of building RS2 should be shown to be gated and separated from the retail parking on levels 1 and 2. In addition, the roll-up gate in building RS3 should be clearly shown to separate the retail parking in level B1 and the residential parking in level B2.
- It is recommended that all drive aisle and parking stall widths meet the City's requirements.
- It is recommended that adequate turnaround space is provided at all dead-end drive aisles.

**Parking Related Recommendations**

- If individual vehicles are not able to be retrieved in the tandem puzzle parking, the tandem spaces should be assigned to one residential unit.
- Prior to final design, Hexagon recommends that the required number of ADA and EV parking spaces be provided in all parking garages.

**Pedestrian Related Recommendations**

- Hexagon recommends that a crosswalk is provided at the intersection of Center Street & East Street and that midblock crosswalks are provided on Center Street and Park Street to reduce block size and improve pedestrian convenience.

**Hamilton Parcels Recommendations**

- The Hamilton Avenue Parcels are located within the C-2-S zoning district, which per Menlo Park Municipal Code Section 16.37(7), will have parking requirements established by the planning commission for each development. The Hamilton Avenue Parcel North proposes total potential development up to 22,402 square feet and 93 spaces. The Hamilton Avenue Parcel South proposes total development of 5,760 s.f. and 13 spaces. It is recommended that the project applicant confirm that sufficient parking is provided for the proposed total development as part of future architectural control and use permit applications with the City.

**Willow Village Master Plan Project**  
**Technical Appendices**

April 16, 2022

## **Appendix A**

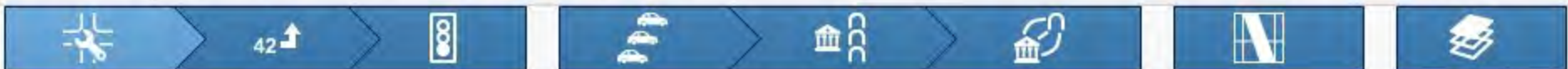
### **Traffic Counts**



### Intersection Setup

Enter text to search...

	↑			↓			→			←		
Number	163											
Intersection	Bayfront Expy/Marsh Rd											
Notes												
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Show Name	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		
Approach	<i>Northbound</i>			<i>Southbound</i>			<i>Eastbound</i>			<i>Westbound</i>		
Lane Configuration	← ← ← ← ←			← ↑ ↓ ←			← ↑ ↓ ←			← ← ← ← ←		
Turning Movement	<i>Left</i>	<i>Thru</i>	<i>Right</i>	<i>Left</i>	<i>Thru</i>	<i>Right</i>	<i>Left</i>	<i>Thru</i>	<i>Right</i>	<i>Left</i>	<i>Thru</i>	<i>Right</i>
Base Volume Input [veh/h]	162	27	1502	10	30	7	8	196	296	1931	371	34
Total Analysis Volume [veh/h]	169	28	1565	10	31	7	8	204	308	2011	386	35
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	130.00	100.00	100.00	100.00	130.00	100.00	100.00	100.00	130.00	100.00	100.00	100.00



Intersection Setup Enter text to search...

	↑			↓			→			←		
Number	163											
Intersection	Bayfront Expy/Marsh Rd											
Notes												
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Show Name	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑↑↑			↑↑			↑↑			↑↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	179	40	1834	12	31	5	9	505	208	1822	119	14
Total Analysis Volume [veh/h]	186	42	1910	13	32	5	9	526	217	1898	124	15
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0

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tdsbay@cs.com

File Name : 45AM FINAL  
Site Code : 00000045  
Start Date : 4/16/2019  
Page No : 1

Groups Printed- Vehicles

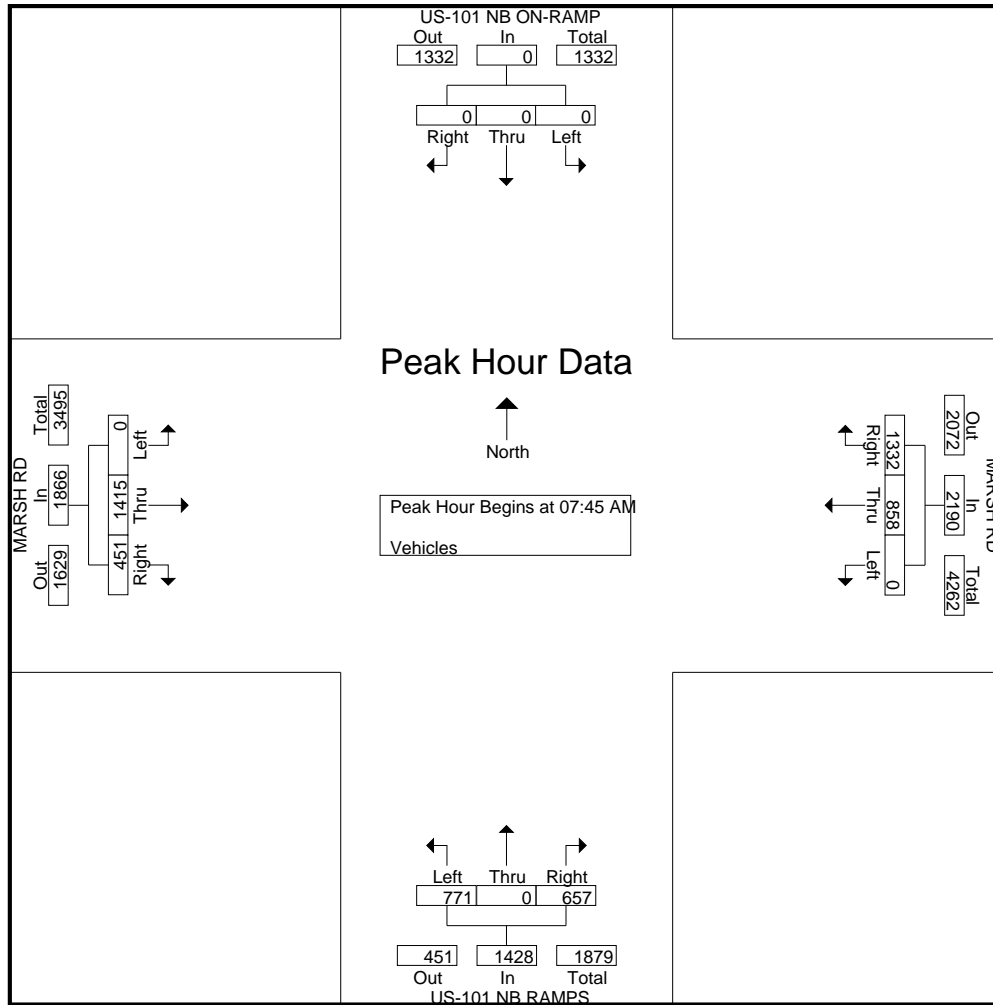
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07:15 AM	0	0	0	1	1	369	207	0	0	576	98	0	231	2	331	100	301	0	0	401	1309
07:30 AM	0	0	0	0	0	318	178	0	0	496	116	0	229	1	346	102	281	0	0	383	1225
07:45 AM	0	0	0	0	0	338	196	0	0	534	129	0	208	0	337	101	354	0	0	455	1326
<b>Total</b>	0	0	0	1	1	1380	770	0	0	2150	428	0	866	3	1297	385	1188	0	0	1573	5021
08:00 AM	0	0	0	2	2	313	214	0	1	528	164	0	214	0	378	110	355	0	0	465	1373
08:15 AM	0	0	0	0	0	331	211	0	0	542	179	0	218	0	397	117	357	0	0	474	1413
08:30 AM	0	0	0	1	1	350	237	0	1	588	185	0	131	0	316	123	349	0	0	472	1377
08:45 AM	0	0	0	2	2	382	190	0	0	572	189	0	133	0	322	92	334	0	0	426	1322
<b>Total</b>	0	0	0	5	5	1376	852	0	2	2230	717	0	696	0	1413	442	1395	0	0	1837	5485
09:00 AM	0	0	0	0	0	320	170	0	0	490	172	0	136	0	308	97	367	0	0	464	1262
09:15 AM	0	0	0	0	0	344	144	0	0	488	180	0	109	0	289	89	313	0	0	402	1179
09:30 AM	0	0	0	3	3	339	191	0	0	530	153	0	115	0	268	117	364	0	0	481	1282
09:45 AM	0	0	0	2	2	376	153	0	1	530	187	0	118	0	305	92	338	0	0	430	1267
<b>Total</b>	0	0	0	5	5	1379	658	0	1	2038	692	0	478	0	1170	395	1382	0	0	1777	4990
Grand Total	0	0	0	11	11	4135	2280	0	3	6418	1837	0	2040	3	3880	1222	3965	0	0	5187	15496
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Total %	0	0	0	0.1	0.1	26.7	14.7	0	0	41.4	11.9	0	13.2	0	25	7.9	25.6	0	0	33.5	

Start Time	US-101 NB ON-RAMP Southbound				MARSH RD Westbound				US-101 NB RAMPS Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	338	196	0	534	129	0	208	337	101	354	0	455	1326
08:00 AM	0	0	0	0	313	214	0	527	164	0	214	378	110	355	0	465	1370
08:15 AM	0	0	0	0	331	211	0	542	179	0	<b>218</b>	<b>397</b>	117	<b>357</b>	0	<b>474</b>	<b>1413</b>
08:30 AM	0	0	0	0	<b>350</b>	<b>237</b>	0	<b>587</b>	<b>185</b>	0	131	316	<b>123</b>	349	0	472	1375
Total Volume	0	0	0	0	1332	858	0	2190	657	0	771	1428	451	1415	0	1866	5484
% App. Total	0	0	0		60.8	39.2	0		46	0	54		24.2	75.8	0		
PHF	.000	.000	.000	.000	.951	.905	.000	.933	.888	.000	.884	.899	.917	.991	.000	.984	.970

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Groups Printed- Bikes

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07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
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09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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Apprch %	0	0	0	0		0	100	0	0		0	0	0	0		0	100	0	0		
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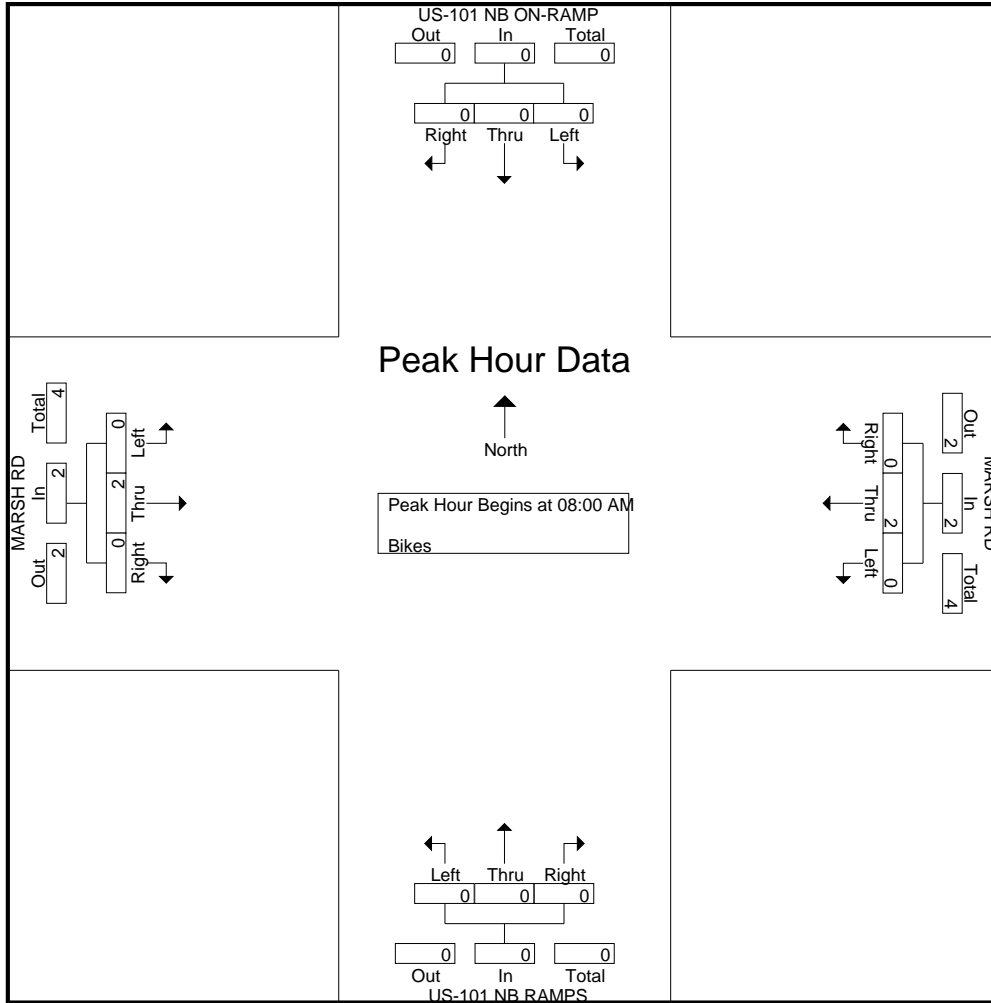
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Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.500	.000	.500	.500



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File Name : 45PM FINAL  
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Groups Printed- Vehicles

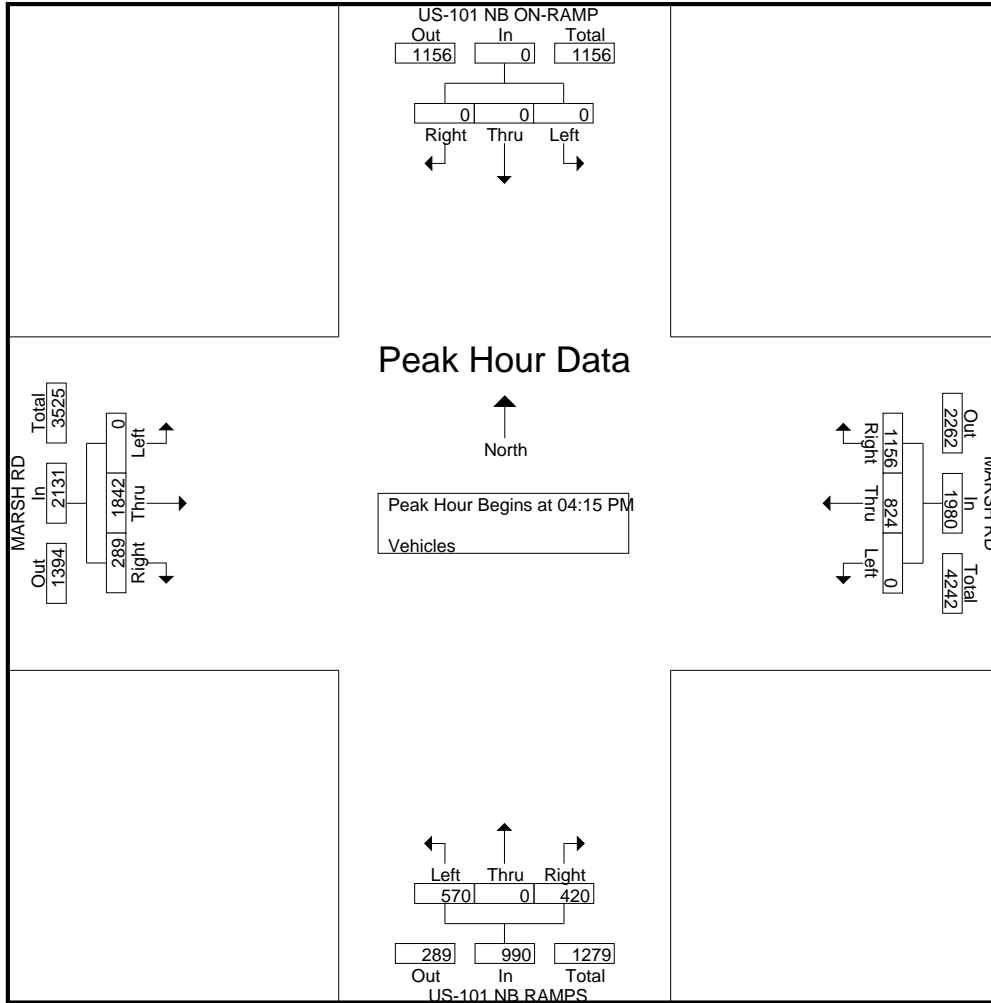
Start Time	US-101 NB ON-RAMP Southbound					MARSH RD Westbound					US-101 NB RAMPS Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	238	193	0	0	431	140	0	119	0	259	82	427	0	0	509	1199
04:15 PM	0	0	0	2	2	294	174	0	0	468	111	0	144	1	256	82	448	0	0	530	1256
04:30 PM	0	0	0	1	1	279	222	0	0	501	109	0	136	0	245	71	449	0	0	520	1267
04:45 PM	0	0	0	2	2	292	218	0	0	510	102	0	147	0	249	64	466	0	0	530	1291
Total	0	0	0	5	5	1103	807	0	0	1910	462	0	546	1	1009	299	1790	0	0	2089	5013
05:00 PM	0	0	0	1	1	291	210	0	0	501	98	0	143	0	241	72	479	0	0	551	1294
05:15 PM	0	0	0	3	3	300	225	0	0	525	91	0	133	0	224	78	418	0	0	496	1248
05:30 PM	0	0	0	8	8	275	228	0	0	503	78	0	150	0	228	59	447	0	0	506	1245
05:45 PM	0	0	0	3	3	243	201	0	0	444	90	0	139	1	230	72	430	0	0	502	1179
Total	0	0	0	15	15	1109	864	0	0	1973	357	0	565	1	923	281	1774	0	0	2055	4966
06:00 PM	0	0	0	1	1	248	242	0	0	490	115	0	151	0	266	74	350	0	0	424	1181
06:15 PM	0	0	0	2	2	258	239	0	0	497	89	0	158	0	247	60	370	0	0	430	1176
06:30 PM	0	0	0	6	6	261	222	0	0	483	65	0	139	0	204	94	397	0	0	491	1184
06:45 PM	0	0	0	2	2	223	163	0	0	386	60	0	122	0	182	67	345	0	0	412	982
Total	0	0	0	11	11	990	866	0	0	1856	329	0	570	0	899	295	1462	0	0	1757	4523
Grand Total	0	0	0	31	31	3202	2537	0	0	5739	1148	0	1681	2	2831	875	5026	0	0	5901	14502
Apprch %	0	0	0	100		55.8	44.2	0	0		40.6	0	59.4	0.1		14.8	85.2	0	0		
Total %	0	0	0	0.2	0.2	22.1	17.5	0	0	39.6	7.9	0	11.6	0	19.5	6	34.7	0	0	40.7	

Start Time	US-101 NB ON-RAMP Southbound				MARSH RD Westbound				US-101 NB RAMPS Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	<b>294</b>	174	0	468	<b>111</b>	0	144	<b>255</b>	<b>82</b>	448	0	530	1253
04:30 PM	0	0	0	0	279	<b>222</b>	0	501	109	0	136	245	71	449	0	520	1266
04:45 PM	0	0	0	0	292	218	0	<b>510</b>	102	0	<b>147</b>	249	64	466	0	530	1289
05:00 PM	0	0	0	0	291	210	0	501	98	0	143	241	72	<b>479</b>	0	<b>551</b>	<b>1293</b>
Total Volume	0	0	0	0	1156	824	0	1980	420	0	570	990	289	1842	0	2131	5101
% App. Total	0	0	0	0	58.4	41.6	0		42.4	0	57.6		13.6	86.4	0		
PHF	.000	.000	.000	.000	.983	.928	.000	.971	.946	.000	.969	.971	.881	.961	.000	.967	.986

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 45PM FINAL  
 Site Code : 00000045  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 45PM FINAL  
 Site Code : 00000045  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Bikes

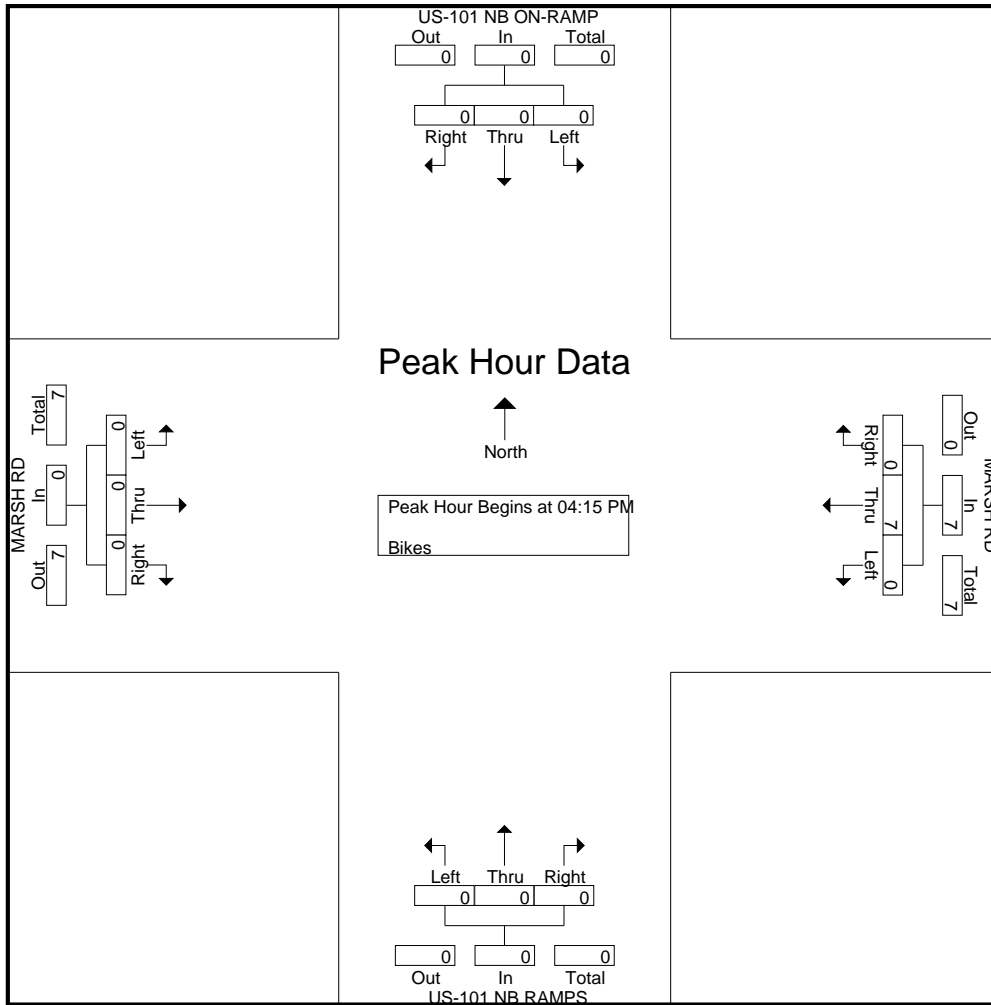
Start Time	US-101 NB ON-RAMP Southbound					MARSH RD Westbound					US-101 NB RAMPS Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	7
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	1	0	0	1	11
Apprch %	0	0	0	0		0	100	0	0		0	0	0	0		0	100	0	0		
Total %	0	0	0	0	0	0	90.9	0	0	90.9	0	0	0	0	0	0	9.1	0	0	9.1	

Start Time	US-101 NB ON-RAMP Southbound				MARSH RD Westbound				US-101 NB RAMPS Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	4
Total Volume	0	0	0	0	0	7	0	7	0	0	0	0	0	0	0	0	7
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.438	.000	.438	.000	.000	.000	.000	.000	.000	.000	.000	.438

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 45PM FINAL  
 Site Code : 00000045  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 44AM FINAL  
 Site Code : 00000044  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Vehicles

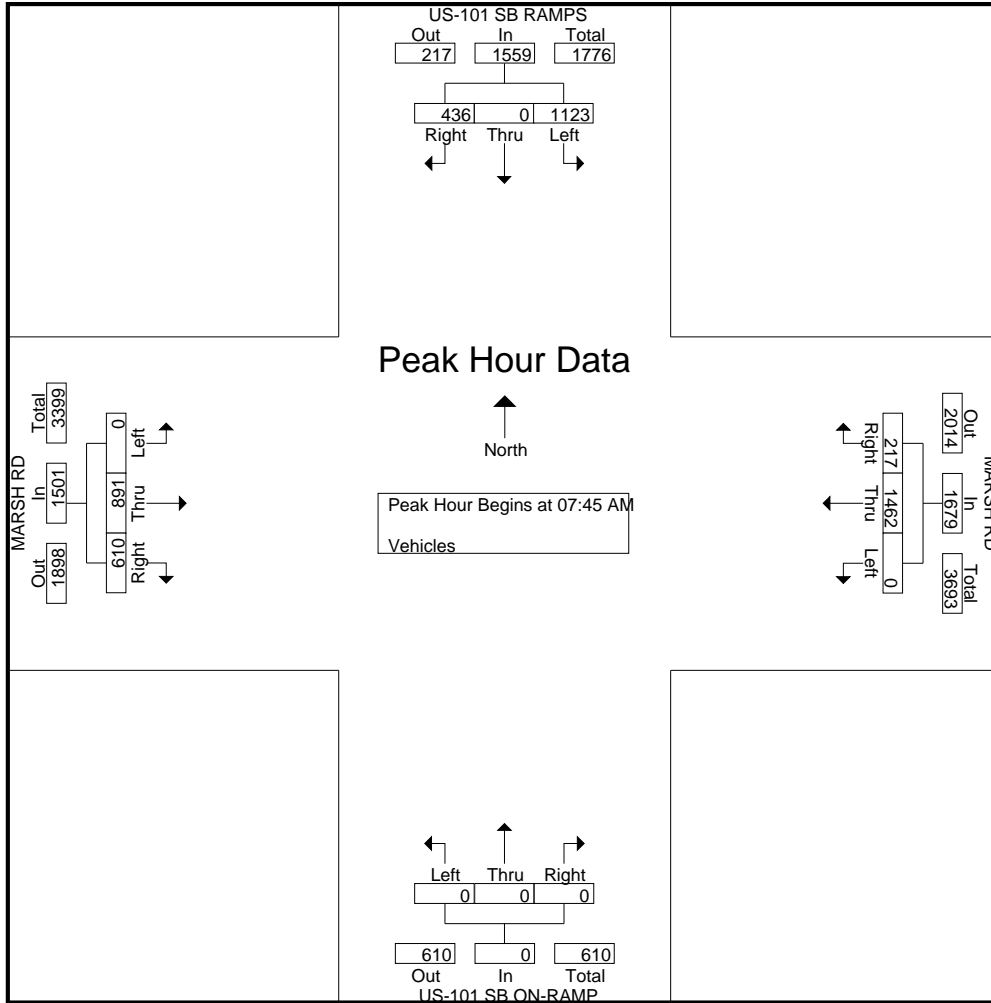
Start Time	US-101 SB RAMPS Southbound					MARSH RD Westbound					US-101 SB ON-RAMP Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	118	0	193	0	311	44	339	0	0	383	0	0	0	0	0	148	136	0	0	284	978
07:15 AM	133	0	245	0	378	42	352	0	0	394	0	0	0	0	0	156	154	0	1	311	1083
07:30 AM	117	0	211	0	328	52	355	0	0	407	0	0	0	0	0	167	179	0	1	347	1082
07:45 AM	120	0	276	0	396	46	345	0	0	391	0	0	0	0	0	162	202	0	0	364	1151
Total	488	0	925	0	1413	184	1391	0	0	1575	0	0	0	0	0	633	671	0	2	1306	4294
08:00 AM	101	0	280	0	381	58	385	0	0	443	0	0	0	0	0	168	210	0	0	378	1202
08:15 AM	121	0	265	0	386	45	396	0	0	441	0	0	0	0	0	138	238	0	0	376	1203
08:30 AM	94	0	302	0	396	68	336	0	0	404	0	0	0	0	0	142	241	0	0	383	1183
08:45 AM	90	0	265	0	355	51	301	0	0	352	0	0	0	0	0	99	173	0	0	272	979
Total	406	0	1112	0	1518	222	1418	0	0	1640	0	0	0	0	0	547	862	0	0	1409	4567
09:00 AM	110	0	269	0	379	35	272	0	0	307	0	0	0	0	0	92	193	0	0	285	971
09:15 AM	52	0	250	0	302	36	220	0	0	256	0	0	0	0	0	87	180	0	0	267	825
09:30 AM	89	0	276	3	368	38	272	0	0	310	0	0	0	0	0	116	194	0	0	310	988
09:45 AM	91	0	262	2	355	30	242	0	0	272	0	0	0	0	0	106	164	0	0	270	897
Total	342	0	1057	5	1404	139	1006	0	0	1145	0	0	0	0	0	401	731	0	0	1132	3681
Grand Total	1236	0	3094	5	4335	545	3815	0	0	4360	0	0	0	0	0	1581	2264	0	2	3847	12542
Apprch %	28.5	0	71.4	0.1		12.5	87.5	0	0		0	0	0	0		41.1	58.9	0	0.1		
Total %	9.9	0	24.7	0	34.6	4.3	30.4	0	0	34.8	0	0	0	0		12.6	18.1	0	0	30.7	

Start Time	US-101 SB RAMPS Southbound				MARSH RD Westbound				US-101 SB ON-RAMP Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	120	0	276	<b>396</b>	46	345	0	391	0	0	0	0	162	202	0	364	1151
08:00 AM	101	0	280	381	58	385	0	<b>443</b>	0	0	0	0	<b>168</b>	210	0	378	1202
08:15 AM	<b>121</b>	0	265	386	45	<b>396</b>	0	441	0	0	0	0	138	238	0	376	<b>1203</b>
08:30 AM	94	0	<b>302</b>	396	<b>68</b>	336	0	404	0	0	0	0	142	<b>241</b>	0	<b>383</b>	1183
Total Volume	436	0	1123	1559	217	1462	0	1679	0	0	0	0	610	891	0	1501	4739
% App. Total	28	0	72		12.9	87.1	0		0	0	0		40.6	59.4	0		
PHF	.901	.000	.930	.984	.798	.923	.000	.948	.000	.000	.000	.000	.908	.924	.000	.980	.985

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 44AM FINAL  
 Site Code : 00000044  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 44AM FINAL  
 Site Code : 00000044  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	US-101 SB RAMPS Southbound					MARSH RD Westbound					US-101 SB ON-RAMP Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	5
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	100	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	100	

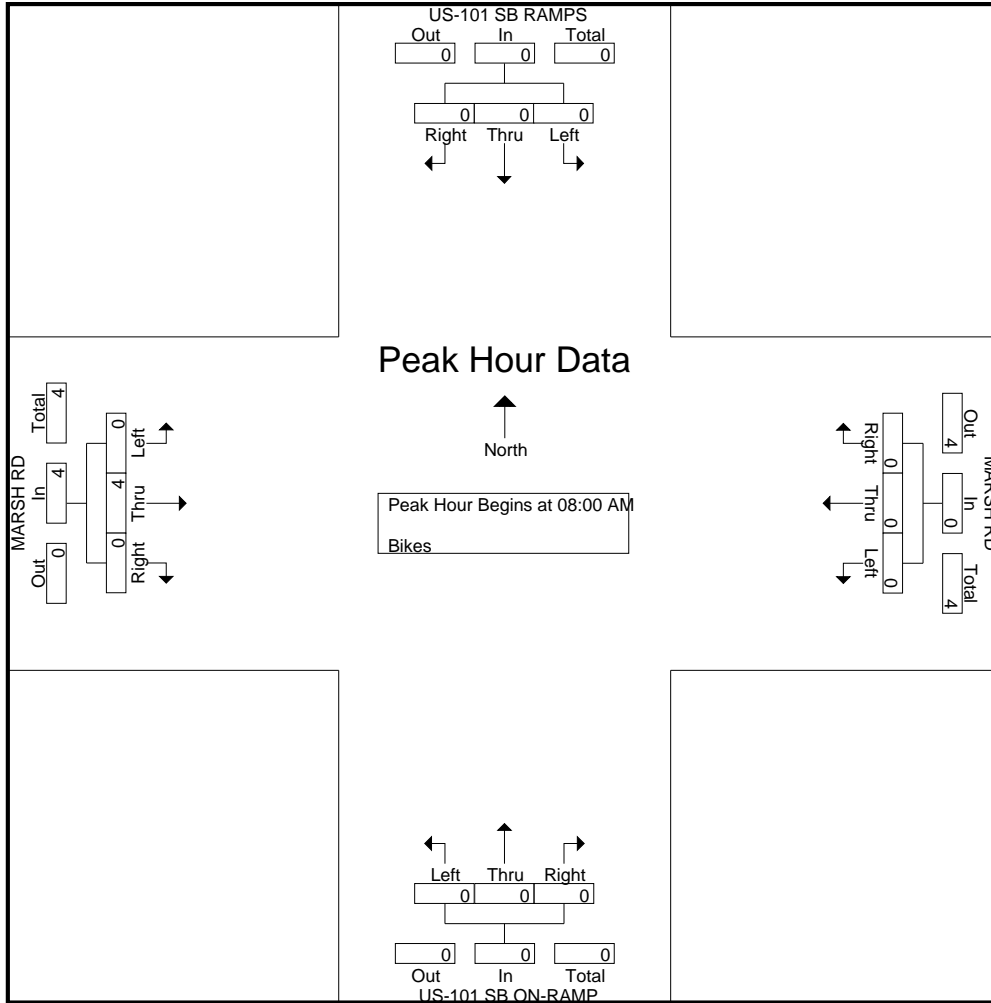
Start Time	US-101 SB RAMPS Southbound				MARSH RD Westbound				US-101 SB ON-RAMP Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	1.00	.000	1.00	1.00



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 44AM FINAL  
Site Code : 00000044  
Start Date : 4/16/2019  
Page No : 2



# Traffic Data Service

San Jose, CA  
**(408) 622-4787**  
*tdsbay@cs.com*

File Name : 44PM FINAL  
 Site Code : 00000044  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Vehicles

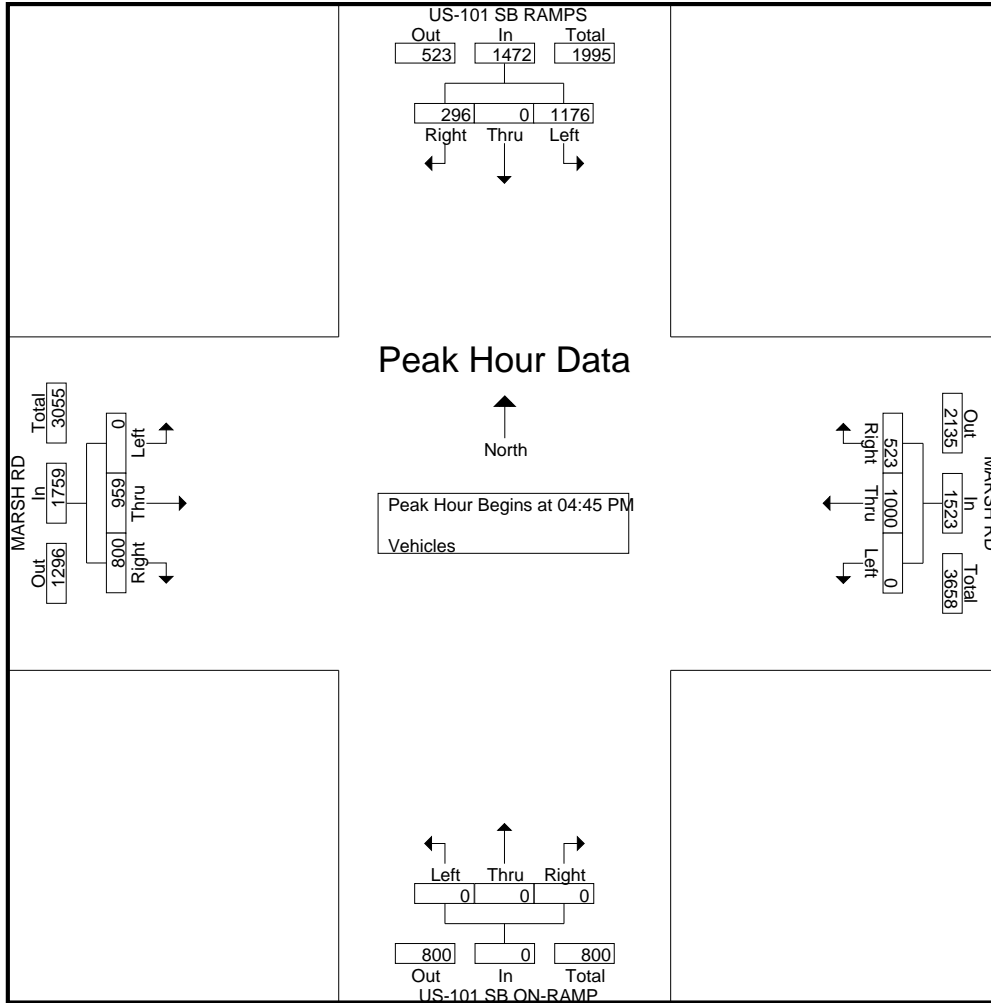
Start Time	US-101 SB RAMPS Southbound					MARSH RD Westbound					US-101 SB ON-RAMP Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	55	0	223	1	279	108	201	0	0	309	0	0	0	0	0	233	281	0	0	514	1102
04:15 PM	52	0	276	1	329	125	198	0	0	323	0	0	0	0	0	238	287	0	1	526	1178
04:30 PM	67	0	262	0	329	127	216	0	0	343	0	0	0	0	0	207	260	0	0	467	1139
04:45 PM	51	0	309	1	361	130	263	0	0	393	0	0	0	0	0	199	247	0	0	446	1200
<b>Total</b>	<b>225</b>	<b>0</b>	<b>1070</b>	<b>3</b>	<b>1298</b>	<b>490</b>	<b>878</b>	<b>0</b>	<b>0</b>	<b>1368</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>877</b>	<b>1075</b>	<b>0</b>	<b>1</b>	<b>1953</b>	<b>4619</b>
05:00 PM	56	0	275	2	333	129	228	0	0	357	0	0	0	0	0	198	282	0	0	480	1170
05:15 PM	75	0	261	2	338	130	252	0	0	382	0	0	0	0	0	218	244	0	0	462	1182
05:30 PM	114	0	331	4	449	134	257	0	0	391	0	0	0	0	0	185	186	0	0	371	1211
05:45 PM	97	0	282	2	381	135	228	0	0	363	0	0	0	0	0	170	225	0	0	395	1139
<b>Total</b>	<b>342</b>	<b>0</b>	<b>1149</b>	<b>10</b>	<b>1501</b>	<b>528</b>	<b>965</b>	<b>0</b>	<b>0</b>	<b>1493</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>771</b>	<b>937</b>	<b>0</b>	<b>0</b>	<b>1708</b>	<b>4702</b>
06:00 PM	81	0	228	2	311	143	264	0	1	408	0	0	0	0	0	173	185	0	0	358	1077
06:15 PM	94	0	264	3	361	155	250	0	0	405	0	0	0	0	0	136	175	0	0	311	1077
06:30 PM	99	0	278	2	379	143	223	0	0	366	0	0	0	3	3	101	207	0	0	308	1056
06:45 PM	108	0	224	4	336	93	197	0	0	290	0	0	0	0	0	126	203	0	0	329	955
<b>Total</b>	<b>382</b>	<b>0</b>	<b>994</b>	<b>11</b>	<b>1387</b>	<b>534</b>	<b>934</b>	<b>0</b>	<b>1</b>	<b>1469</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>536</b>	<b>770</b>	<b>0</b>	<b>0</b>	<b>1306</b>	<b>4165</b>
Grand Total	949	0	3213	24	4186	1552	2777	0	1	4330	0	0	0	3	3	2184	2782	0	1	4967	13486
Apprch %	22.7	0	76.8	0.6		35.8	64.1	0	0		0	0	0	100		44	56	0	0		
Total %	7	0	23.8	0.2	31	11.5	20.6	0	0	32.1	0	0	0	0	0	16.2	20.6	0	0	36.8	

Start Time	US-101 SB RAMPS Southbound				MARSH RD Westbound				US-101 SB ON-RAMP Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	51	0	309	360	130	<b>263</b>	0	<b>393</b>	0	0	0	0	199	247	0	446	1199
05:00 PM	56	0	275	331	129	228	0	357	0	0	0	0	198	<b>282</b>	0	<b>480</b>	1168
05:15 PM	75	0	261	336	130	252	0	382	0	0	0	0	<b>218</b>	244	0	462	1180
05:30 PM	<b>114</b>	0	<b>331</b>	<b>445</b>	<b>134</b>	257	0	391	0	0	0	0	185	186	0	371	<b>1207</b>
Total Volume	296	0	1176	1472	523	1000	0	1523	0	0	0	0	800	959	0	1759	4754
% App. Total	20.1	0	79.9		34.3	65.7	0		0	0	0		45.5	54.5	0		
PHF	.649	.000	.888	.827	.976	.951	.000	.969	.000	.000	.000	.000	.917	.850	.000	.916	.985

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 44PM FINAL  
 Site Code : 00000044  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 44PM FINAL  
 Site Code : 00000044  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Bikes

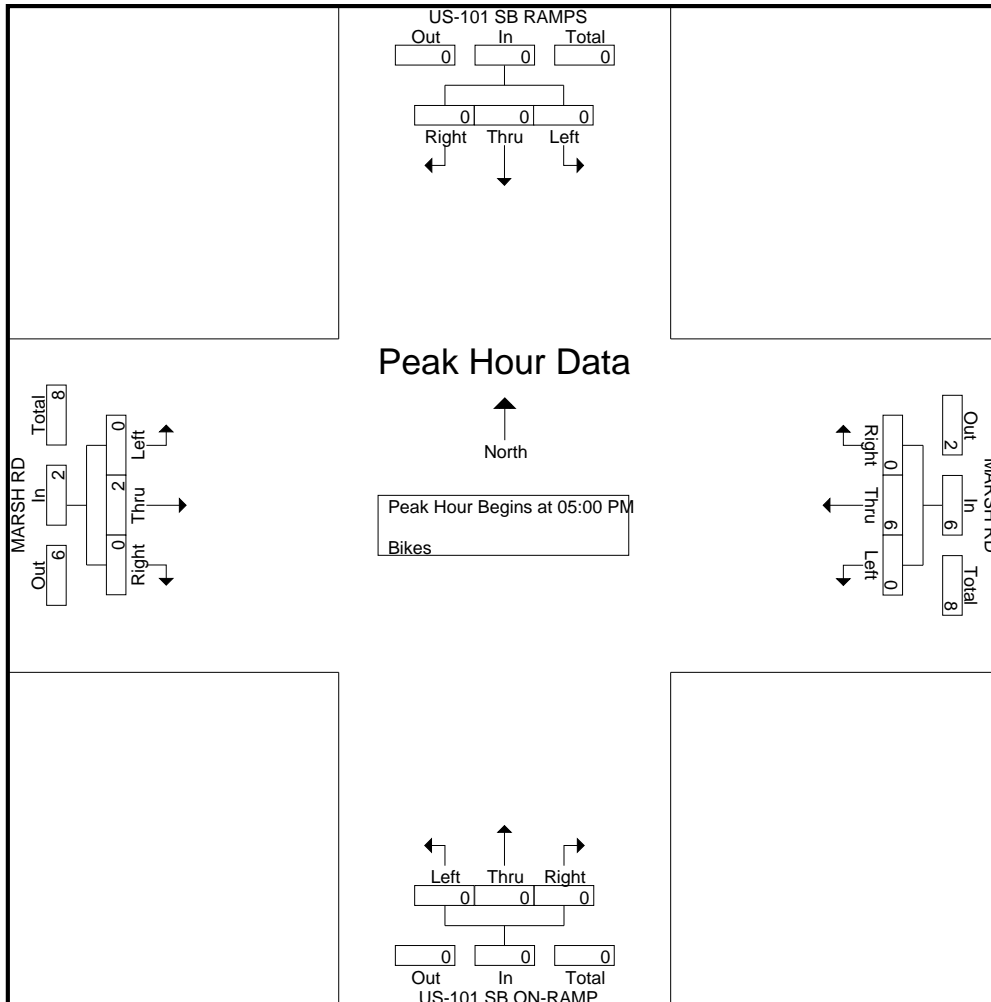
Start Time	US-101 SB RAMPS Southbound					MARSH RD Westbound					US-101 SB ON-RAMP Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
05:00 PM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	5
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	2	0	0	2	8
06:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	2	0	0	2	12
Apprch %	0	0	0	0		0	100	0	0		0	0	0	0		0	100	0	0		
Total %	0	0	0	0	0	0	83.3	0	0	83.3	0	0	0	0	0	0	16.7	0	0	16.7	

Start Time	US-101 SB RAMPS Southbound				MARSH RD Westbound				US-101 SB ON-RAMP Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	5
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	6	0	6	0	0	0	0	0	2	0	2	8
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.300	.000	.300	.000	.000	.000	.000	.000	.500	.000	.500	.400

# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 44PM FINAL  
Site Code : 00000044  
Start Date : 4/16/2019  
Page No : 2



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 22AM FINAL  
Site Code : 00000022  
Start Date : 4/16/2019  
Page No : 1

Groups Printed- Vehicles

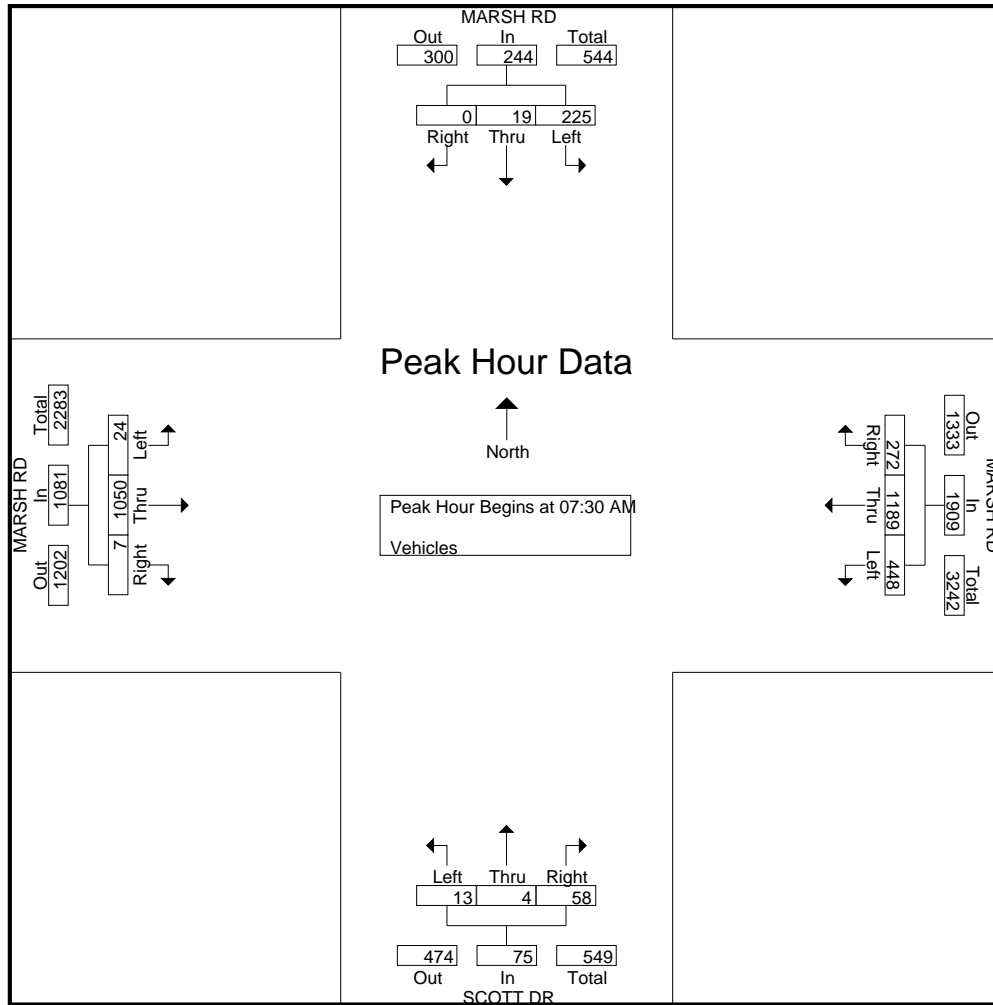
Start Time	MARSH RD Southbound					MARSH RD Westbound					SCOTT DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	2	62	0	64	51	316	79	0	446	9	0	3	0	12	4	208	2	1	215	737
07:15 AM	0	2	52	0	54	78	309	79	0	466	13	4	1	0	18	1	225	2	1	229	767
07:30 AM	0	2	62	0	64	69	324	87	0	480	15	1	0	0	16	3	247	3	0	253	813
07:45 AM	0	6	77	0	83	65	284	106	0	455	14	2	6	0	22	0	234	7	0	241	801
<b>Total</b>	0	12	253	0	265	263	1233	351	0	1847	51	7	10	0	68	8	914	14	2	938	3118
08:00 AM	0	7	39	0	46	72	250	100	1	423	18	1	3	2	24	1	280	6	1	288	781
08:15 AM	0	4	47	0	51	66	331	155	0	552	11	0	4	0	15	3	289	8	1	301	919
08:30 AM	1	4	39	0	44	43	280	109	0	432	22	0	4	0	26	2	293	9	1	305	807
08:45 AM	0	5	25	0	30	28	254	105	0	387	21	1	3	0	25	2	231	8	0	241	683
<b>Total</b>	1	20	150	0	171	209	1115	469	1	1794	72	2	14	2	90	8	1093	31	3	1135	3190
09:00 AM	0	1	32	0	33	44	220	117	1	382	17	0	1	1	19	3	224	3	2	232	666
09:15 AM	0	1	35	1	37	36	170	75	0	281	15	1	6	0	22	3	211	8	0	222	562
09:30 AM	0	1	30	1	32	34	207	89	0	330	20	0	4	0	24	1	260	2	0	263	649
09:45 AM	1	0	32	1	34	31	242	77	0	350	12	0	7	0	19	6	226	7	0	239	642
<b>Total</b>	1	3	129	3	136	145	839	358	1	1343	64	1	18	1	84	13	921	20	2	956	2519
Grand Total	2	35	532	3	572	617	3187	1178	2	4984	187	10	42	3	242	29	2928	65	7	3029	8827
Apprch %	0.3	6.1	93	0.5		12.4	63.9	23.6	0		77.3	4.1	17.4	1.2		1	96.7	2.1	0.2		
Total %	0	0.4	6	0	6.5	7	36.1	13.3	0	56.5	2.1	0.1	0.5	0	2.7	0.3	33.2	0.7	0.1	34.3	

Start Time	MARSH RD Southbound				MARSH RD Westbound				SCOTT DR Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	2	62	64	69	324	87	480	15	1	0	16	3	247	3	253	813
07:45 AM	0	6	77	83	65	284	106	455	14	2	6	22	0	234	7	241	801
08:00 AM	0	7	39	46	72	250	100	422	18	1	3	22	1	280	6	287	777
08:15 AM	0	4	47	51	66	331	155	552	11	0	4	15	3	289	8	300	918
Total Volume	0	19	225	244	272	1189	448	1909	58	4	13	75	7	1050	24	1081	3309
% App. Total	0	7.8	92.2		14.2	62.3	23.5		77.3	5.3	17.3		0.6	97.1	2.2		
PHF	.000	.679	.731	.735	.944	.898	.723	.865	.806	.500	.542	.852	.583	.908	.750	.901	.901

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 22AM FINAL  
 Site Code : 00000022  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 22AM FINAL  
 Site Code : 00000022  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	MARSH RD Southbound					MARSH RD Westbound					SCOTT DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
08:30 AM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	0	0	1	3
09:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
Grand Total	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	0	2	0	0	2	5
Apprch %	0	0	100	0		0	0	100	0		0	0	0	0		0	100	0	0		
Total %	0	0	20	0	20	0	0	40	0	40	0	0	0	0	0	0	40	0	0	40	

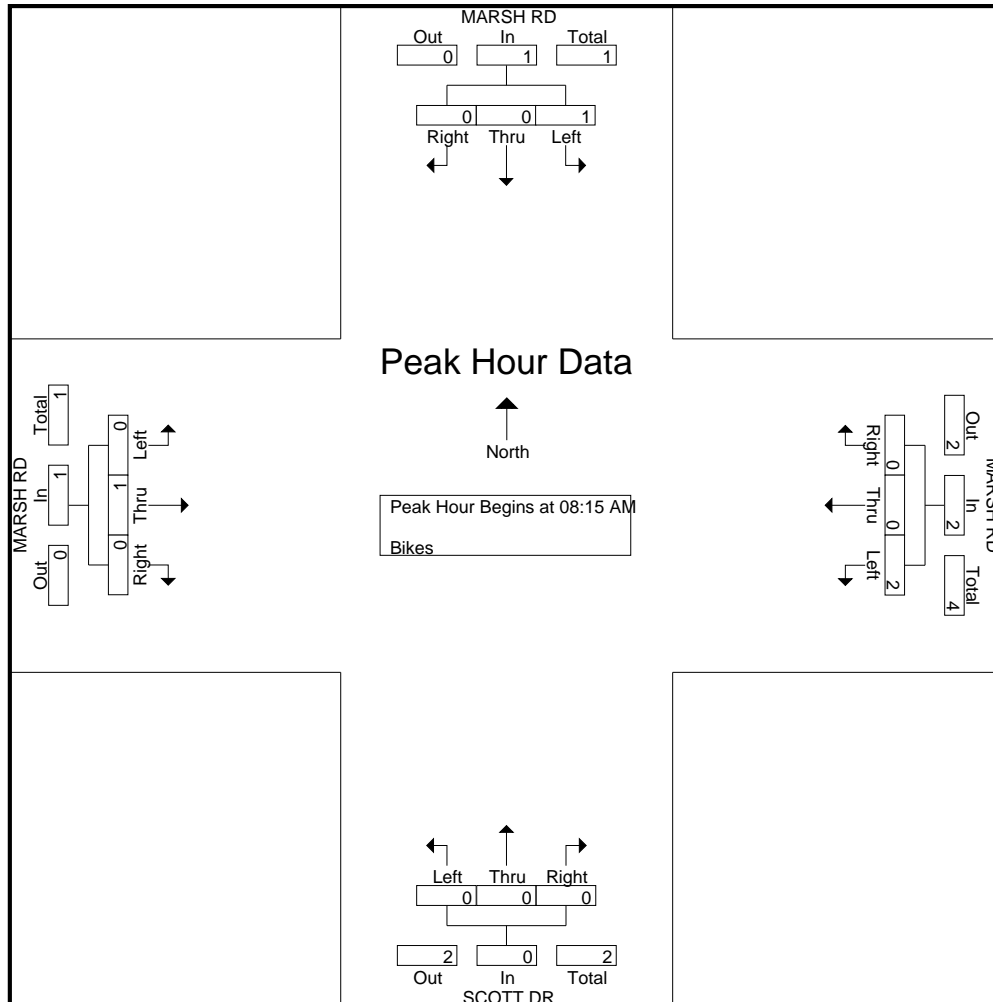
Start Time	MARSH RD Southbound				MARSH RD Westbound				SCOTT DR Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:30 AM	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	1	1	0	0	2	2	0	0	0	0	0	1	0	1	4
% App. Total	0	0	100		0	0	100		0	0	0		0	100	0		
PHF	.000	.000	.250	.250	.000	.000	.250	.250	.000	.000	.000	.000	.000	.250	.000	.250	.500



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 22AM FINAL  
Site Code : 00000022  
Start Date : 4/16/2019  
Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 22PM FINAL  
 Site Code : 00000022  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Vehicles

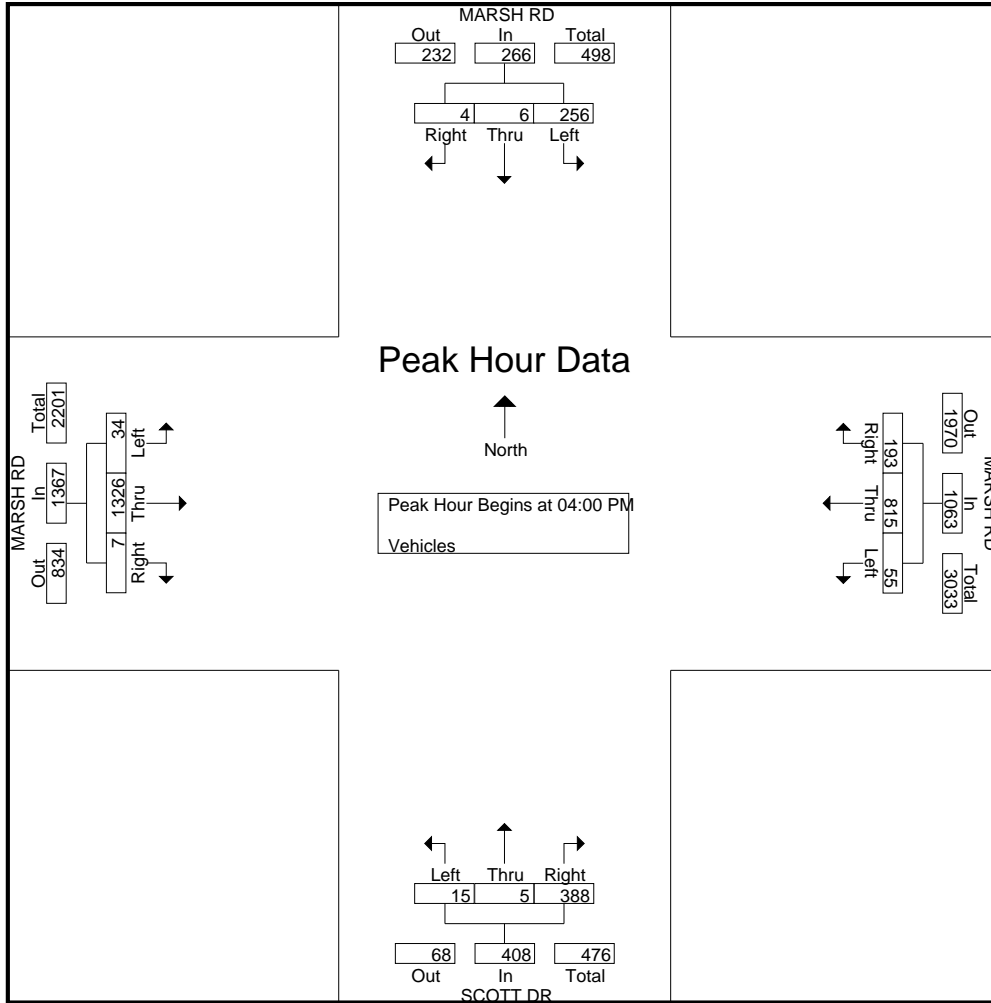
Start Time	MARSH RD Southbound					MARSH RD Westbound					SCOTT DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	3	4	72	0	79	45	172	21	0	238	111	2	4	0	117	2	346	8	0	356	790
04:15 PM	0	2	65	1	68	48	188	13	0	249	85	1	6	0	92	2	388	9	1	400	809
04:30 PM	0	0	68	0	68	47	220	6	0	273	116	1	4	0	121	1	270	11	1	283	745
04:45 PM	1	0	51	0	52	53	235	15	0	303	76	1	1	0	78	2	322	6	0	330	763
Total	4	6	256	1	267	193	815	55	0	1063	388	5	15	0	408	7	1326	34	2	1369	3107
05:00 PM	0	2	73	3	78	48	215	14	0	277	117	1	6	0	124	0	289	12	0	301	780
05:15 PM	0	4	65	0	69	46	246	19	0	311	105	1	4	0	110	0	278	10	0	288	778
05:30 PM	1	3	46	3	53	54	278	20	0	352	78	3	6	0	87	1	242	10	0	253	745
05:45 PM	1	2	37	1	41	47	269	13	0	329	66	1	7	0	74	4	277	8	1	290	734
Total	2	11	221	7	241	195	1008	66	0	1269	366	6	23	0	395	5	1086	40	1	1132	3037
06:00 PM	0	2	28	1	31	47	273	17	0	337	60	5	6	0	71	1	267	12	0	280	719
06:15 PM	0	1	41	0	42	52	275	22	0	349	39	1	6	0	46	1	237	8	0	246	683
06:30 PM	0	1	30	1	32	45	263	9	0	317	47	0	5	2	54	0	225	7	0	232	635
06:45 PM	0	1	24	0	25	51	248	10	0	309	38	2	2	0	42	0	265	8	1	274	650
Total	0	5	123	2	130	195	1059	58	0	1312	184	8	19	2	213	2	994	35	1	1032	2687
Grand Total	6	22	600	10	638	583	2882	179	0	3644	938	19	57	2	1016	14	3406	109	4	3533	8831
Apprch %	0.9	3.4	94	1.6		16	79.1	4.9	0		92.3	1.9	5.6	0.2		0.4	96.4	3.1	0.1		
Total %	0.1	0.2	6.8	0.1	7.2	6.6	32.6	2	0	41.3	10.6	0.2	0.6	0	11.5	0.2	38.6	1.2	0	40	

Start Time	MARSH RD Southbound				MARSH RD Westbound				SCOTT DR Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	3	4	72	79	45	172	21	238	111	2	4	117	2	346	8	356	790
04:15 PM	0	2	65	67	48	188	13	249	85	1	6	92	2	388	9	399	807
04:30 PM	0	0	68	68	47	220	6	273	116	1	4	121	1	270	11	282	744
04:45 PM	1	0	51	52	53	235	15	303	76	1	1	78	2	322	6	330	763
Total Volume	4	6	256	266	193	815	55	1063	388	5	15	408	7	1326	34	1367	3104
% App. Total	1.5	2.3	96.2		18.2	76.7	5.2		95.1	1.2	3.7		0.5	97	2.5		
PHF	.333	.375	.889	.842	.910	.867	.655	.877	.836	.625	.625	.843	.875	.854	.773	.857	.962

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 22PM FINAL  
 Site Code : 00000022  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 22PM FINAL  
 Site Code : 00000022  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Bikes

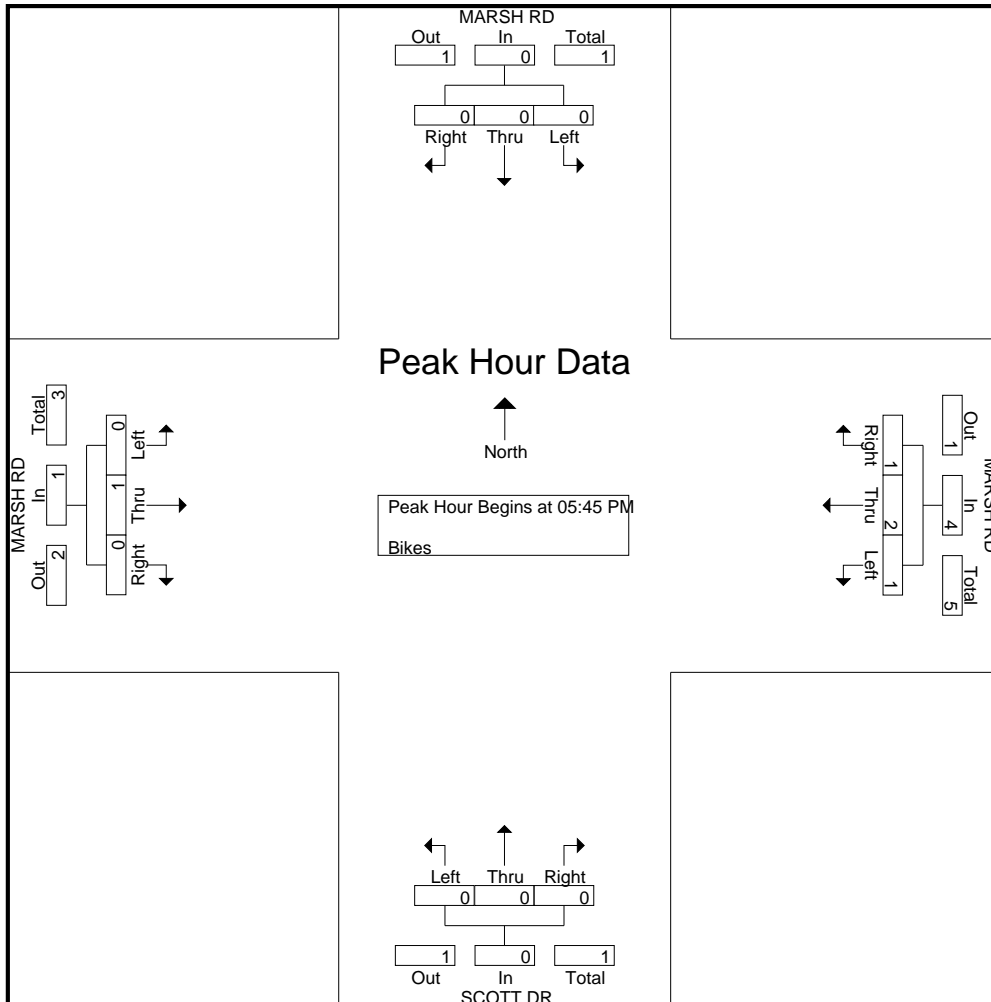
Start Time	MARSH RD Southbound					MARSH RD Westbound					SCOTT DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	1	0	0	1	3
06:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	1	1	3
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	1	2	1	0	4	0	0	0	0	0	0	0	1	1	2	6
Grand Total	0	0	0	0	0	2	3	1	0	6	1	0	0	0	1	0	1	1	1	3	10
Apprch %	0	0	0	0		33.3	50	16.7	0		100	0	0	0		0	33.3	33.3	33.3		
Total %	0	0	0	0	0	20	30	10	0	60	10	0	0	0	10	0	10	10	10	30	

Start Time	MARSH RD Southbound				MARSH RD Westbound				SCOTT DR Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:45 PM																	
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
06:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
06:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1
06:30 PM	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	1	2	1	4	0	0	0	0	0	1	0	1	5
% App. Total	0	0	0		.25	.50	.25		0	0	0		0	100	0		.625
PHF	.000	.000	.000	.000	.250	.500	.250	.500	.000	.000	.000	.000	.000	.250	.000	.250	.625

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 22PM FINAL  
 Site Code : 00000022  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 21AM FINAL  
Site Code : 00000021  
Start Date : 3/21/2019  
Page No : 1

Groups Printed- Vehicles

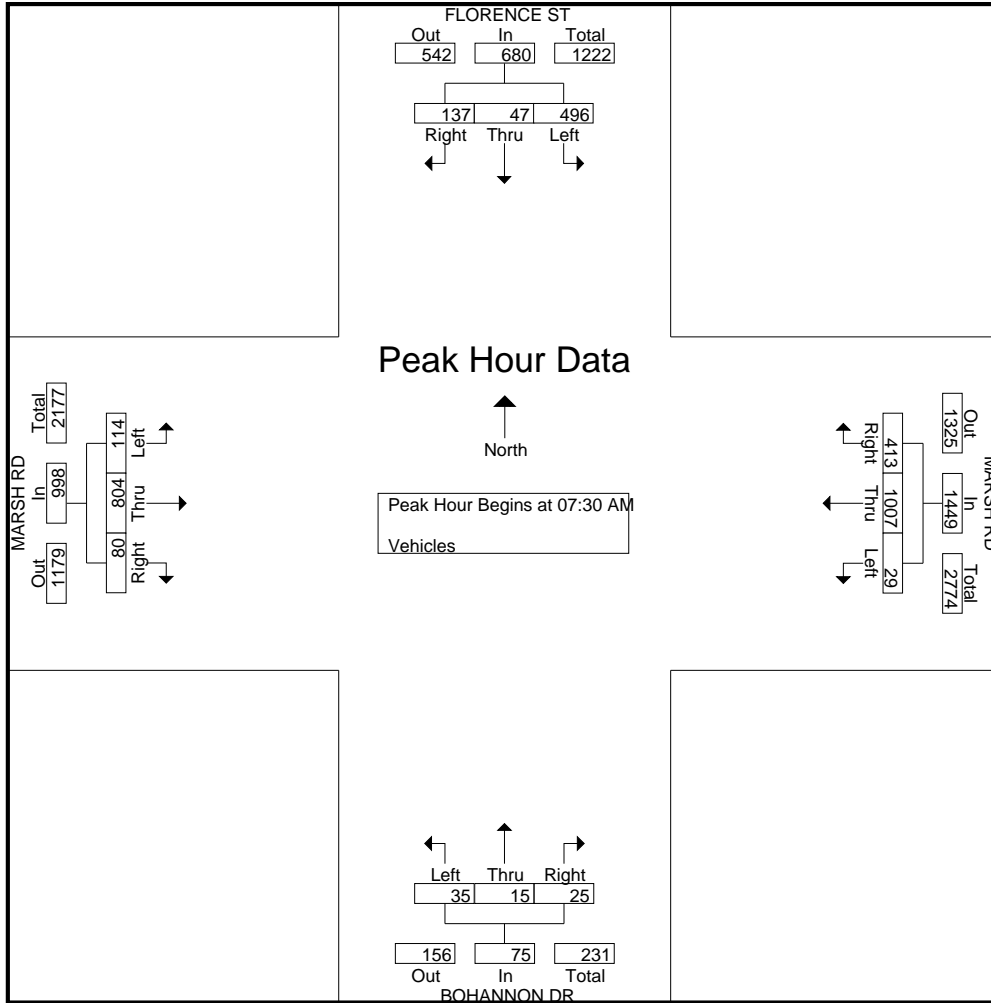
Start Time	FLORENCE ST Southbound					MARSH RD Westbound					BOHANNON DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	33	5	83	2	123	108	224	6	0	338	1	2	2	1	6	10	126	7	0	143	610
07:15 AM	33	11	90	1	135	103	262	13	1	379	9	3	6	1	19	20	134	28	0	182	715
07:30 AM	38	6	140	0	184	111	291	5	0	407	5	4	9	0	18	17	156	17	0	190	799
07:45 AM	33	13	132	0	178	104	242	10	1	357	5	4	5	0	14	26	181	24	0	231	780
Total	137	35	445	3	620	426	1019	34	2	1481	20	13	22	2	57	73	597	76	0	746	2904
08:00 AM	38	11	122	0	171	111	235	6	0	352	9	5	9	0	23	20	222	36	0	278	824
08:15 AM	28	17	102	1	148	87	239	8	2	336	6	2	12	0	20	17	245	37	2	301	805
08:30 AM	39	8	79	0	126	74	188	4	0	266	4	0	7	1	12	20	258	37	8	323	727
08:45 AM	27	12	77	0	116	68	217	4	0	289	8	6	8	0	22	32	228	38	7	305	732
Total	132	48	380	1	561	340	879	22	2	1243	27	13	36	1	77	89	953	148	17	1207	3088
09:00 AM	36	6	69	1	112	65	168	7	1	241	5	6	16	0	27	31	165	25	1	222	602
09:15 AM	34	12	69	1	116	56	169	6	1	232	3	2	15	0	20	19	156	21	0	196	564
09:30 AM	22	16	62	1	101	53	147	9	0	209	9	7	12	2	30	37	156	42	7	242	582
09:45 AM	23	12	58	0	93	52	134	6	0	192	10	9	26	0	45	23	150	43	1	217	547
Total	115	46	258	3	422	226	618	28	2	874	27	24	69	2	122	110	627	131	9	877	2295
Grand Total	384	129	1083	7	1603	992	2516	84	6	3598	74	50	127	5	256	272	2177	355	26	2830	8287
Apprch %	24	8	67.6	0.4		27.6	69.9	2.3	0.2		28.9	19.5	49.6	2		9.6	76.9	12.5	0.9		
Total %	4.6	1.6	13.1	0.1	19.3	12	30.4	1	0.1	43.4	0.9	0.6	1.5	0.1	3.1	3.3	26.3	4.3	0.3	34.1	

Start Time	FLORENCE ST Southbound					MARSH RD Westbound					BOHANNON DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	<b>38</b>	6	<b>140</b>		<b>184</b>	<b>111</b>	<b>291</b>	5		<b>407</b>	5	4	9	18		17	156	17		190	799
07:45 AM	33	13	132		178	104	242	<b>10</b>		356	5	4	5	14		<b>26</b>	181	24		231	779
08:00 AM	38	11	122		171	111	235	6		352	<b>9</b>	<b>5</b>	9	<b>23</b>		20	222	36		278	<b>824</b>
08:15 AM	28	<b>17</b>	102		147	87	239	8		334	6	2	<b>12</b>	20		17	<b>245</b>	<b>37</b>		<b>299</b>	800
Total Volume	137	47	496		680	413	1007	29		1449	25	15	35	75		80	804	114		998	3202
% App. Total	20.1	6.9	72.9			28.5	69.5	2			33.3	20	46.7			8	80.6	11.4			
PHF	.901	.691	.886		.924	.930	.865	.725		.890	.694	.750	.729	.815		.769	.820	.770		.834	.971

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 21AM FINAL  
 Site Code : 00000021  
 Start Date : 3/21/2019  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 21AM FINAL  
 Site Code : 00000021  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	FLORENCE ST Southbound					MARSH RD Westbound					BOHANNON DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>
08:00 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
08:15 AM	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4
08:30 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	3	4	6
08:45 AM	2	1	1	0	4	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	6
<b>Total</b>	<b>8</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>7</b>	<b>19</b>
09:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
09:15 AM	2	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
09:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
09:45 AM	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
<b>Total</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>10</b>
Grand Total	15	3	3	0	21	1	1	0	0	2	0	0	1	0	1	2	3	4	0	9	33
Apprch %	71.4	14.3	14.3	0		50	50	0	0		0	0	100	0		22.2	33.3	44.4	0		
Total %	45.5	9.1	9.1	0	63.6	3	3	0	0	6.1	0	0	3	0	3	6.1	9.1	12.1	0	27.3	

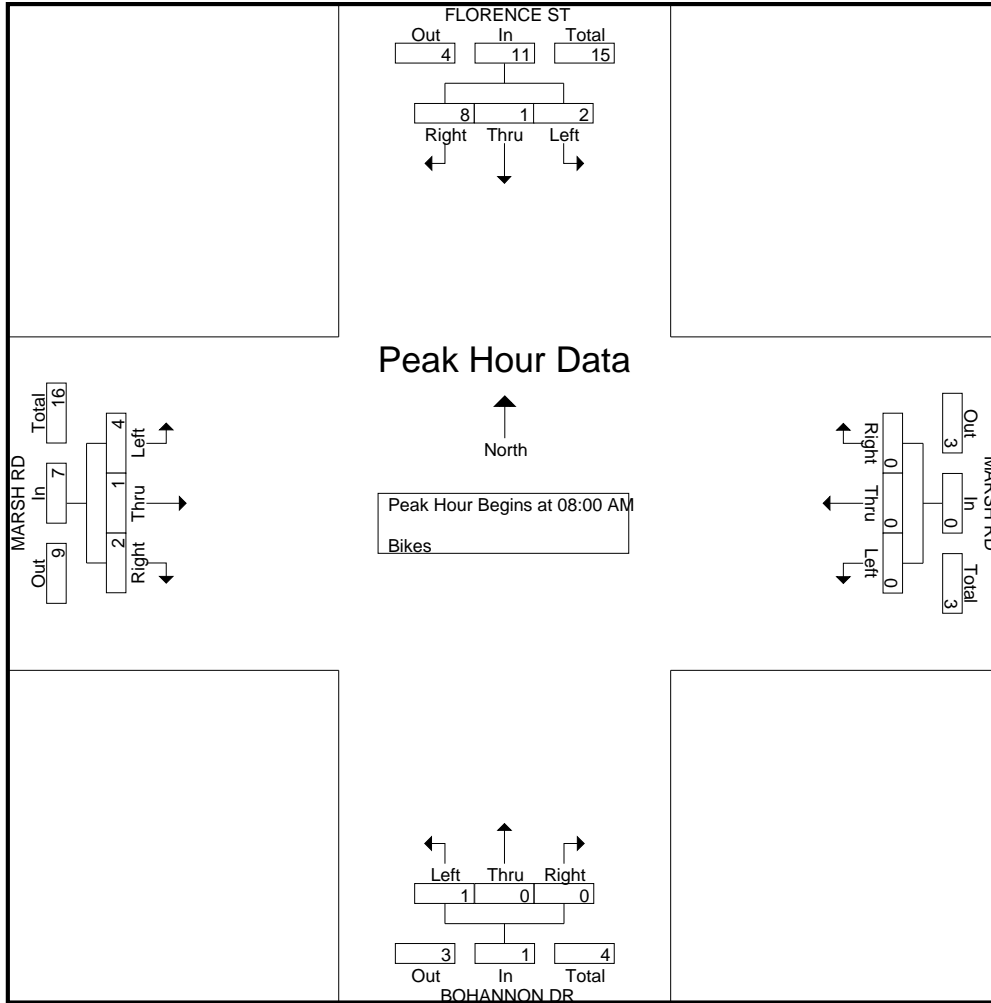
Start Time	FLORENCE ST Southbound				MARSH RD Westbound				BOHANNON DR Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	2	0	0	2	0	0	0	0	0	0	0	0	0	0	1	1	3
08:15 AM	2	0	1	3	0	0	0	0	0	0	0	0	0	1	0	1	4
08:30 AM	2	0	0	2	0	0	0	0	0	0	0	0	1	0	3	4	6
08:45 AM	2	1	1	4	0	0	0	0	0	0	1	1	1	0	0	1	6
Total Volume	8	1	2	11	0	0	0	0	0	0	1	1	2	1	4	7	19
% App. Total	72.7	9.1	18.2		0	0	0		0	0	100		28.6	14.3	57.1		
PHF	1.00	.250	.500	.688	.000	.000	.000	.000	.000	.000	.250	.250	.500	.250	.333	.438	.792



# Traffic Data Service

San Jose, CA  
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File Name : 21AM FINAL  
 Site Code : 00000021  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 21PM FINAL  
 Site Code : 00000021  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Vehicles

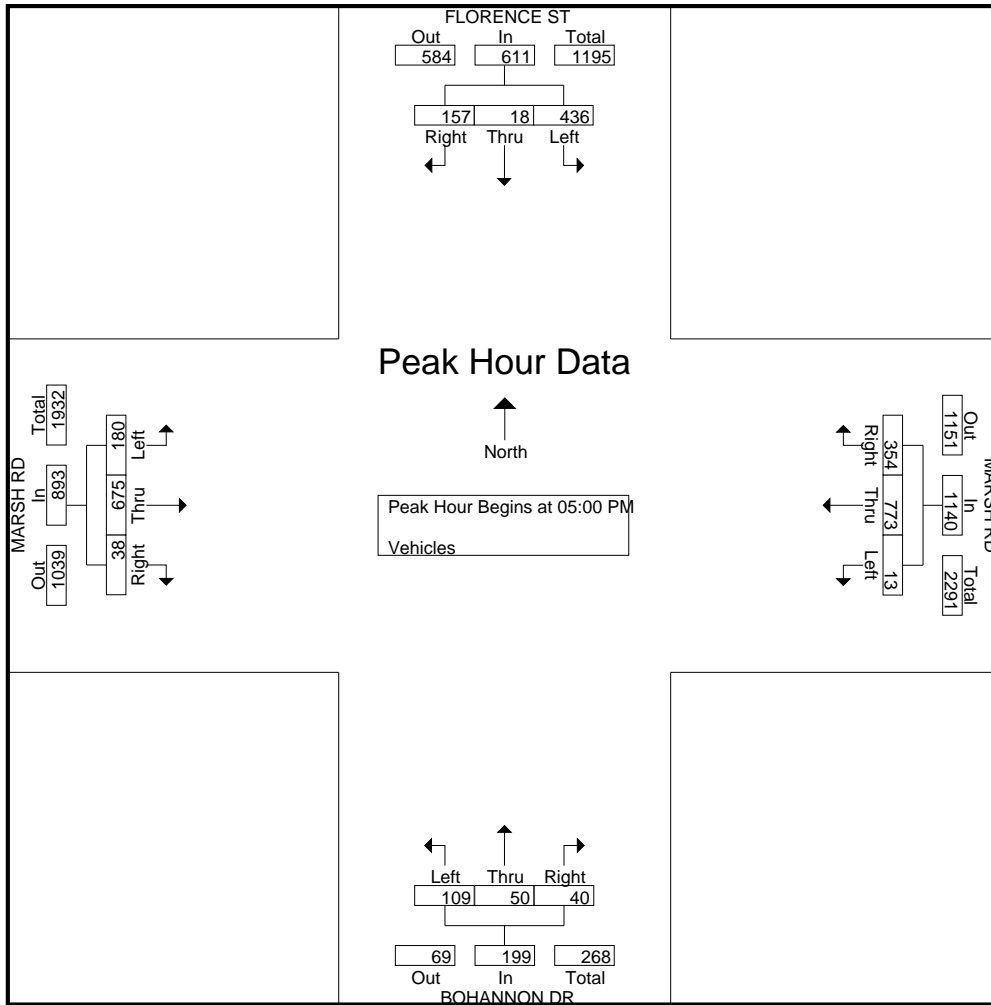
Start Time	FLORENCE ST Southbound					MARSH RD Westbound					BOHANNON DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	24	8	106	2	140	81	137	3	2	223	12	10	32	1	55	18	184	49	6	257	675
04:15 PM	33	7	125	2	167	78	145	6	2	231	15	10	13	0	38	13	212	41	2	268	704
04:30 PM	32	12	119	3	166	66	135	3	3	207	12	11	30	0	53	14	184	42	7	247	673
04:45 PM	32	9	102	1	144	83	143	5	0	231	19	15	29	0	63	33	183	52	2	270	708
Total	121	36	452	8	617	308	560	17	7	892	58	46	104	1	209	78	763	184	17	1042	2760
05:00 PM	41	3	123	3	170	79	179	5	1	264	16	10	46	0	72	8	213	39	1	261	767
05:15 PM	35	2	102	0	139	104	159	3	0	266	7	19	26	0	52	9	173	50	1	233	690
05:30 PM	45	5	105	0	155	82	203	5	1	291	5	13	21	1	40	7	143	43	0	193	679
05:45 PM	36	8	106	3	153	89	232	0	0	321	12	8	16	0	36	14	146	48	1	209	719
Total	157	18	436	6	617	354	773	13	2	1142	40	50	109	1	200	38	675	180	3	896	2855
06:00 PM	27	7	75	4	113	87	216	5	2	310	9	7	24	0	40	5	180	45	1	231	694
06:15 PM	33	6	67	2	108	79	174	4	5	262	7	7	7	0	21	4	165	39	0	208	599
06:30 PM	25	2	65	1	93	95	205	6	0	306	16	4	15	0	35	7	159	42	1	209	643
06:45 PM	30	6	97	4	137	84	194	1	1	280	6	8	5	1	20	16	180	32	0	228	665
Total	115	21	304	11	451	345	789	16	8	1158	38	26	51	1	116	32	684	158	2	876	2601
Grand Total	393	75	1192	25	1685	1007	2122	46	17	3192	136	122	264	3	525	148	2122	522	22	2814	8216
Apprch %	23.3	4.5	70.7	1.5		31.5	66.5	1.4	0.5		25.9	23.2	50.3	0.6		5.3	75.4	18.6	0.8		
Total %	4.8	0.9	14.5	0.3	20.5	12.3	25.8	0.6	0.2	38.9	1.7	1.5	3.2	0	6.4	1.8	25.8	6.4	0.3	34.3	

Start Time	FLORENCE ST Southbound					MARSH RD Westbound					BOHANNON DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	41	3	123		167	79	179	5		263	16	10	46		72	8	213	39		260	762
05:15 PM	35	2	102		139	104	159	3		266	7	19	26		52	9	173	50		232	689
05:30 PM	45	5	105		155	82	203	5		290	5	13	21		39	7	143	43		193	677
05:45 PM	36	8	106		150	89	232	0		321	12	8	16		36	14	146	48		208	715
Total Volume	157	18	436		611	354	773	13		1140	40	50	109		199	38	675	180		893	2843
% App. Total	25.7	2.9	71.4			31.1	67.8	1.1			20.1	25.1	54.8			4.3	75.6	20.2			
PHF	.872	.563	.886		.915	.851	.833	.650		.888	.625	.658	.592		.691	.679	.792	.900		.859	.933

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 21PM FINAL  
 Site Code : 00000021  
 Start Date : 3/21/2019  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 21PM FINAL  
 Site Code : 00000021  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

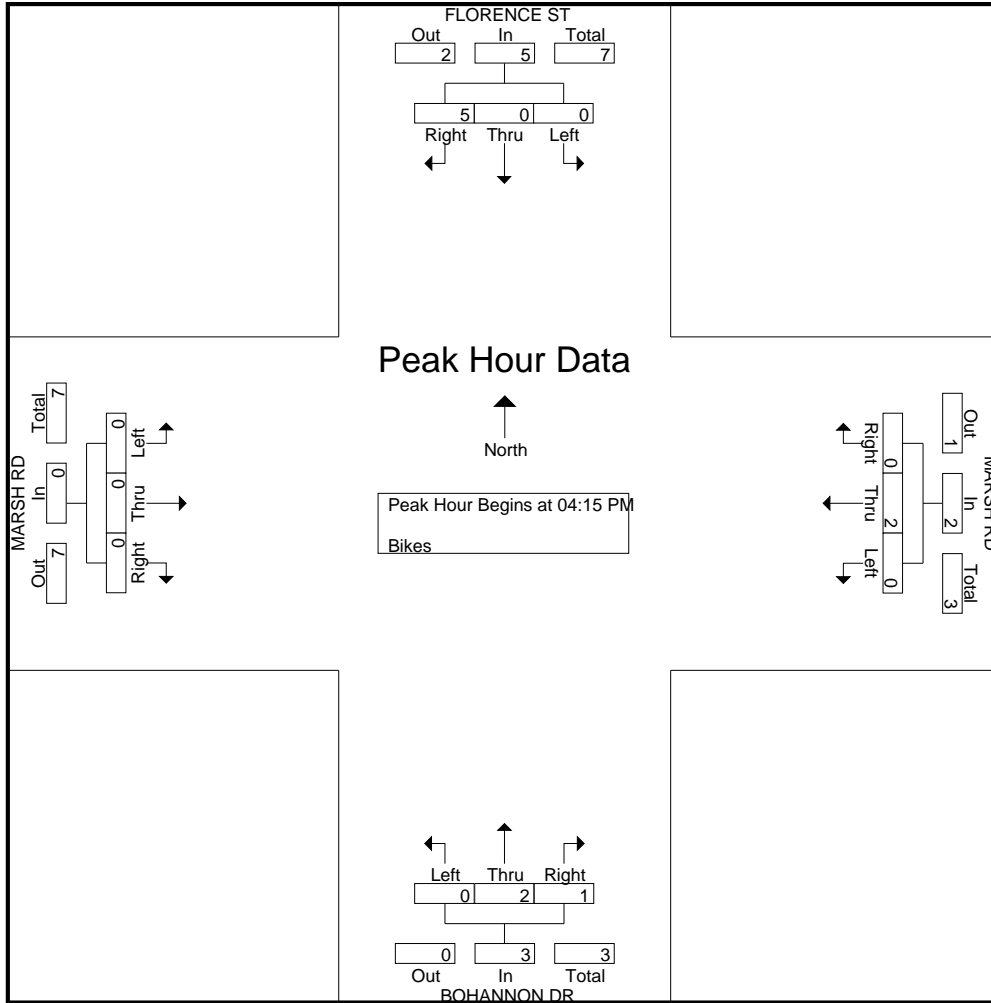
Start Time	FLORENCE ST Southbound					MARSH RD Westbound					BOHANNON DR Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	3	0	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
04:45 PM	1	0	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0
<b>Total</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>
05:00 PM	1	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
05:15 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
05:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>7</b>
06:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
<b>Total</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>6</b>
Grand Total	10	0	0	0	10	3	2	0	0	5	1	2	0	0	3	1	0	3	0	4	22
Apprch %	100	0	0	0		60	40	0	0		33.3	66.7	0	0		25	0	75	0		
Total %	45.5	0	0	0	45.5	13.6	9.1	0	0	22.7	4.5	9.1	0	0	13.6	4.5	0	13.6	0	18.2	

Start Time	FLORENCE ST Southbound				MARSH RD Westbound				BOHANNON DR Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	3	0	0	3	0	1	0	1	0	0	0	0	0	0	0	0	4
04:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
04:45 PM	1	0	0	1	0	1	0	1	0	1	0	1	0	0	0	0	3
05:00 PM	1	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2
Total Volume	5	0	0	5	0	2	0	2	1	2	0	3	0	0	0	0	10
% App. Total	100	0	0		0	100	0		33.3	66.7	0		0	0	0		
PHF	.417	.000	.000	.417	.000	.500	.000	.500	.250	.500	.000	.750	.000	.000	.000	.000	.625

# Traffic Data Service

San Jose, CA  
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File Name : 21PM FINAL  
 Site Code : 00000021  
 Start Date : 3/21/2019  
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# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 20AM FINAL  
Site Code : 00000020  
Start Date : 3/21/2019  
Page No : 1

Groups Printed- Vehicles

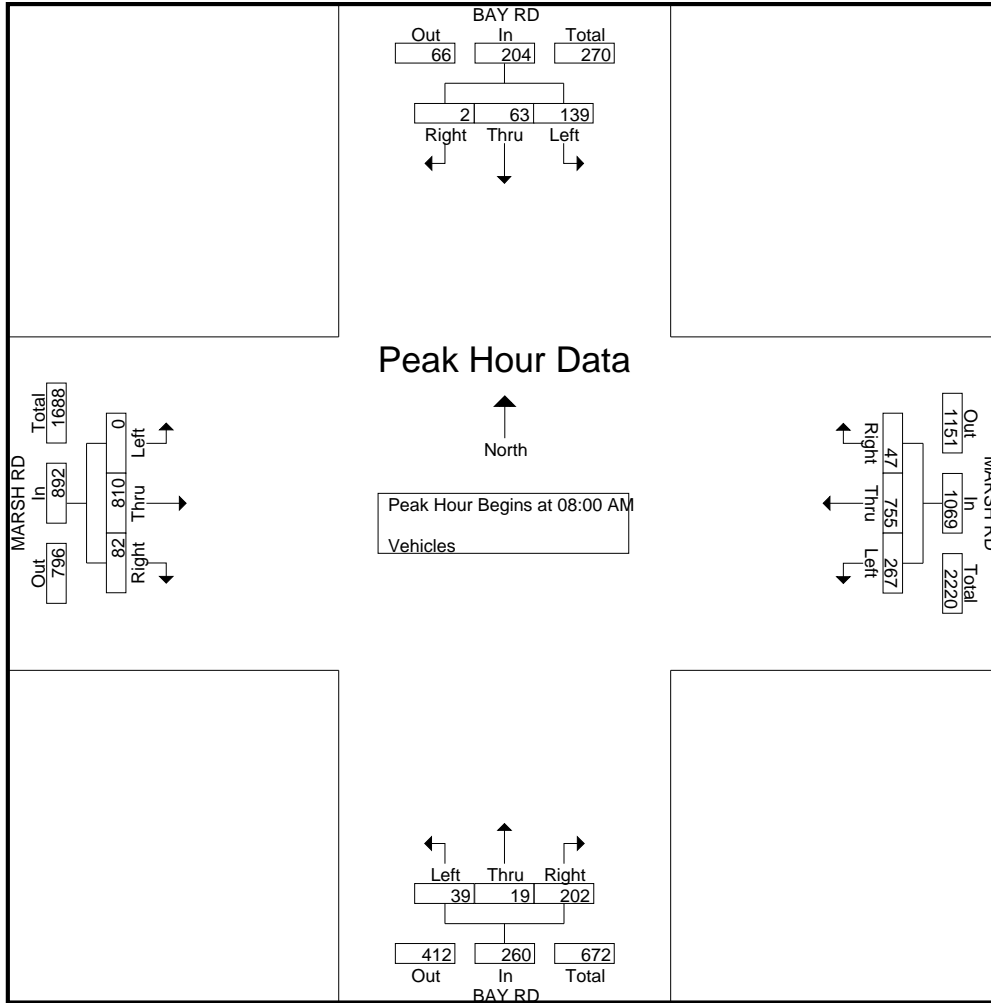
Start Time	BAY RD Southbound					MARSH RD Westbound					BAY RD Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	1	1	25	1	28	5	217	26	2	250	26	0	4	0	30	2	89	0	0	91	399
07:15 AM	0	1	23	0	24	8	252	36	0	296	30	2	4	0	36	10	123	0	0	133	489
07:30 AM	2	7	26	1	36	16	268	60	2	346	41	3	17	0	61	7	138	0	1	146	589
07:45 AM	0	13	30	1	44	18	205	58	4	285	32	4	18	0	54	9	156	0	0	165	548
Total	3	22	104	3	132	47	942	180	8	1177	129	9	43	0	181	28	506	0	1	535	2025
08:00 AM	0	13	38	0	51	26	193	76	2	297	48	1	19	1	69	21	183	0	0	204	621
08:15 AM	0	13	34	0	47	9	191	76	4	280	44	7	6	0	57	19	209	0	0	228	612
08:30 AM	1	23	44	2	70	5	178	58	2	243	60	6	6	1	73	23	201	0	0	224	610
08:45 AM	1	14	23	0	38	7	193	57	2	259	50	5	8	0	63	19	217	0	0	236	596
Total	2	63	139	2	206	47	755	267	10	1079	202	19	39	2	262	82	810	0	0	892	2439
09:00 AM	0	12	17	0	29	8	156	43	3	210	39	2	4	1	46	9	171	0	0	180	465
09:15 AM	3	4	20	1	28	10	172	33	4	219	47	4	16	0	67	12	139	0	0	151	465
09:30 AM	2	7	13	1	23	7	148	31	2	188	44	4	9	0	57	16	167	0	0	183	451
09:45 AM	0	6	18	1	25	7	134	30	2	173	31	1	4	0	36	15	142	0	0	157	391
Total	5	29	68	3	105	32	610	137	11	790	161	11	33	1	206	52	619	0	0	671	1772
Grand Total	10	114	311	8	443	126	2307	584	29	3046	492	39	115	3	649	162	1935	0	1	2098	6236
Apprch %	2.3	25.7	70.2	1.8		4.1	75.7	19.2	1		75.8	6	17.7	0.5		7.7	92.2	0	0		
Total %	0.2	1.8	5	0.1	7.1	2	37	9.4	0.5	48.8	7.9	0.6	1.8	0	10.4	2.6	31	0	0	33.6	

Start Time	BAY RD Southbound				MARSH RD Westbound				BAY RD Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	13	38	51	<b>26</b>	<b>193</b>	<b>76</b>	<b>295</b>	48	1	19	68	21	183	0	204	<b>618</b>
08:15 AM	0	13	34	47	9	191	76	276	44	7	6	57	19	209	0	228	608
08:30 AM	1	23	44	68	5	178	58	241	60	6	6	72	23	201	0	224	605
08:45 AM	1	14	23	38	7	193	57	257	50	5	8	63	19	217	0	236	594
Total Volume	2	63	139	204	47	755	267	1069	202	19	39	260	82	810	0	892	2425
% App. Total	1	30.9	68.1		4.4	70.6	25		77.7	7.3	15		9.2	90.8	0		
PHF	.500	.685	.790	.750	.452	.978	.878	.906	.842	.679	.513	.903	.891	.933	.000	.945	.981

# Traffic Data Service

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File Name : 20AM FINAL  
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Groups Printed- Bikes

Start Time	BAY RD Southbound					MARSH RD Westbound					BAY RD Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	1	0	0	1	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	4
08:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	1	0	0	1	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	4
08:30 AM	1	5	0	0	6	2	0	2	0	4	0	2	0	0	2	0	0	0	0	0	12
08:45 AM	0	2	0	0	2	0	1	3	0	4	0	0	0	0	0	0	0	0	0	0	6
<b>Total</b>	1	8	0	0	9	5	2	5	0	12	0	2	0	0	2	0	0	0	0	0	23
09:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
09:15 AM	1	1	0	0	2	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	5
09:30 AM	1	1	0	0	2	2	0	1	0	3	0	1	1	0	2	0	0	0	0	0	7
09:45 AM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
<b>Total</b>	2	3	0	0	5	4	0	3	0	7	0	2	1	0	3	0	0	0	0	0	15
Grand Total	3	12	0	0	15	9	3	10	0	22	0	4	1	0	5	0	0	0	0	0	42
Apprch %	20	80	0	0		40.9	13.6	45.5	0		0	80	20	0		0	0	0	0		
Total %	7.1	28.6	0	0	35.7	21.4	7.1	23.8	0	52.4	0	9.5	2.4	0	11.9	0	0	0	0	0	

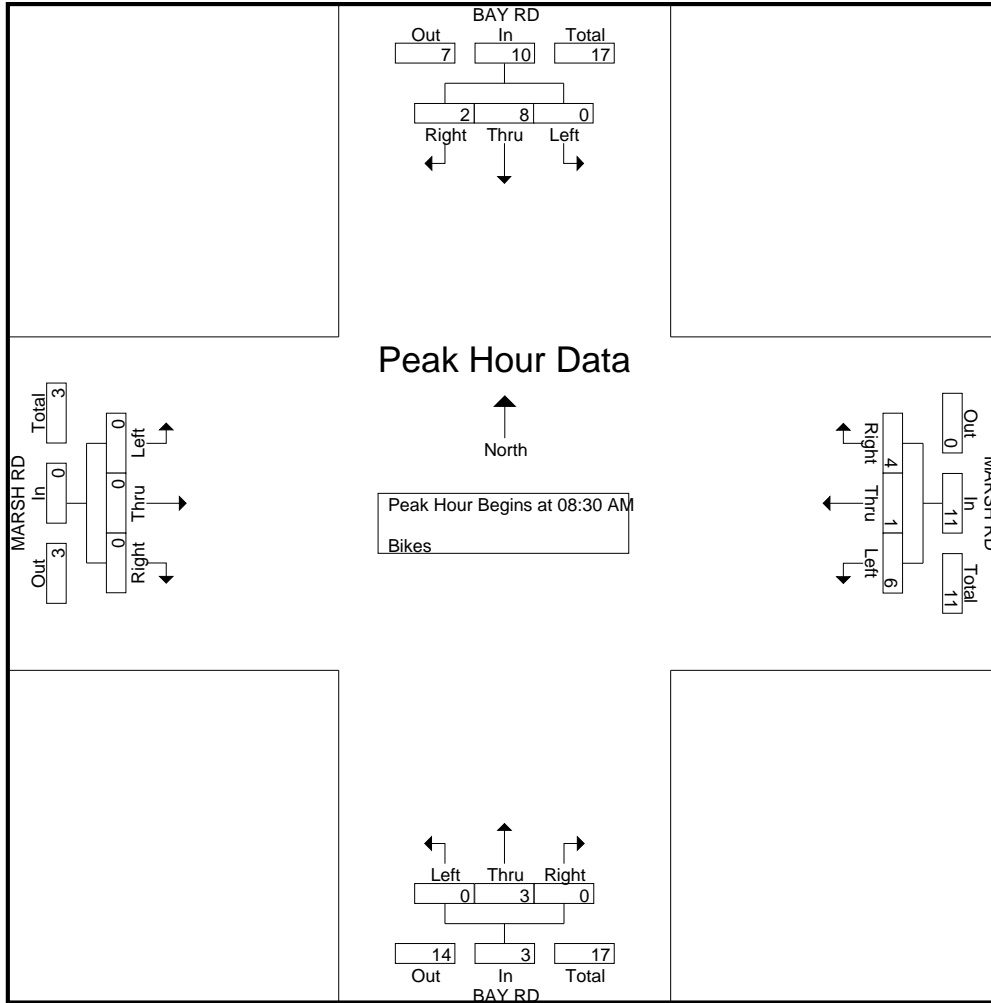
Start Time	BAY RD Southbound				MARSH RD Westbound				BAY RD Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:30 AM																	
08:30 AM	1	5	0	6	2	0	2	4	0	2	0	2	0	0	0	0	12
08:45 AM	0	2	0	2	0	1	3	4	0	0	0	0	0	0	0	0	6
09:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
09:15 AM	1	1	0	2	2	0	0	2	0	1	0	1	0	0	0	0	5
Total Volume	2	8	0	10	4	1	6	11	0	3	0	3	0	0	0	0	24
% App. Total	20	80	0		36.4	9.1	54.5		0	100	0		0	0	0		
PHF	.500	.400	.000	.417	.500	.250	.500	.688	.000	.375	.000	.375	.000	.000	.000	.000	.500



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# Traffic Data Service

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File Name : 20PM FINAL  
 Site Code : 00000020  
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Groups Printed- Vehicles

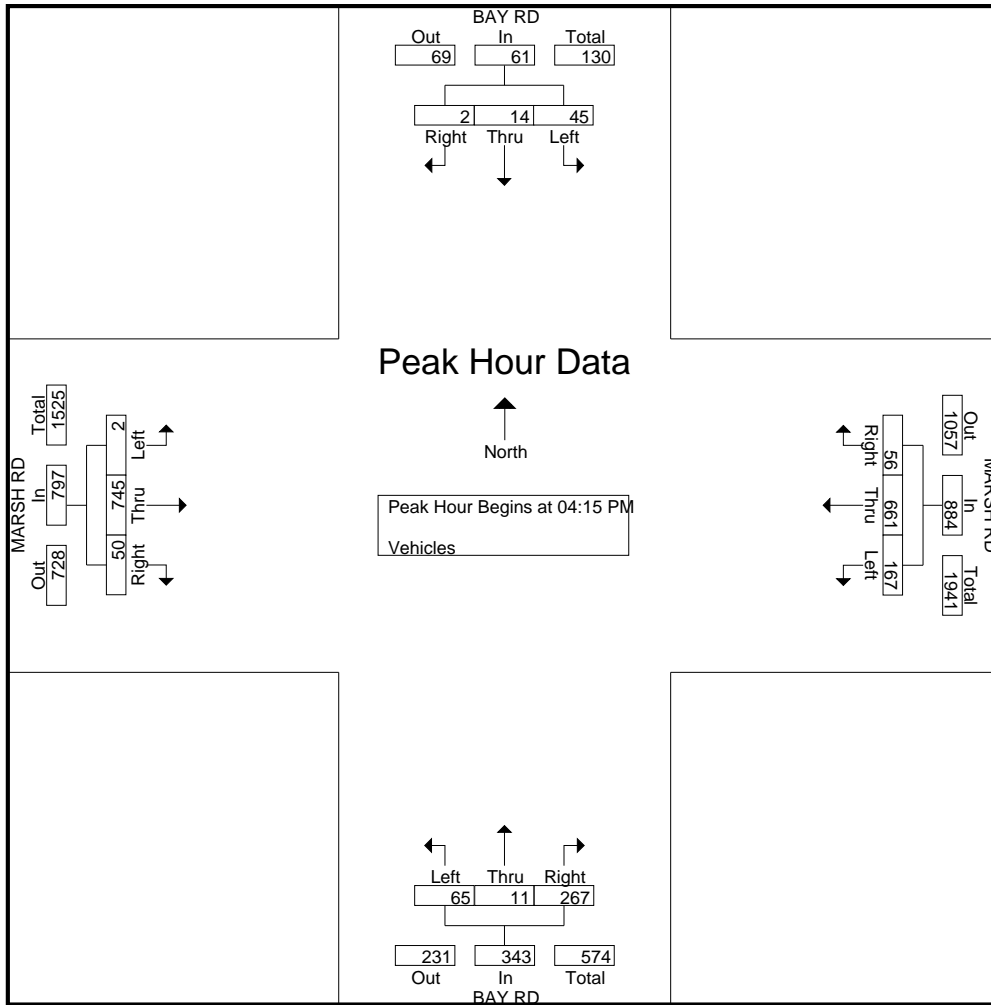
Start Time	BAY RD Southbound					MARSH RD Westbound					BAY RD Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	3	12	0	15	6	153	31	7	197	32	0	15	0	47	14	195	0	0	209	468
04:15 PM	1	5	11	1	18	12	152	32	2	198	47	5	18	0	70	18	209	0	0	227	513
04:30 PM	0	3	16	0	19	12	154	37	4	207	53	1	14	0	68	16	176	1	0	193	487
04:45 PM	1	2	12	5	20	15	153	40	3	211	57	4	18	0	79	9	200	1	0	210	520
<b>Total</b>	<b>2</b>	<b>13</b>	<b>51</b>	<b>6</b>	<b>72</b>	<b>45</b>	<b>612</b>	<b>140</b>	<b>16</b>	<b>813</b>	<b>189</b>	<b>10</b>	<b>65</b>	<b>0</b>	<b>264</b>	<b>57</b>	<b>780</b>	<b>2</b>	<b>0</b>	<b>839</b>	<b>1988</b>
05:00 PM	0	4	6	0	10	17	202	58	3	280	110	1	15	0	126	7	160	0	0	167	583
05:15 PM	0	7	21	0	28	6	181	31	2	220	53	8	14	0	75	21	129	0	0	150	473
05:30 PM	1	7	14	0	22	11	197	57	4	269	40	4	13	0	57	15	143	1	0	159	507
05:45 PM	2	6	16	2	26	12	212	68	6	298	35	4	11	0	50	11	148	0	0	159	533
<b>Total</b>	<b>3</b>	<b>24</b>	<b>57</b>	<b>2</b>	<b>86</b>	<b>46</b>	<b>792</b>	<b>214</b>	<b>15</b>	<b>1067</b>	<b>238</b>	<b>17</b>	<b>53</b>	<b>0</b>	<b>308</b>	<b>54</b>	<b>580</b>	<b>1</b>	<b>0</b>	<b>635</b>	<b>2096</b>
06:00 PM	1	4	16	2	23	11	212	47	4	274	41	4	14	0	59	14	184	0	0	198	554
06:15 PM	2	1	10	1	14	10	175	32	4	221	38	1	5	0	44	17	164	2	0	183	462
06:30 PM	1	1	10	6	18	19	197	35	2	253	30	4	7	0	41	4	182	0	0	186	498
06:45 PM	1	1	12	0	14	15	194	27	3	239	32	1	7	0	40	9	192	0	0	201	494
<b>Total</b>	<b>5</b>	<b>7</b>	<b>48</b>	<b>9</b>	<b>69</b>	<b>55</b>	<b>778</b>	<b>141</b>	<b>13</b>	<b>987</b>	<b>141</b>	<b>10</b>	<b>33</b>	<b>0</b>	<b>184</b>	<b>44</b>	<b>722</b>	<b>2</b>	<b>0</b>	<b>768</b>	<b>2008</b>
Grand Total	10	44	156	17	227	146	2182	495	44	2867	568	37	151	0	756	155	2082	5	0	2242	6092
Apprch %	4.4	19.4	68.7	7.5		5.1	76.1	17.3	1.5		75.1	4.9	20	0		6.9	92.9	0.2	0		
Total %	0.2	0.7	2.6	0.3	3.7	2.4	35.8	8.1	0.7	47.1	9.3	0.6	2.5	0	12.4	2.5	34.2	0.1	0	36.8	

Start Time	BAY RD Southbound				MARSH RD Westbound				BAY RD Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	1	5	11	17	12	152	32	196	47	5	18	70	18	209	0	227	510
04:30 PM	0	3	16	19	12	154	37	203	53	1	14	68	16	176	1	193	483
04:45 PM	1	2	12	15	15	153	40	208	57	4	18	79	9	200	1	210	512
05:00 PM	0	4	6	10	17	202	58	277	110	1	15	126	7	160	0	167	580
Total Volume	2	14	45	61	56	661	167	884	267	11	65	343	50	745	2	797	2085
% App. Total	3.3	23	73.8		6.3	74.8	18.9		77.8	3.2	19		6.3	93.5	0.3		
PHF	.500	.700	.703	.803	.824	.818	.720	.798	.607	.550	.903	.681	.694	.891	.500	.878	.899

# Traffic Data Service

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# Traffic Data Service

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File Name : 20PM FINAL  
 Site Code : 00000020  
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 Page No : 1

Groups Printed- Bikes

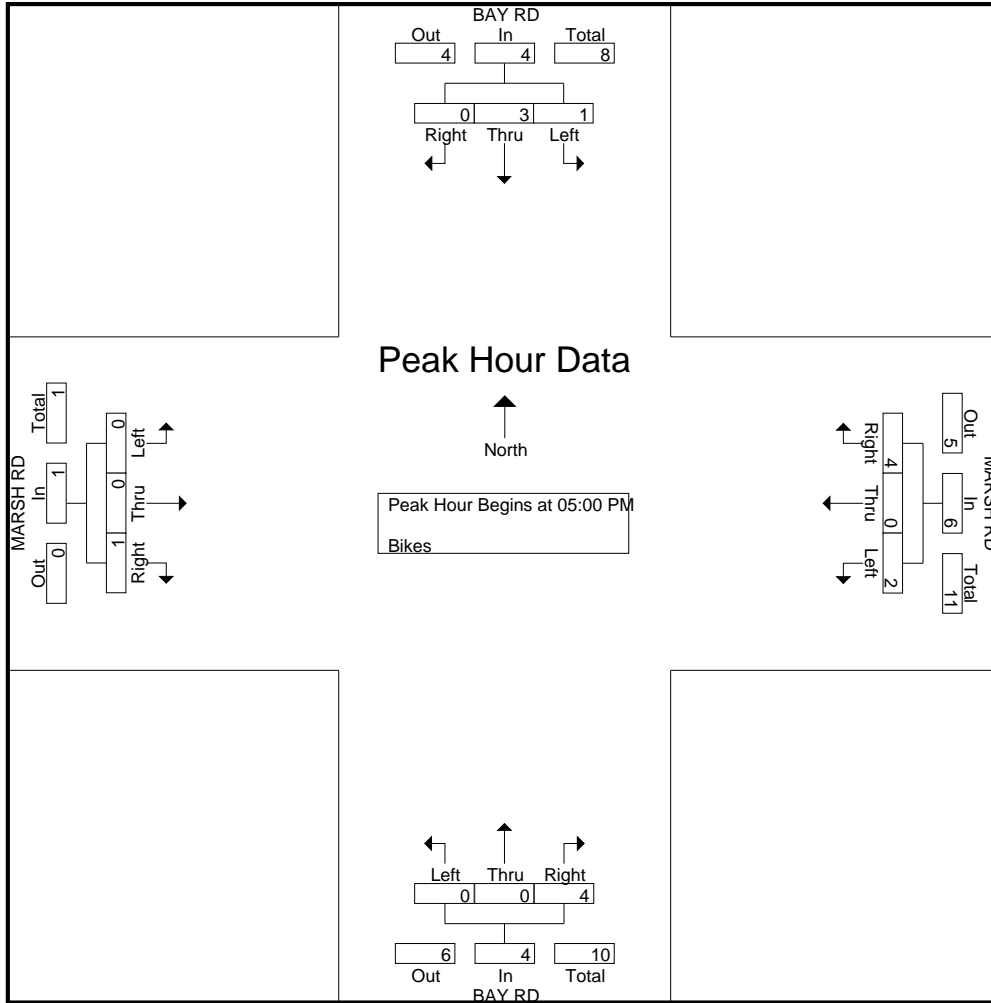
Start Time	BAY RD Southbound					MARSH RD Westbound					BAY RD Northbound					MARSH RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
04:45 PM	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	3
Total	0	4	0	0	4	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	6
05:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
05:15 PM	0	0	1	0	1	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
05:30 PM	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	0	0	0	0	0	3
05:45 PM	0	2	0	0	2	2	0	1	0	3	2	0	0	0	2	0	0	0	0	0	7
Total	0	3	1	0	4	4	0	2	0	6	4	0	0	0	4	1	0	0	0	1	15
06:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
06:45 PM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	4	0	0	0	0	0	4
Total	0	1	0	0	1	0	0	0	0	0	4	2	0	0	6	0	0	0	0	0	7
Grand Total	0	8	1	0	9	4	1	2	0	7	9	2	0	0	11	1	0	0	0	1	28
Apprch %	0	88.9	11.1	0		57.1	14.3	28.6	0		81.8	18.2	0	0		100	0	0	0		
Total %	0	28.6	3.6	0	32.1	14.3	3.6	7.1	0	25	32.1	7.1	0	0	39.3	3.6	0	0	0	3.6	

Start Time	BAY RD Southbound				MARSH RD Westbound				BAY RD Northbound				MARSH RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2
05:15 PM	0	0	1	1	2	0	0	2	0	0	0	0	0	0	0	0	3
05:30 PM	0	0	0	0	0	0	1	1	2	0	0	2	0	0	0	0	3
05:45 PM	0	2	0	2	2	0	1	3	2	0	0	2	0	0	0	0	7
Total Volume	0	3	1	4	4	0	2	6	4	0	0	4	1	0	0	1	15
% App. Total	0	75	25		66.7	0	33.3		100	0	0		100	0	0		
PHF	.000	.375	.250	.500	.500	.000	.500	.500	.500	.000	.000	.500	.250	.000	.000	.250	.536

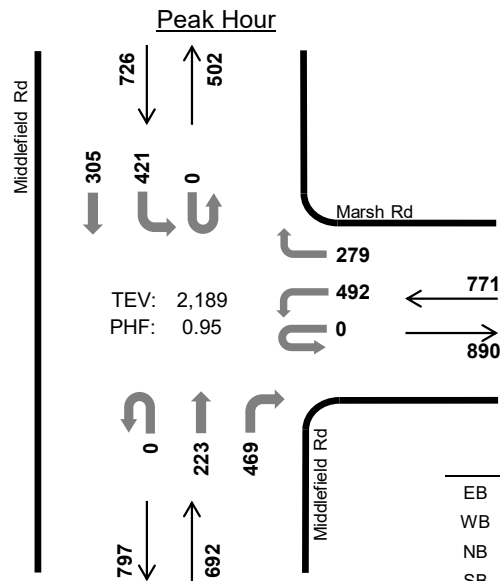
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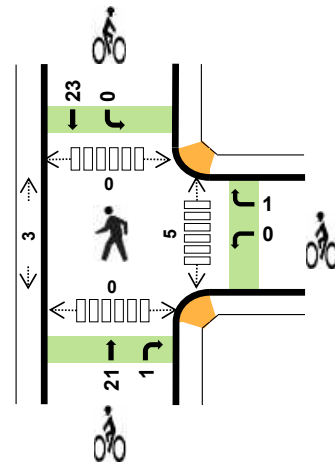
File Name : 20PM FINAL  
 Site Code : 00000020  
 Start Date : 3/21/2019  
 Page No : 2



### Middlefield Rd Marsh Rd



Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	-	-
WB	4.9%	0.97
NB	1.9%	0.89
SB	1.8%	0.93
TOTAL	2.9%	0.95

#### Three-Hour Count Summaries

Interval Start	n/a				Marsh Rd				Middlefield Rd				Middlefield Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:00 AM	0	0	0	0	0	103	0	73	0	0	53	124	0	97	66	0	516	0	
8:15 AM	0	0	0	0	0	116	0	82	0	0	52	143	0	105	79	0	577	0	
8:30 AM	0	0	0	0	0	130	0	68	0	0	48	113	0	113	82	0	554	0	
8:45 AM	0	0	0	0	0	143	0	56	0	0	70	89	0	106	78	0	542	2,189	
Peak Hour	All	0	0	0	0	0	492	0	279	0	0	223	469	0	421	305	0	2,189	0
	HV	0	0	0	0	0	29	0	9	0	0	3	10	0	7	6	0	64	0
	HV%	-	-	-	-	-	6%	-	3%	-	-	1%	2%	-	2%	2%	-	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	0	14	4	4	22	0	0	4	5	9	1	0	0	0	1
8:15 AM	0	12	3	3	18	0	0	6	6	12	1	1	0	0	2
8:30 AM	0	6	4	4	14	0	0	4	4	8	1	0	0	0	1
8:45 AM	0	6	2	2	10	0	1	8	8	17	2	2	0	0	4
Peak Hour	0	38	13	13	64	0	1	22	23	46	5	3	0	0	8

Three-Hour Count Summaries														15-min Total	Rolling One Hour				
Interval Start	n/a				Marsh Rd				Middlefield Rd				Middlefield Rd						
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	136	0	80	0	0	11	62	0	53	55	0	397	0	
7:15 AM	0	0	0	0	0	136	0	84	0	0	23	72	0	66	66	0	447	0	
7:30 AM	0	0	0	0	0	135	0	94	0	0	43	86	0	76	110	0	544	0	
7:45 AM	0	0	0	0	0	93	0	88	0	0	47	108	0	94	80	0	510	1,898	
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>103</b>	<b>0</b>	<b>73</b>	<b>0</b>	<b>0</b>	<b>53</b>	<b>124</b>	<b>0</b>	<b>97</b>	<b>66</b>	<b>0</b>	<b>516</b>	2,017	
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>116</b>	<b>0</b>	<b>82</b>	<b>0</b>	<b>0</b>	<b>52</b>	<b>143</b>	<b>0</b>	<b>105</b>	<b>79</b>	<b>0</b>	<b>577</b>	2,147	
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>130</b>	<b>0</b>	<b>68</b>	<b>0</b>	<b>0</b>	<b>48</b>	<b>113</b>	<b>0</b>	<b>113</b>	<b>82</b>	<b>0</b>	<b>554</b>	2,157	
<b>8:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>143</b>	<b>0</b>	<b>56</b>	<b>0</b>	<b>0</b>	<b>70</b>	<b>89</b>	<b>0</b>	<b>106</b>	<b>78</b>	<b>0</b>	<b>542</b>	<b>2,189</b>	
9:00 AM	0	0	0	0	0	108	0	65	0	0	62	88	0	86	69	0	478	2,151	
9:15 AM	0	0	0	0	0	128	0	57	0	0	80	109	0	75	50	0	499	2,073	
9:30 AM	0	0	0	0	0	110	0	62	0	0	63	80	0	73	55	0	443	1,962	
9:45 AM	0	0	0	0	0	119	0	60	0	0	63	104	0	72	58	0	476	1,896	
Count Total	0	0	0	0	0	1,457	0	869	0	0	615	1,178	0	1,016	848	0	5,983	0	
Peak Hour	All	0	0	0	0	0	492	0	279	0	0	223	469	0	421	305	0	2,189	0
	HV	0	0	0	0	0	29	0	9	0	0	3	10	0	7	6	0	64	0
	HV%	-	-	-	-	-	6%	-	3%	-	-	1%	2%	-	2%	2%	-	3%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	4	1	6	0	1	2	4	7	1	0	0	0	1
7:15 AM	0	5	3	1	9	0	1	1	3	5	2	1	0	0	3
7:30 AM	0	6	7	4	17	0	0	2	11	13	6	0	0	0	6
7:45 AM	0	3	5	3	11	0	1	4	10	15	0	1	0	0	1
<b>8:00 AM</b>	<b>0</b>	<b>14</b>	<b>4</b>	<b>4</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>8:15 AM</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>3</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>6</b>	<b>12</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>8:30 AM</b>	<b>0</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>8:45 AM</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>2</b>	<b>10</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>8</b>	<b>17</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>4</b>
9:00 AM	0	6	6	3	15	0	1	7	12	20	1	0	0	0	1
9:15 AM	0	4	9	6	19	0	0	3	4	7	0	0	0	0	0
9:30 AM	0	10	6	3	19	0	0	1	5	6	0	0	0	0	0
9:45 AM	0	3	4	2	9	0	0	0	3	3	1	0	0	0	1
Count Total	0	76	57	36	169	0	5	42	75	122	16	5	0	0	21
Peak Hr	0	38	13	13	64	0	1	22	23	46	5	3	0	0	8

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Marsh Rd				Middlefield Rd				Middlefield Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	1	0	0	0	0	1	3	0	0	1	0	6	0
7:15 AM	0	0	0	0	0	5	0	0	0	0	0	3	0	0	1	0	9	0
7:30 AM	0	0	0	0	0	5	0	1	0	0	3	4	0	3	1	0	17	0
7:45 AM	0	0	0	0	0	2	0	1	0	0	1	4	0	0	3	0	11	43
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>22</b>	59
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>18</b>	68
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>14</b>	65
<b>8:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>64</b>
9:00 AM	0	0	0	0	0	5	0	1	0	0	2	4	0	2	1	0	15	57
9:15 AM	0	0	0	0	0	3	0	1	0	0	4	5	0	3	3	0	19	58
9:30 AM	0	0	0	0	0	8	0	2	0	0	1	5	0	2	1	0	19	63
9:45 AM	0	0	0	0	0	3	0	0	0	0	2	2	0	1	1	0	9	62
Count Total	0	0	0	0	0	61	0	15	0	0	17	40	0	18	18	0	169	0
Peak Hour	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>10</b>	<b>0</b>	<b>7</b>	<b>6</b>	<b>0</b>	<b>64</b>	<b>0</b>

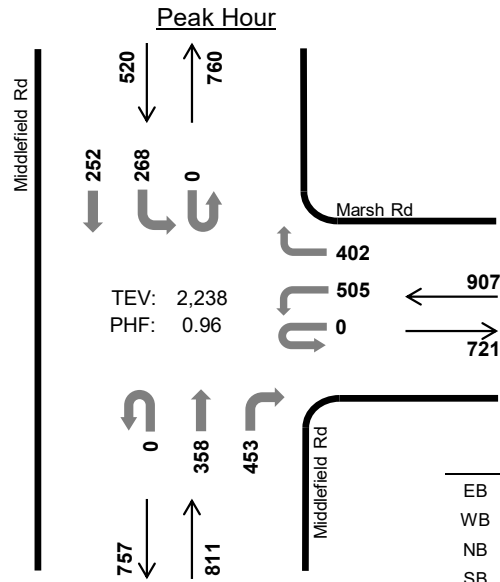
  

Three-Hour Count Summaries - Bikes																	
Interval Start	n/a			Marsh Rd			Middlefield Rd			Middlefield Rd			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	1	0	0	0	2	0	0	4	0	7	0			
7:15 AM	0	0	0	1	0	0	0	1	0	0	3	0	5	0			
7:30 AM	0	0	0	0	0	0	0	2	0	0	11	0	13	0			
7:45 AM	0	0	0	1	0	0	0	4	0	0	10	0	15	40			
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>9</b>	42			
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>12</b>	49			
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>8</b>	44			
<b>8:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>17</b>	<b>46</b>			
9:00 AM	0	0	0	1	0	0	0	7	0	0	12	0	20	57			
9:15 AM	0	0	0	0	0	0	0	3	0	0	4	0	7	52			
9:30 AM	0	0	0	0	0	0	0	1	0	0	5	0	6	50			
9:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	3	36			
Count Total	0	0	0	4	0	1	0	41	1	0	75	0	122	0			
Peak Hour	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>21</b>	<b>1</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>46</b>	<b>0</b>			

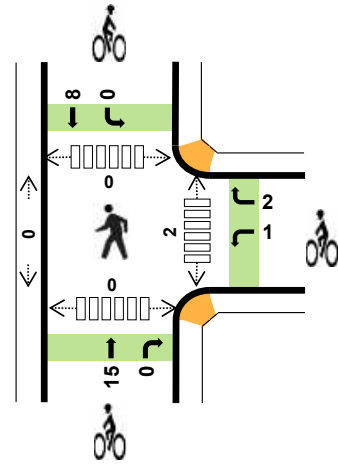
Note: U-Turn volumes for bikes are included in Left-Turn, if any.



### Middlefield Rd Marsh Rd



Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 5:30 PM to 6:30 PM



	HV %:	PHF
EB	-	-
WB	0.7%	0.94
NB	1.8%	0.91
SB	1.7%	0.98
TOTAL	1.3%	0.96

#### Three-Hour Count Summaries

Interval Start	n/a				Marsh Rd				Middlefield Rd				Middlefield Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
5:30 PM	0	0	0	0	0	139	0	101	0	0	86	96	0	67	62	0	551	0	
5:45 PM	0	0	0	0	0	106	0	111	0	0	103	109	0	64	69	0	562	0	
6:00 PM	0	0	0	0	0	123	0	92	0	0	89	105	0	78	54	0	541	0	
6:15 PM	0	0	0	0	0	137	0	98	0	0	80	143	0	59	67	0	584	2,238	
Peak Hour	All	0	0	0	0	0	505	0	402	0	0	358	453	0	268	252	0	2,238	0
	HV	0	0	0	0	0	6	0	0	0	0	4	11	0	3	6	0	30	0
	HV%	-	-	-	-	-	1%	-	0%	-	-	1%	2%	-	1%	2%	-	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:30 PM	0	2	5	3	10	0	1	2	3	6	1	0	0	0	1
5:45 PM	0	0	5	3	8	0	1	5	0	6	0	0	0	0	0
6:00 PM	0	2	1	0	3	0	1	4	2	7	1	0	0	0	1
6:15 PM	0	2	4	3	9	0	0	4	3	7	0	0	0	0	0
Peak Hour	0	6	15	9	30	0	3	15	8	26	2	0	0	0	2

Three-Hour Count Summaries																			
Interval Start	n/a				Marsh Rd				Middlefield Rd				Middlefield Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	90	0	95	0	0	100	100	0	86	72	0	543	0	
4:15 PM	0	0	0	0	0	82	0	77	0	0	88	123	0	97	69	0	536	0	
4:30 PM	0	0	0	0	0	95	0	95	0	0	100	98	0	81	65	0	534	0	
4:45 PM	0	0	0	0	0	98	0	93	0	0	98	96	0	75	63	0	523	2,136	
5:00 PM	0	0	0	0	0	112	0	88	0	0	101	88	0	81	78	0	548	2,141	
5:15 PM	0	0	0	0	0	153	0	117	0	0	77	89	0	66	61	0	563	2,168	
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>139</b>	<b>0</b>	<b>101</b>	<b>0</b>	<b>0</b>	<b>86</b>	<b>96</b>	<b>0</b>	<b>67</b>	<b>62</b>	<b>0</b>	<b>551</b>	<b>2,185</b>	
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>106</b>	<b>0</b>	<b>111</b>	<b>0</b>	<b>0</b>	<b>103</b>	<b>109</b>	<b>0</b>	<b>64</b>	<b>69</b>	<b>0</b>	<b>562</b>	<b>2,224</b>	
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>123</b>	<b>0</b>	<b>92</b>	<b>0</b>	<b>0</b>	<b>89</b>	<b>105</b>	<b>0</b>	<b>78</b>	<b>54</b>	<b>0</b>	<b>541</b>	<b>2,217</b>	
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>137</b>	<b>0</b>	<b>98</b>	<b>0</b>	<b>0</b>	<b>80</b>	<b>143</b>	<b>0</b>	<b>59</b>	<b>67</b>	<b>0</b>	<b>584</b>	<b>2,238</b>	
6:30 PM	0	0	0	0	0	93	0	93	0	0	72	98	0	67	56	0	479	2,166	
6:45 PM	0	0	0	0	0	115	0	87	0	0	71	100	0	76	49	0	498	2,102	
Count Total	0	0	0	0	0	1,343	0	1,147	0	0	1,065	1,245	0	897	765	0	6,462	0	
Peak Hour	All	0	0	0	0	0	505	0	402	0	0	358	453	0	268	252	0	2,238	0
	HV	0	0	0	0	0	6	0	0	0	0	4	11	0	3	6	0	30	0
	HV%	-	-	-	-	-	1%	-	0%	-	-	1%	2%	-	1%	2%	-	1%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	2	4	2	8	0	0	1	3	4	1	0	0	0	1
4:15 PM	0	1	5	1	7	0	0	0	5	5	2	3	0	0	5
4:30 PM	0	0	2	3	5	0	0	6	5	11	1	0	0	0	1
4:45 PM	0	1	2	1	4	0	0	6	4	10	1	0	0	0	1
5:00 PM	0	3	2	3	8	0	0	4	5	9	2	0	0	0	2
5:15 PM	0	2	2	1	5	0	0	6	4	10	2	0	0	0	2
<b>5:30 PM</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>3</b>	<b>10</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>6:00 PM</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
<b>6:15 PM</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
6:30 PM	0	0	7	1	8	0	0	9	1	10	2	0	0	0	2
6:45 PM	0	0	2	2	4	0	0	4	2	6	1	0	0	0	1
Count Total	0	15	41	23	79	0	3	51	37	91	14	3	0	0	17
Peak Hr	0	6	15	9	30	0	3	15	8	26	2	0	0	0	2

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Marsh Rd				Middlefield Rd				Middlefield Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	2	0	0	0	0	1	3	0	1	1	0	8	0
4:15 PM	0	0	0	0	0	0	0	1	0	0	2	3	0	0	1	0	7	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	3	0	0	5	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	1	1	0	0	1	0	4	24
5:00 PM	0	0	0	0	0	3	0	0	0	0	2	0	0	1	2	0	8	24
5:15 PM	0	0	0	0	0	2	0	0	0	0	0	2	0	0	1	0	5	22
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>27</b>
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>31</b>
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>26</b>
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>9</b>	<b>30</b>
6:30 PM	0	0	0	0	0	0	0	0	0	0	2	5	0	0	1	0	8	28
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	1	1	0	4	24
Count Total	0	0	0	0	0	14	0	1	0	0	14	27	0	9	14	0	79	0
Peak Hour	0	0	0	0	0	6	0	0	0	0	4	11	0	3	6	0	30	0

Three-Hour Count Summaries - Bikes																	
Interval Start	n/a			Marsh Rd			Middlefield Rd			Middlefield Rd			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	1	0	0	3	0	4	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	5	0	5	0			
4:30 PM	0	0	0	0	0	0	0	6	0	0	5	0	11	0			
4:45 PM	0	0	0	0	0	0	0	6	0	0	4	0	10	30			
5:00 PM	0	0	0	0	0	0	0	4	0	0	5	0	9	35			
5:15 PM	0	0	0	0	0	0	0	6	0	0	4	0	10	40			
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>6</b>	<b>35</b>			
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>31</b>			
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>7</b>	<b>29</b>			
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>26</b>			
6:30 PM	0	0	0	0	0	0	0	9	0	0	1	0	10	30			
6:45 PM	0	0	0	0	0	0	0	3	1	0	2	0	6	30			
Count Total	0	0	0	1	0	2	0	50	1	0	37	0	91	0			
Peak Hour	0	0	0	1	0	2	0	15	0	0	8	0	26	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 41AM FINAL  
 Site Code : 00000041  
 Start Date : 4/16/2019  
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Groups Printed- Vehicles

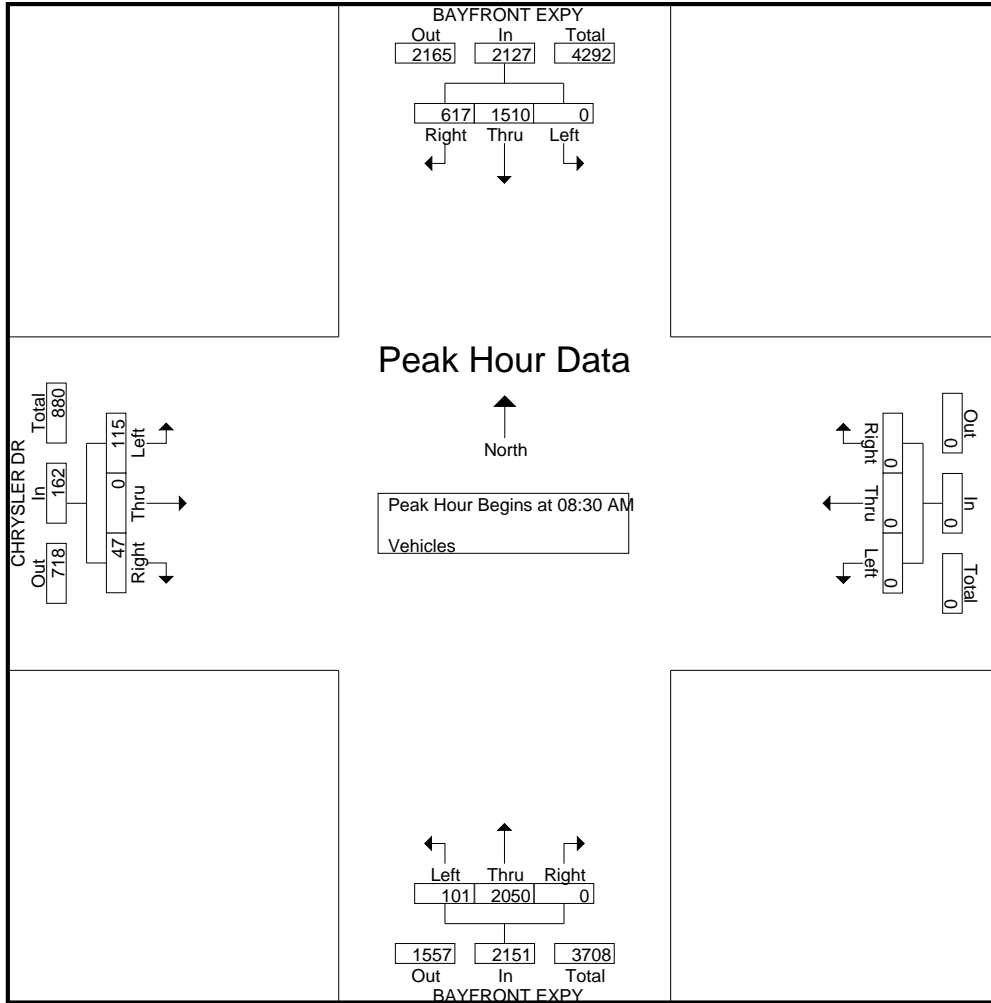
Start Time	BAYFRONT EXPY Southbound					Westbound					BAYFRONT EXPY Northbound					CHRYSLER DR Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	116	177	0	0	293	0	0	0	0	0	0	540	14	1	555	4	0	37	0	41	889
07:15 AM	164	215	0	0	379	0	0	0	0	0	0	514	15	2	531	7	0	25	0	32	942
07:30 AM	153	208	0	0	361	0	0	0	0	0	0	504	11	8	523	13	0	53	0	66	950
07:45 AM	188	239	0	0	427	0	0	0	0	0	0	492	23	5	520	8	0	45	0	53	1000
Total	621	839	0	0	1460	0	0	0	0	0	0	2050	63	16	2129	32	0	160	0	192	3781
08:00 AM	211	293	0	0	504	0	0	0	0	0	0	495	7	6	508	18	0	35	0	53	1065
08:15 AM	202	305	0	0	507	0	0	0	0	0	0	431	9	5	445	19	0	35	0	54	1006
08:30 AM	166	337	0	0	503	0	0	0	0	0	0	576	20	3	599	15	0	22	0	37	1139
08:45 AM	142	371	0	0	513	0	0	0	0	0	0	548	16	1	565	12	0	27	0	39	1117
Total	721	1306	0	0	2027	0	0	0	0	0	0	2050	52	15	2117	64	0	119	0	183	4327
09:00 AM	174	433	0	0	607	0	0	0	0	0	0	454	28	0	482	7	0	38	0	45	1134
09:15 AM	135	369	0	0	504	0	0	0	0	0	0	472	37	0	509	13	0	28	0	41	1054
09:30 AM	146	395	0	0	541	0	0	0	0	0	0	487	29	3	519	15	0	40	0	55	1115
09:45 AM	157	379	0	1	537	0	0	0	0	0	0	499	29	0	528	11	0	35	0	46	1111
Total	612	1576	0	1	2189	0	0	0	0	0	0	1912	123	3	2038	46	0	141	0	187	4414
Grand Total	1954	3721	0	1	5676	0	0	0	0	0	0	6012	238	34	6284	142	0	420	0	562	12522
Apprch %	34.4	65.6	0	0		0	0	0	0	0	0	95.7	3.8	0.5		25.3	0	74.7	0		
Total %	15.6	29.7	0	0	45.3	0	0	0	0	0	0	48	1.9	0.3	50.2	1.1	0	3.4	0	4.5	

Start Time	BAYFRONT EXPY Southbound				Westbound				BAYFRONT EXPY Northbound				CHRYSLER DR Eastbound				Int. Total	
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total		
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 08:30 AM																		
08:30 AM	166	337	0	503	0	0	0	0	0	0	576	20	596	15	0	22	37	1136
08:45 AM	142	371	0	513	0	0	0	0	0	0	548	16	564	12	0	27	39	1116
09:00 AM	<b>174</b>	<b>433</b>	0	<b>607</b>	0	0	0	0	0	0	454	28	482	7	0	<b>38</b>	<b>45</b>	1134
09:15 AM	135	369	0	504	0	0	0	0	0	0	472	<b>37</b>	509	13	0	28	41	1054
Total Volume	617	1510	0	2127	0	0	0	0	0	0	2050	101	2151	47	0	115	162	4440
% App. Total	29	71	0		0	0	0		0	0	95.3	4.7		29	0	71		
PHF	.886	.872	.000	.876	.000	.000	.000	.000	.000	.000	.890	.682	.902	.783	.000	.757	.900	.977

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 41AM FINAL  
 Site Code : 00000041  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 41AM FINAL  
 Site Code : 00000041  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Bikes

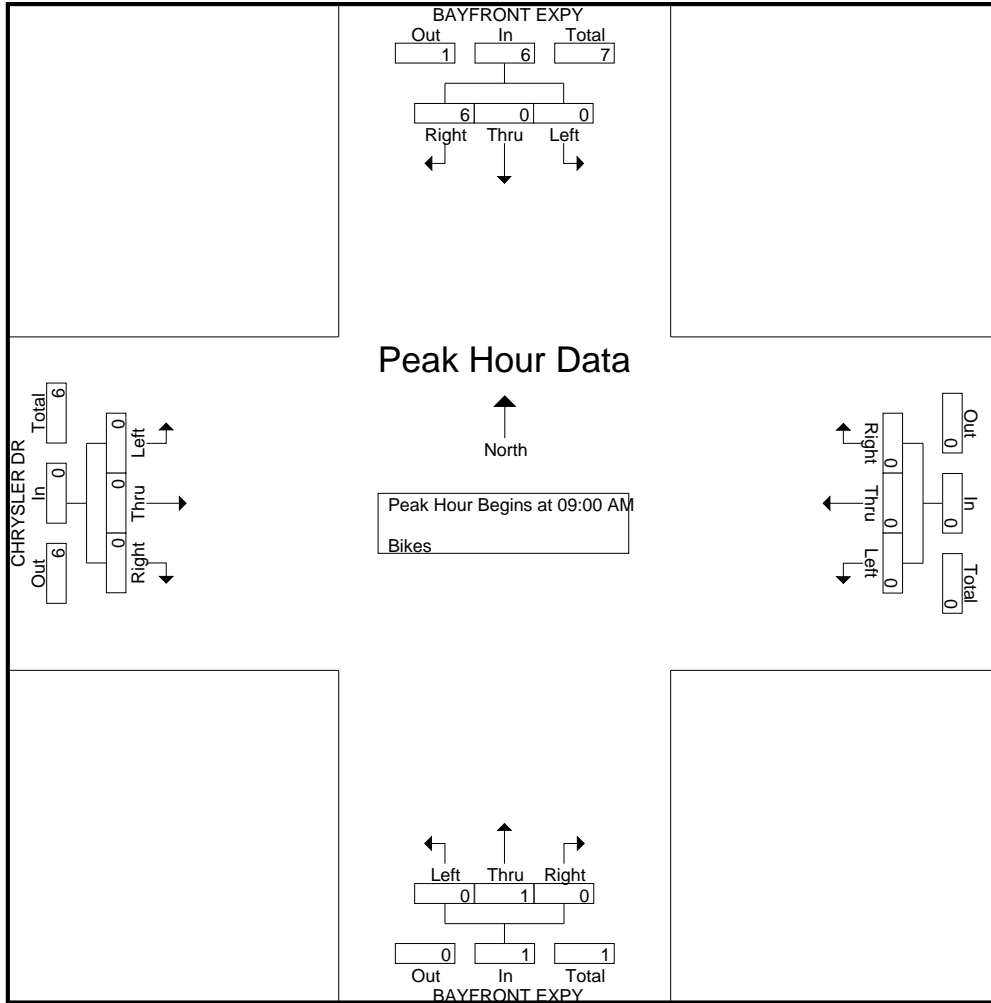
Start Time	BAYFRONT EXPY Southbound					Westbound					BAYFRONT EXPY Northbound					CHRYSLER DR Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
09:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	3	0	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
09:45 AM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<b>Total</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>
Grand Total	7	0	0	0	7	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	8
Apprch %	100	0	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
Total %	87.5	0	0	0	87.5	0	0	0	0	0	0	12.5	0	0	12.5	0	0	0	0	0	

Start Time	BAYFRONT EXPY Southbound				Westbound				BAYFRONT EXPY Northbound				CHRYSLER DR Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 09:00 AM																	
09:00 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	3	0	0	3	0	0	0	0	0	1	0	1	0	0	0	0	4
09:45 AM	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	6	0	0	6	0	0	0	0	0	1	0	1	0	0	0	0	7
% App. Total	100	0	0		0	0	0		0	100	0		0	0	0		
PHF	.500	.000	.000	.500	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.438

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 41AM FINAL  
 Site Code : 00000041  
 Start Date : 4/16/2019  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 41PM FINAL  
 Site Code : 00000041  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Vehicles

Start Time	BAYFRONT EXPY Southbound					Westbound					BAYFRONT EXPY Northbound					CHRYSLER DR Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	40	578	0	0	618	0	0	0	0	0	0	281	10	5	296	21	0	126	0	147	1061
04:15 PM	47	627	0	0	674	0	0	0	0	0	0	282	11	1	294	11	0	163	0	174	1142
04:30 PM	52	571	0	0	623	0	0	0	0	0	0	314	9	7	330	13	0	182	0	195	1148
04:45 PM	57	574	0	0	631	0	0	0	0	0	0	302	8	2	312	17	0	151	0	168	1111
Total	196	2350	0	0	2546	0	0	0	0	0	0	1179	38	15	1232	62	0	622	0	684	4462
05:00 PM	69	548	0	0	617	0	0	0	0	0	0	344	10	2	356	18	0	109	0	127	1100
05:15 PM	94	449	0	0	543	0	0	0	0	0	0	374	14	5	393	4	0	136	0	140	1076
05:30 PM	82	482	0	0	564	0	0	0	0	0	0	320	8	0	328	11	0	162	0	173	1065
05:45 PM	69	461	0	0	530	0	0	0	0	0	0	314	10	3	327	15	0	124	0	139	996
Total	314	1940	0	0	2254	0	0	0	0	0	0	1352	42	10	1404	48	0	531	0	579	4237
06:00 PM	60	412	0	2	474	0	0	0	0	0	0	320	17	0	337	14	0	167	0	181	992
06:15 PM	47	394	0	0	441	0	0	0	0	0	0	318	9	5	332	13	0	169	1	183	956
06:30 PM	30	394	0	0	424	0	0	0	0	0	0	281	13	1	295	16	0	149	0	165	884
06:45 PM	35	334	0	0	369	0	0	0	0	0	0	257	11	5	273	7	0	105	0	112	754
Total	172	1534	0	2	1708	0	0	0	0	0	0	1176	50	11	1237	50	0	590	1	641	3586
Grand Total	682	5824	0	2	6508	0	0	0	0	0	0	3707	130	36	3873	160	0	1743	1	1904	12285
Apprch %	10.5	89.5	0	0		0	0	0	0	0	0	95.7	3.4	0.9		8.4	0	91.5	0.1		
Total %	5.6	47.4	0	0	53	0	0	0	0	0	0	30.2	1.1	0.3	31.5	1.3	0	14.2	0	15.5	

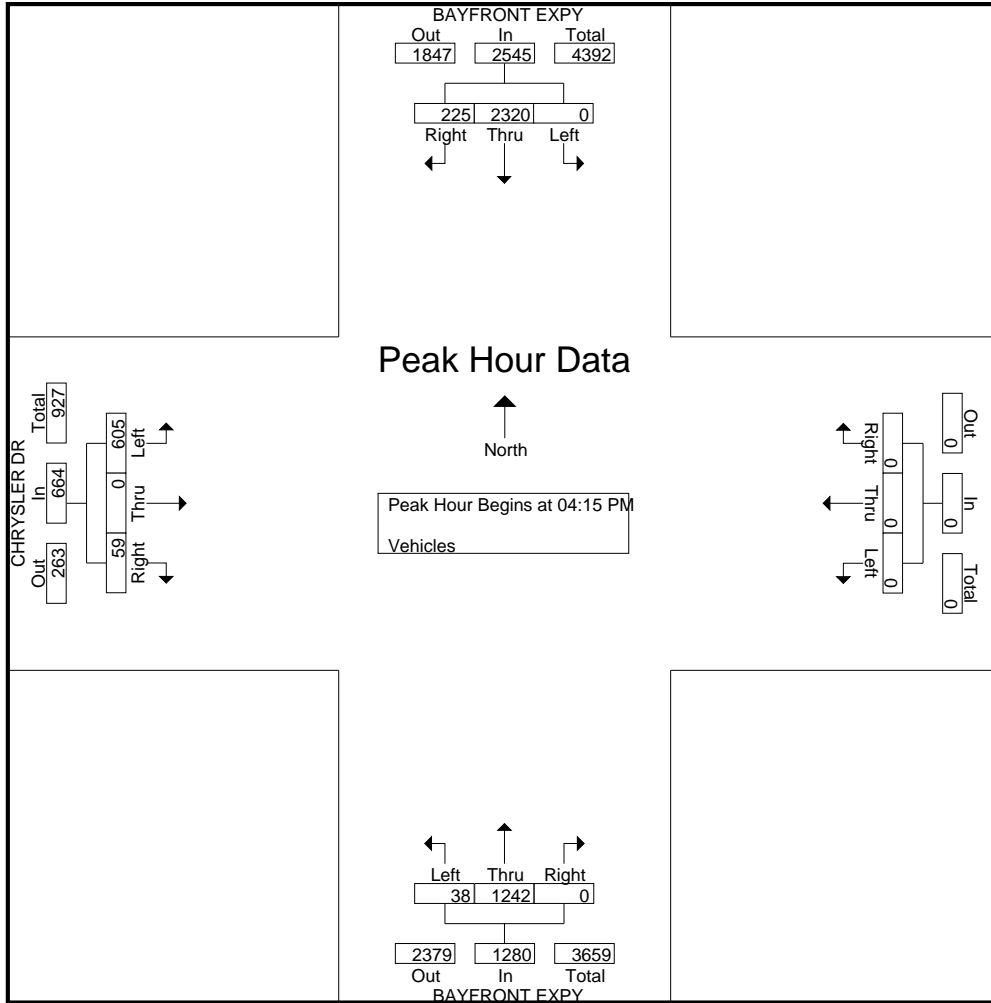
Start Time	BAYFRONT EXPY Southbound				Westbound				BAYFRONT EXPY Northbound				CHRYSLER DR Eastbound				Int. Total	
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total		
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 04:15 PM																		
04:15 PM	47	<b>627</b>	0	<b>674</b>	0	0	0	0	0	0	282	<b>11</b>	293	11	0	163	174	<b>1141</b>
04:30 PM	52	571	0	623	0	0	0	0	0	0	314	9	323	13	0	<b>182</b>	<b>195</b>	1141
04:45 PM	57	574	0	631	0	0	0	0	0	0	302	8	310	17	0	151	168	1109
05:00 PM	<b>69</b>	548	0	617	0	0	0	0	0	0	<b>344</b>	10	<b>354</b>	<b>18</b>	0	109	127	1098
Total Volume	225	2320	0	2545	0	0	0	0	0	0	1242	38	1280	59	0	605	664	4489
% App. Total	8.8	91.2	0		0	0	0		0	0	97	3		8.9	0	91.1		
PHF	.815	.925	.000	.944	.000	.000	.000	.000	.000	.000	.903	.864	.904	.819	.000	.831	.851	.984



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 41PM FINAL  
 Site Code : 00000041  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 41PM FINAL  
 Site Code : 00000041  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Bikes

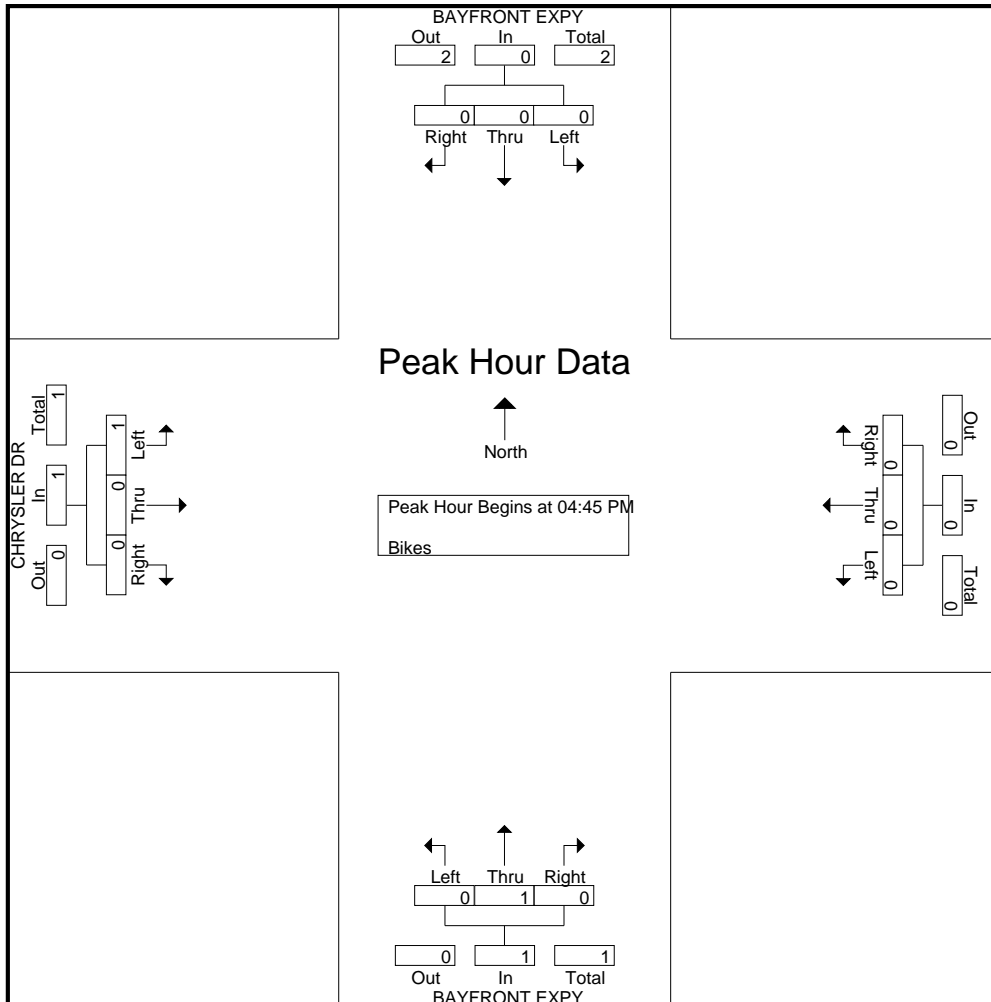
Start Time	BAYFRONT EXPY Southbound					Westbound					BAYFRONT EXPY Northbound					CHRYSLER DR Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Grand Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	3	0	3	4
Apprch %	0	0	0	0		0	0	0	0		0	100	0	0		0	0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	25	0	0	25	0	0	75	0	75	

Start Time	BAYFRONT EXPY Southbound					Westbound					BAYFRONT EXPY Northbound					CHRYSLER DR Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
% App. Total	0	0	0	0		0	0	0	0		0	100	0	0		0	0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250	.250	.000	.500

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 41PM FINAL  
 Site Code : 00000041  
 Start Date : 4/16/2019  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 40AM FINAL  
 Site Code : 00000040  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Vehicles

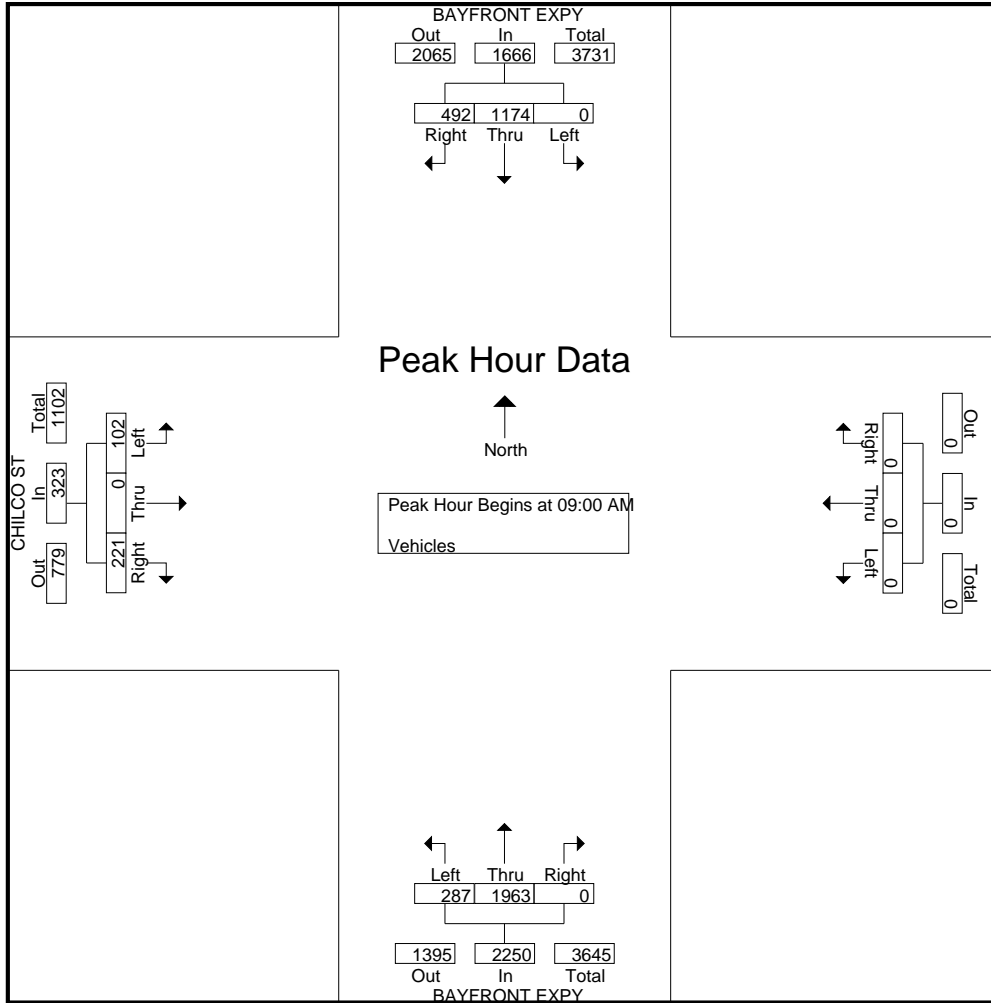
Start Time	BAYFRONT EXPY Southbound					Westbound					BAYFRONT EXPY Northbound					CHILCO ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	29	134	0	0	163	0	0	0	0	0	0	484	35	3	522	12	0	43	0	55	740
07:15 AM	36	216	0	2	254	0	0	0	0	0	0	480	37	0	517	18	0	28	0	46	817
07:30 AM	36	162	0	0	198	0	0	0	0	0	0	532	34	5	571	33	0	48	0	81	850
07:45 AM	60	246	0	1	307	0	0	0	0	0	0	544	56	7	607	24	0	42	0	66	980
Total	161	758	0	3	922	0	0	0	0	0	0	2040	162	15	2217	87	0	161	0	248	3387
08:00 AM	76	211	0	1	288	0	0	0	0	0	0	461	63	4	528	23	0	24	0	47	863
08:15 AM	84	157	0	2	243	0	0	0	0	0	0	481	47	4	532	40	0	26	0	66	841
08:30 AM	96	156	0	0	252	0	0	0	0	0	0	485	60	1	546	44	0	34	1	79	877
08:45 AM	96	158	0	1	255	0	0	0	0	0	0	498	83	3	584	37	0	28	0	65	904
Total	352	682	0	4	1038	0	0	0	0	0	0	1925	253	12	2190	144	0	112	1	257	3485
09:00 AM	155	322	0	3	480	0	0	0	0	0	0	455	69	4	528	49	0	23	0	72	1080
09:15 AM	121	254	0	4	379	0	0	0	0	0	0	489	70	3	562	52	0	21	0	73	1014
09:30 AM	131	297	0	0	428	0	0	0	0	0	0	511	83	1	595	61	0	31	0	92	1115
09:45 AM	85	301	0	2	388	0	0	0	0	0	0	508	65	3	576	59	0	27	0	86	1050
Total	492	1174	0	9	1675	0	0	0	0	0	0	1963	287	11	2261	221	0	102	0	323	4259
Grand Total	1005	2614	0	16	3635	0	0	0	0	0	0	5928	702	38	6668	452	0	375	1	828	11131
Apprch %	27.6	71.9	0	0.4		0	0	0	0	0	0	88.9	10.5	0.6		54.6	0	45.3	0.1		
Total %	9	23.5	0	0.1	32.7	0	0	0	0	0	0	53.3	6.3	0.3	59.9	4.1	0	3.4	0	7.4	

Start Time	BAYFRONT EXPY Southbound				Westbound				BAYFRONT EXPY Northbound				CHILCO ST Eastbound				Int. Total	
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total		
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 09:00 AM																		
09:00 AM	155	322	0	477	0	0	0	0	0	0	455	69	524	49	0	23	72	1073
09:15 AM	121	254	0	375	0	0	0	0	0	0	489	70	559	52	0	21	73	1007
09:30 AM	131	297	0	428	0	0	0	0	0	0	511	83	594	61	0	31	92	1114
09:45 AM	85	301	0	386	0	0	0	0	0	0	508	65	573	59	0	27	86	1045
Total Volume	492	1174	0	1666	0	0	0	0	0	0	1963	287	2250	221	0	102	323	4239
% App. Total	29.5	70.5	0		0	0	0		0	0	87.2	12.8		68.4	0	31.6		
PHF	.794	.911	.000	.873	.000	.000	.000	.000	.000	.000	.960	.864	.947	.906	.000	.823	.878	.951

# Traffic Data Service

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Groups Printed- Bikes

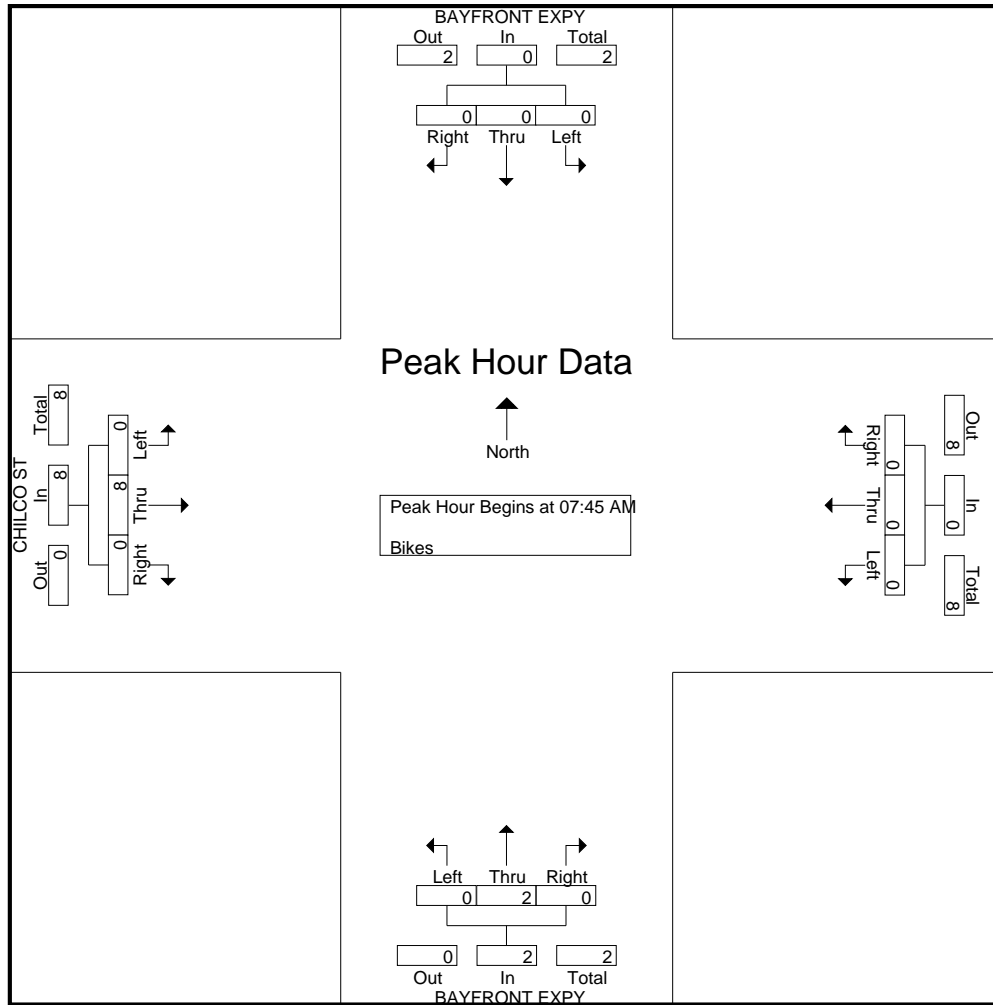
Start Time	BAYFRONT EXPY Southbound					Westbound					BAYFRONT EXPY Northbound					CHILCO ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	5	0	0	0	5
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	8	0	0	0	8
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	2	0	0	8
Grand Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	17	2	0	0	19
Apprch %	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	89.5	10.5	0	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	9.5	0	0	9.5	0	81	9.5	0	90.5	

Start Time	BAYFRONT EXPY Southbound				Westbound				BAYFRONT EXPY Northbound				CHILCO ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	5	0	5	6
08:15 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	0	0	0	0	0	0	0	0	0	2	0	2	0	8	0	8	10
% App. Total	0	0	0	0	0	0	0	0	0	100	0	0	0	100	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.500	.000	.400	.000	.400	.417

# Traffic Data Service

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Groups Printed- Vehicles

Start Time	BAYFRONT EXPY Southbound					Westbound					BAYFRONT EXPY Northbound					CHILCO ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	40	533	0	0	573	0	0	0	0	0	0	240	33	0	273	63	0	49	0	112	958
04:15 PM	52	615	0	0	667	0	0	0	0	0	0	247	35	1	283	63	0	59	0	122	1072
04:30 PM	51	511	0	0	562	0	0	0	0	0	0	266	29	2	297	69	0	56	0	125	984
04:45 PM	63	523	0	0	586	0	0	0	0	0	0	258	32	2	292	50	0	70	0	120	998
Total	206	2182	0	0	2388	0	0	0	0	0	0	1011	129	5	1145	245	0	234	0	479	4012
05:00 PM	63	391	0	1	455	0	0	0	0	0	0	288	36	6	330	85	0	74	0	159	944
05:15 PM	46	463	0	3	512	0	0	0	0	0	0	299	31	1	331	75	0	88	0	163	1006
05:30 PM	47	525	0	2	574	0	0	0	0	0	0	235	21	8	264	53	0	75	0	128	966
05:45 PM	56	456	0	1	513	0	0	0	0	0	0	272	32	3	307	43	0	62	0	105	925
Total	212	1835	0	7	2054	0	0	0	0	0	0	1094	120	18	1232	256	0	299	0	555	3841
06:00 PM	53	351	0	3	407	0	0	0	0	0	0	239	37	4	280	57	0	80	0	137	824
06:15 PM	51	377	0	1	429	0	0	0	0	0	0	255	29	4	288	46	0	73	0	119	836
06:30 PM	54	363	0	0	417	0	0	0	0	0	0	235	21	0	256	38	0	49	0	87	760
06:45 PM	38	295	0	1	334	0	0	0	0	0	0	223	30	0	253	42	0	65	0	107	694
Total	196	1386	0	5	1587	0	0	0	0	0	0	952	117	8	1077	183	0	267	0	450	3114
Grand Total	614	5403	0	12	6029	0	0	0	0	0	0	3057	366	31	3454	684	0	800	0	1484	10967
Apprch %	10.2	89.6	0	0.2		0	0	0	0	0	0	88.5	10.6	0.9		46.1	0	53.9	0		
Total %	5.6	49.3	0	0.1	55	0	0	0	0	0	0	27.9	3.3	0.3	31.5	6.2	0	7.3	0	13.5	

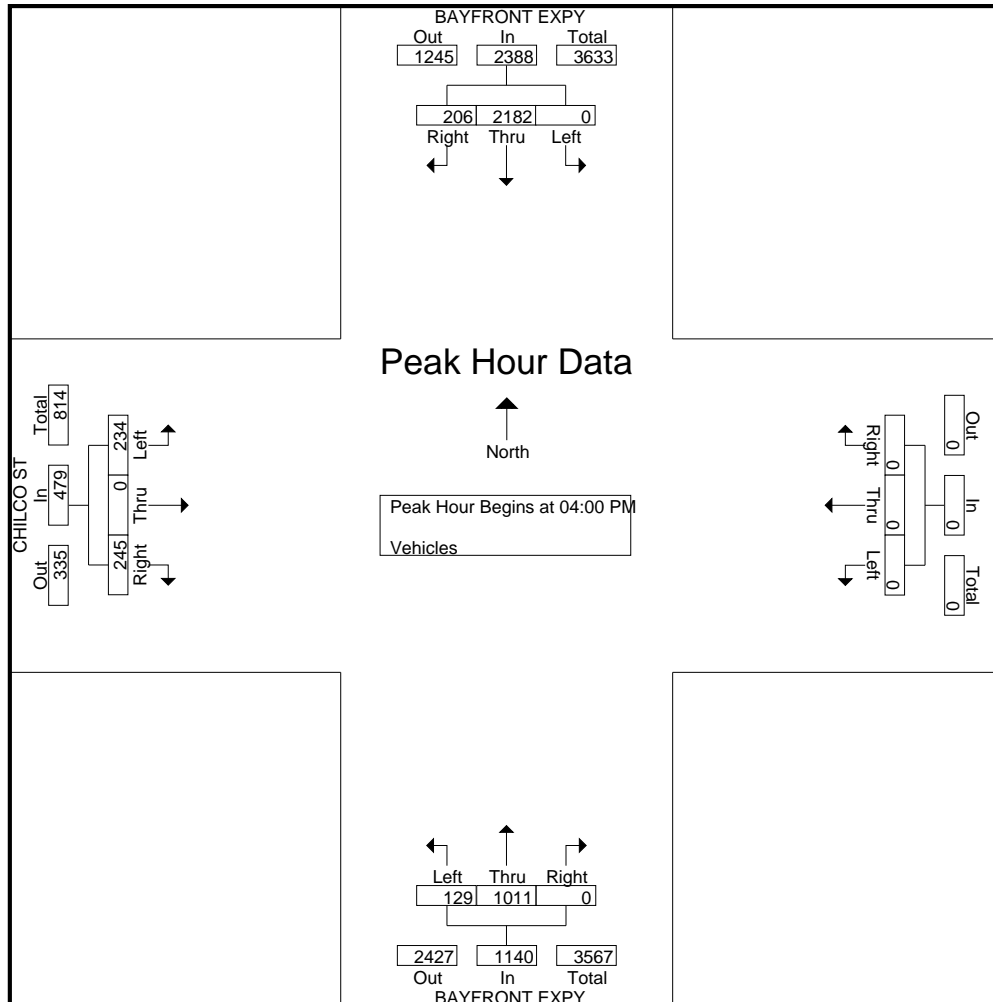
Start Time	BAYFRONT EXPY Southbound				Westbound				BAYFRONT EXPY Northbound				CHILCO ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	40	533	0	573	0	0	0	0	0	240	33	273	63	0	49	112	958
04:15 PM	52	<b>615</b>	0	<b>667</b>	0	0	0	0	0	247	<b>35</b>	282	63	0	59	122	<b>1071</b>
04:30 PM	51	511	0	562	0	0	0	0	0	<b>266</b>	29	<b>295</b>	<b>69</b>	0	56	<b>125</b>	982
04:45 PM	<b>63</b>	523	0	586	0	0	0	0	0	258	32	290	50	0	<b>70</b>	120	996
Total Volume	206	2182	0	2388	0	0	0	0	0	1011	129	1140	245	0	234	479	4007
% App. Total	8.6	91.4	0		0	0	0		0	88.7	11.3		51.1	0	48.9		
PHF	.817	.887	.000	.895	.000	.000	.000	.000	.000	.950	.921	.966	.888	.000	.836	.958	.935



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File Name : 40PM FINAL  
 Site Code : 00000040  
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Groups Printed- Bikes

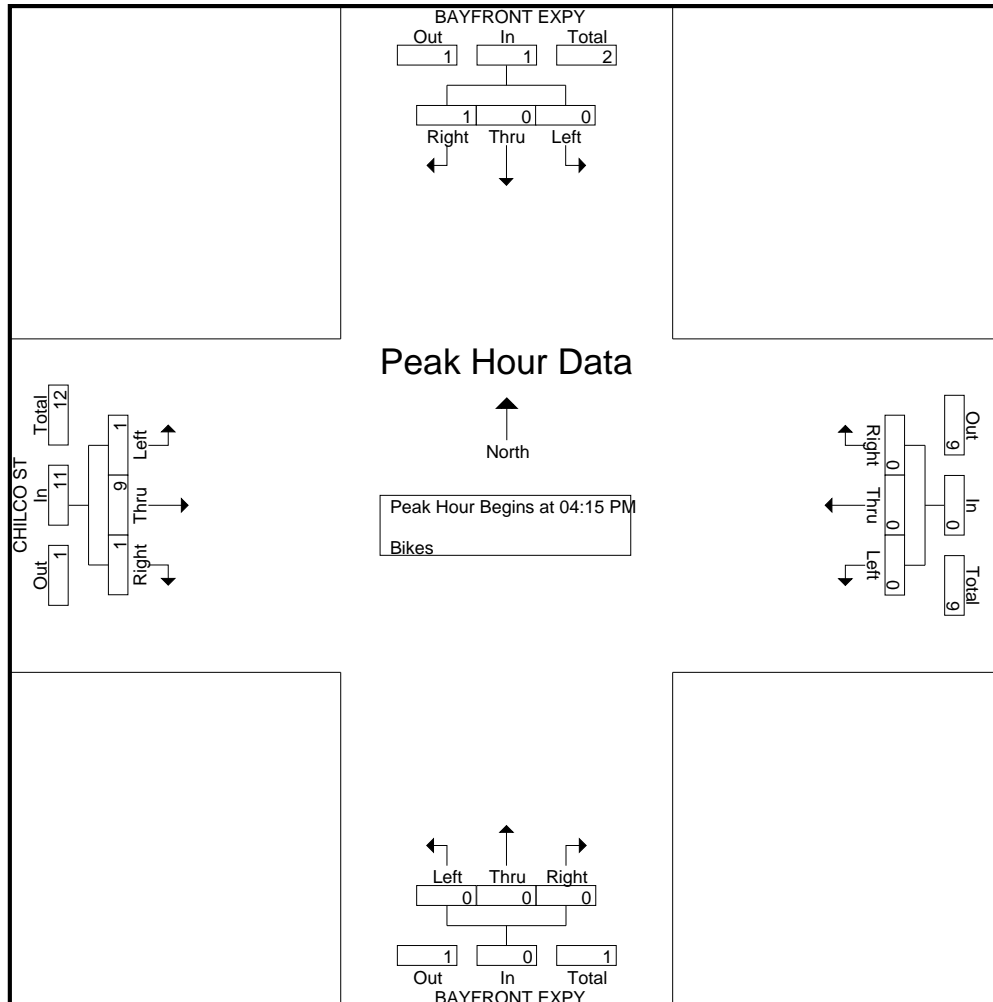
Start Time	BAYFRONT EXPY Southbound					Westbound					BAYFRONT EXPY Northbound					CHILCO ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	3
04:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	4	4
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	6	1	0	8	9
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	8	0	0	9	9
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	3
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2	4
Grand Total	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	2	16	1	0	19	22
Apprch %	100	0	0	0		0	0	0	0		0	100	0	0		10.5	84.2	5.3	0		
Total %	4.5	0	0	0	4.5	0	0	0	0	0	0	9.1	0	0	9.1	9.1	72.7	4.5	0	86.4	

Start Time	BAYFRONT EXPY Southbound				Westbound				BAYFRONT EXPY Northbound				CHILCO ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	3
04:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	4	4
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
Total Volume	1	0	0	1	0	0	0	0	0	0	0	0	1	9	1	11	12
% App. Total	100	0	0		0	0	0		0	0	0		9.1	81.8	9.1		
PHF	.250	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250	.750	.250	.688	.750

# Traffic Data Service

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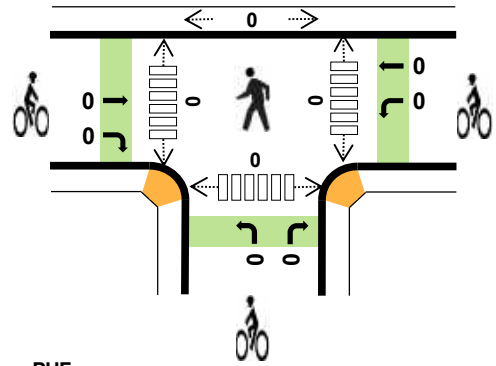
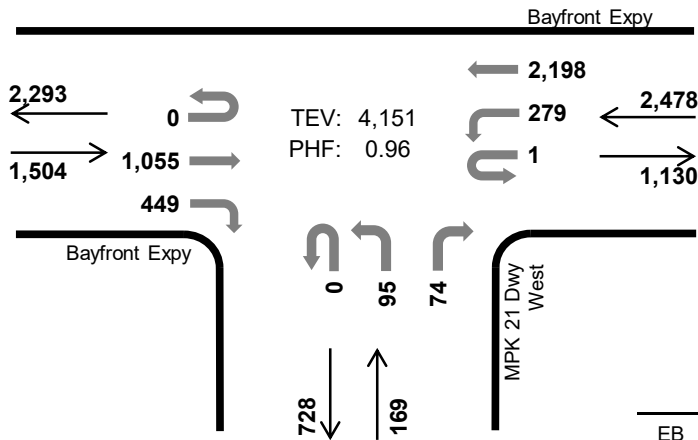


# MPK 21 Dwy West Bayfront Expy



Peak Hour

Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 9:00 AM to 10:00 AM



	HV %:	PHF
EB	11.6%	0.95
WB	4.4%	0.97
NB	35.5%	0.77
SB	-	-
TOTAL	8.3%	0.96

### Three-Hour Count Summaries

Interval Start	Bayfront Expy				Bayfront Expy				MPK 21 Dwy West				n/a				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
9:00 AM	0	0	253	114	0	69	515	0	0	23	0	12	0	0	0	0	986	0	
9:15 AM	0	0	266	130	1	70	550	0	0	18	0	25	0	0	0	0	1,060	0	
9:30 AM	0	0	244	112	0	63	574	0	0	22	0	14	0	0	0	0	1,029	0	
9:45 AM	0	0	292	93	0	77	559	0	0	32	0	23	0	0	0	0	1,076	4,151	
Peak Hour	All	0	0	1,055	449	1	279	2,198	0	0	95	0	74	0	0	0	0	4,151	0
	HV	0	0	119	55	0	6	104	0	0	42	0	18	0	0	0	0	344	0
	HV%	-	-	11%	12%	0%	2%	5%	-	-	44%	-	24%	-	-	-	-	8%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
9:00 AM	50	28	10	0	88	0	0	0	0	0	0	0	0	0	0
9:15 AM	39	28	14	0	81	0	0	0	0	0	0	0	0	0	0
9:30 AM	36	31	14	0	81	0	0	0	0	0	0	0	0	0	0
9:45 AM	49	23	22	0	94	0	0	0	0	0	0	0	0	0	0
Peak Hour	174	110	60	0	344	0	0	0	0	0	0	0	0	0	0

**Three-Hour Count Summaries**

Interval Start	Bayfront Expy				Bayfront Expy				MPK 21 Dwy West				n/a				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	206	14	0	18	594	0	0	9	0	6	0	0	0	0	847	0	
7:15 AM	0	0	203	32	0	10	669	0	0	6	0	7	0	0	0	0	927	0	
7:30 AM	0	0	239	45	1	21	547	0	0	9	0	6	0	0	0	0	868	0	
7:45 AM	0	0	286	36	0	36	468	0	0	8	0	14	0	0	0	0	848	3,490	
8:00 AM	0	0	235	66	0	29	464	0	0	3	0	9	0	0	0	0	806	3,449	
8:15 AM	0	0	235	66	0	40	491	0	0	15	0	10	0	0	0	0	857	3,379	
8:30 AM	0	0	286	103	1	34	523	0	0	17	0	12	0	0	0	0	976	3,487	
8:45 AM	0	0	252	83	1	74	518	0	0	26	0	13	0	0	0	0	967	3,606	
<b>9:00 AM</b>	<b>0</b>	<b>0</b>	<b>253</b>	<b>114</b>	<b>0</b>	<b>69</b>	<b>515</b>	<b>0</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>986</b>	<b>3,786</b>	
<b>9:15 AM</b>	<b>0</b>	<b>0</b>	<b>266</b>	<b>130</b>	<b>1</b>	<b>70</b>	<b>550</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,060</b>	<b>3,989</b>	
<b>9:30 AM</b>	<b>0</b>	<b>0</b>	<b>244</b>	<b>112</b>	<b>0</b>	<b>63</b>	<b>574</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,029</b>	<b>4,042</b>	
<b>9:45 AM</b>	<b>0</b>	<b>0</b>	<b>292</b>	<b>93</b>	<b>0</b>	<b>77</b>	<b>559</b>	<b>0</b>	<b>0</b>	<b>32</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,076</b>	<b>4,151</b>	
Count Total	0	0	2,997	894	4	541	6,472	0	0	188	0	151	0	0	0	0	11,247	0	
Peak Hour	All	0	0	1,055	449	1	279	2,198	0	0	95	0	74	0	0	0	0	4,151	0
	HV	0	0	119	55	0	6	104	0	0	42	0	18	0	0	0	0	344	0
	HV%	-	-	11%	12%	0%	2%	5%	-	-	44%	-	24%	-	-	-	-	8%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	15	38	5	0	58	0	0	0	0	0	0	0	0	0	0
7:15 AM	20	25	5	0	50	0	0	0	0	0	0	0	0	0	0
7:30 AM	32	32	3	0	67	0	0	0	0	0	0	0	0	0	0
7:45 AM	29	33	10	0	72	0	0	0	0	0	1	0	0	0	1
8:00 AM	26	34	4	0	64	0	0	0	0	0	0	0	0	0	0
8:15 AM	28	37	12	0	77	0	0	0	0	0	0	0	0	0	0
8:30 AM	40	25	8	0	73	0	0	0	0	0	0	0	0	0	0
8:45 AM	35	31	16	0	82	0	0	0	0	0	0	0	0	0	0
<b>9:00 AM</b>	<b>50</b>	<b>28</b>	<b>10</b>	<b>0</b>	<b>88</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:15 AM</b>	<b>39</b>	<b>28</b>	<b>14</b>	<b>0</b>	<b>81</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:30 AM</b>	<b>36</b>	<b>31</b>	<b>14</b>	<b>0</b>	<b>81</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:45 AM</b>	<b>49</b>	<b>23</b>	<b>22</b>	<b>0</b>	<b>94</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Count Total	399	365	123	0	887	0	0	0	0	0	1	0	0	0	1
Peak Hr	174	110	60	0	344	0	0	0	0	0	0	0	0	0	0

**Three-Hour Count Summaries - Heavy Vehicles**

Interval Start	Bayfront Expy				Bayfront Expy				MPK 21 Dwy West				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	14	1	0	1	37	0	0	4	0	1	0	0	0	0	58	0
7:15 AM	0	0	19	1	0	1	24	0	0	3	0	2	0	0	0	0	50	0
7:30 AM	0	0	24	8	0	1	31	0	0	3	0	0	0	0	0	0	67	0
7:45 AM	0	0	25	4	0	2	31	0	0	6	0	4	0	0	0	0	72	247
8:00 AM	0	0	18	8	0	1	33	0	0	3	0	1	0	0	0	0	64	253
8:15 AM	0	0	24	4	0	1	36	0	0	9	0	3	0	0	0	0	77	280
8:30 AM	0	0	26	14	0	1	24	0	0	6	0	2	0	0	0	0	73	286
8:45 AM	0	0	25	10	0	4	27	0	0	10	0	6	0	0	0	0	82	296
<b>9:00 AM</b>	<b>0</b>	<b>0</b>	<b>32</b>	<b>18</b>	<b>0</b>	<b>1</b>	<b>27</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>88</b>	<b>320</b>
<b>9:15 AM</b>	<b>0</b>	<b>0</b>	<b>27</b>	<b>12</b>	<b>0</b>	<b>1</b>	<b>27</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>81</b>	<b>324</b>
<b>9:30 AM</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>14</b>	<b>0</b>	<b>2</b>	<b>29</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>81</b>	<b>332</b>
<b>9:45 AM</b>	<b>0</b>	<b>0</b>	<b>38</b>	<b>11</b>	<b>0</b>	<b>2</b>	<b>21</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>94</b>	<b>344</b>
Count Total	0	0	294	105	0	18	347	0	0	86	0	37	0	0	0	0	887	0
Peak Hour	0	0	119	55	0	6	104	0	0	42	0	18	0	0	0	0	344	0

**Three-Hour Count Summaries - Bikes**

Interval Start	Bayfront Expy			Bayfront Expy			MPK 21 Dwy West			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>9:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

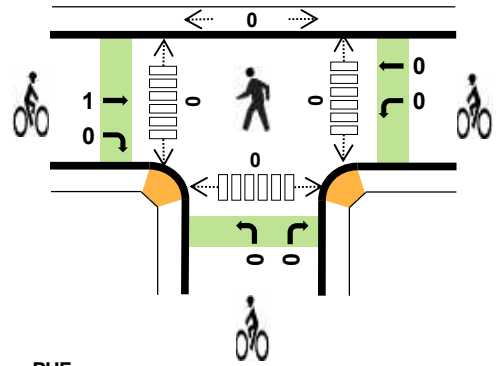
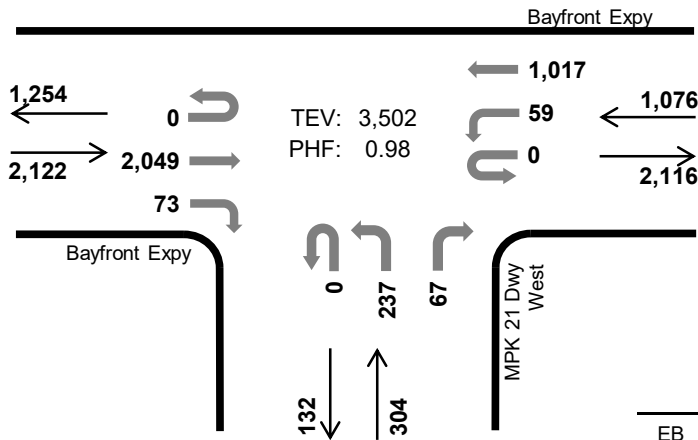
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# MPK 21 Dwy West Bayfront Expy



Peak Hour

Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	4.1%	0.95
WB	5.1%	0.89
NB	14.8%	0.82
SB	-	-
TOTAL	5.4%	0.98

### Three-Hour Count Summaries

Interval Start	Bayfront Expy				Bayfront Expy				MPK 21 Dwy West				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	543	18	0	15	256	0	0	47	0	8	0	0	0	0	887	0
4:15 PM	0	0	506	14	0	19	283	0	0	57	0	18	0	0	0	0	897	0
4:30 PM	0	0	515	17	0	14	238	0	0	65	0	28	0	0	0	0	877	0
4:45 PM	0	0	485	24	0	11	240	0	0	68	0	13	0	0	0	0	841	3,502
Peak Hour	All	0	0	2,049	73	0	59	1,017	0	0	237	0	67	0	0	0	3,502	0
	HV	0	0	80	8	0	5	50	0	0	45	0	0	0	0	0	188	0
	HV%	-	-	4%	11%	-	8%	5%	-	-	19%	-	0%	-	-	-	5%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	26	19	8	0	53	1	0	0	0	1	0	0	0	0	0
4:15 PM	20	11	15	0	46	0	0	0	0	0	0	0	0	0	0
4:30 PM	16	13	10	0	39	0	0	0	0	0	0	0	0	0	0
4:45 PM	26	12	12	0	50	0	0	0	0	0	0	0	0	0	0
Peak Hour	88	55	45	0	188	1	0	0	0	1	0	0	0	0	0

**Three-Hour Count Summaries**

Interval Start	Bayfront Expy				Bayfront Expy				MPK 21 Dwy West				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	543	18	0	15	256	0	0	47	0	8	0	0	0	0	887	0
4:15 PM	0	0	506	14	0	19	283	0	0	57	0	18	0	0	0	0	897	0
4:30 PM	0	0	515	17	0	14	238	0	0	65	0	28	0	0	0	0	877	0
4:45 PM	0	0	485	24	0	11	240	0	0	68	0	13	0	0	0	0	841	3,502
5:00 PM	0	0	437	18	0	6	232	0	0	72	0	26	0	0	0	0	791	3,406
5:15 PM	0	0	417	9	0	15	261	0	0	87	0	27	0	0	0	0	816	3,325
5:30 PM	0	0	391	28	0	15	234	0	0	86	0	18	0	0	0	0	772	3,220
5:45 PM	0	0	419	22	0	13	247	0	0	76	0	17	0	0	0	0	794	3,173
6:00 PM	0	0	420	19	0	13	205	0	0	84	0	10	0	0	0	0	751	3,133
6:15 PM	0	0	438	15	0	11	234	0	0	86	0	11	0	0	0	0	795	3,112
6:30 PM	0	0	410	21	0	9	217	0	0	81	0	16	0	0	0	0	754	3,094
6:45 PM	0	0	366	17	0	9	192	0	0	70	0	36	0	0	0	0	690	2,990
Count Total	0	0	5,347	222	0	150	2,839	0	0	879	0	228	0	0	0	0	9,665	0
Peak Hour	All	0	0	2,049	73	0	59	1,017	0	0	237	0	67	0	0	0	3,502	0
	HV	0	0	80	8	0	5	50	0	0	45	0	0	0	0	0	188	0
	HV%	-	-	4%	11%	-	8%	5%	-	-	19%	-	0%	-	-	-	5%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	26	19	8	0	53	1	0	0	0	1	0	0	0	0	0
4:15 PM	20	11	15	0	46	0	0	0	0	0	0	0	0	0	0
4:30 PM	16	13	10	0	39	0	0	0	0	0	0	0	0	0	0
4:45 PM	26	12	12	0	50	0	0	0	0	0	0	0	0	0	0
5:00 PM	16	16	12	0	44	0	0	0	0	0	0	0	0	0	0
5:15 PM	24	9	22	0	55	1	0	0	0	1	0	0	0	0	0
5:30 PM	16	7	10	0	33	0	0	0	0	0	0	0	0	0	0
5:45 PM	24	13	15	0	52	0	0	0	0	0	0	0	0	0	0
6:00 PM	20	7	13	0	40	0	0	0	0	0	0	0	0	0	0
6:15 PM	14	9	12	0	35	0	0	0	0	0	0	0	0	0	0
6:30 PM	25	7	13	0	45	0	0	0	0	0	0	0	0	0	0
6:45 PM	18	10	17	0	45	0	0	0	0	0	0	0	0	0	0
Count Total	245	133	159	0	537	2	0	0	0	2	0	0	0	0	0
Peak Hr	88	55	45	0	188	1	0	0	0	1	0	0	0	0	0



### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Bayfront Expy				Bayfront Expy				MPK 21 Dwy West				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	22	4	0	1	18	0	0	8	0	0	0	0	0	0	53	0
4:15 PM	0	0	20	0	0	1	10	0	0	15	0	0	0	0	0	0	46	0
4:30 PM	0	0	14	2	0	1	12	0	0	10	0	0	0	0	0	0	39	0
4:45 PM	0	0	24	2	0	2	10	0	0	12	0	0	0	0	0	0	50	188
5:00 PM	0	0	11	5	0	1	15	0	0	12	0	0	0	0	0	0	44	179
5:15 PM	0	0	23	1	0	2	7	0	0	22	0	0	0	0	0	0	55	188
5:30 PM	0	0	13	3	0	1	6	0	0	10	0	0	0	0	0	0	33	182
5:45 PM	0	0	21	3	0	1	12	0	0	15	0	0	0	0	0	0	52	184
6:00 PM	0	0	19	1	0	1	6	0	0	13	0	0	0	0	0	0	40	180
6:15 PM	0	0	14	0	0	2	7	0	0	12	0	0	0	0	0	0	35	160
6:30 PM	0	0	20	5	0	1	6	0	0	13	0	0	0	0	0	0	45	172
6:45 PM	0	0	14	4	0	1	9	0	0	16	0	1	0	0	0	0	45	165
Count Total	0	0	215	30	0	15	118	0	0	158	0	1	0	0	0	0	537	0
Peak Hour	0	0	80	8	0	5	50	0	0	45	0	0	0	0	0	0	188	0

### Three-Hour Count Summaries - Bikes

Interval Start	Bayfront Expy			Bayfront Expy			MPK 21 Dwy West			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	1	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	1	1	0	0	0	0	0	0	0	0	0	2	0
Peak Hour	0	1	0	0	0	0	0	0	0	0	0	0	1	0

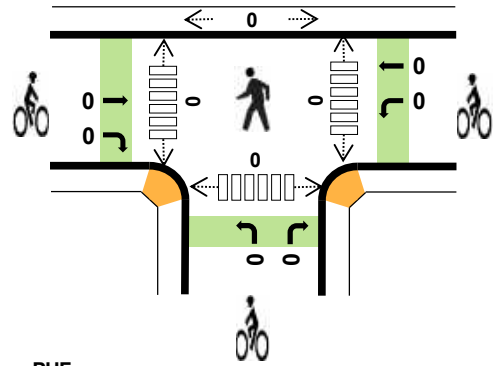
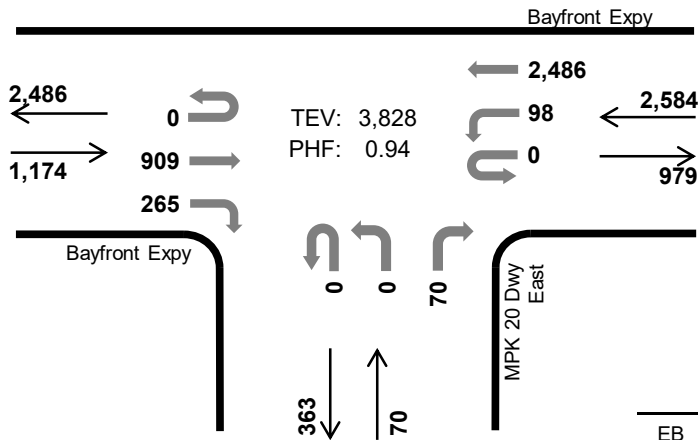
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# MPK 20 Dwy East Bayfront Expy



Peak Hour

Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 9:00 AM to 10:00 AM



	HV %:	PHF
EB	11.7%	0.90
WB	6.3%	0.97
NB	88.6%	0.92
SB	-	-
TOTAL	9.5%	0.94

### Three-Hour Count Summaries

Interval Start	Bayfront Expy				Bayfront Expy				MPK 20 Dwy East				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
9:00 AM	0	0	220	62	0	17	588	0	0	0	19	0	0	0	0	906	0	
9:15 AM	0	0	234	63	0	29	634	0	0	0	16	0	0	0	0	976	0	
9:30 AM	0	0	212	56	0	21	626	0	0	0	17	0	0	0	0	932	0	
9:45 AM	0	0	243	84	0	31	638	0	0	0	18	0	0	0	0	1,014	3,828	
Peak Hour	All	0	0	909	265	0	98	2,486	0	0	0	70	0	0	0	0	3,828	0
	HV	0	0	130	7	0	56	108	0	0	0	62	0	0	0	0	363	0
	HV%	-	-	14%	3%	-	57%	4%	-	-	-	89%	-	-	-	-	9%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
9:00 AM	35	39	16	0	90	0	0	0	0	0	0	0	0	0	0
9:15 AM	30	41	16	0	87	0	0	0	0	0	0	0	0	0	0
9:30 AM	27	41	13	0	81	0	0	0	0	0	0	0	0	0	0
9:45 AM	45	43	17	0	105	0	0	0	0	0	0	0	0	0	0
Peak Hour	137	164	62	0	363	0	0	0	0	0	0	0	0	0	0

**Three-Hour Count Summaries**

Interval Start	Bayfront Expy				Bayfront Expy				MPK 20 Dwy East				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	207	6	0	5	652	0	0	0	0	2	0	0	0	0	872	0
7:15 AM	0	0	214	7	0	4	687	0	0	0	0	4	0	0	0	0	916	0
7:30 AM	0	0	243	11	0	12	607	0	0	0	0	11	0	0	0	0	884	0
7:45 AM	0	0	297	18	2	19	509	0	0	0	0	7	0	0	0	0	852	3,524
8:00 AM	0	0	204	32	0	9	453	0	0	0	0	8	0	0	0	0	706	3,358
8:15 AM	0	0	222	30	0	19	532	0	0	0	0	7	0	0	0	0	810	3,252
8:30 AM	0	0	261	41	0	17	571	0	0	0	0	13	0	0	0	0	903	3,271
8:45 AM	0	0	212	51	0	24	595	0	0	0	0	15	0	0	0	0	897	3,316
<b>9:00 AM</b>	<b>0</b>	<b>0</b>	<b>220</b>	<b>62</b>	<b>0</b>	<b>17</b>	<b>588</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>906</b>	<b>3,516</b>
<b>9:15 AM</b>	<b>0</b>	<b>0</b>	<b>234</b>	<b>63</b>	<b>0</b>	<b>29</b>	<b>634</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>976</b>	<b>3,682</b>
<b>9:30 AM</b>	<b>0</b>	<b>0</b>	<b>212</b>	<b>56</b>	<b>0</b>	<b>21</b>	<b>626</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>932</b>	<b>3,711</b>
<b>9:45 AM</b>	<b>0</b>	<b>0</b>	<b>243</b>	<b>84</b>	<b>0</b>	<b>31</b>	<b>638</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,014</b>	<b>3,828</b>
Count Total	0	0	2,769	461	2	207	7,092	0	0	0	0	137	0	0	0	0	10,668	0
Peak Hour	All	0	0	909	265	0	98	2,486	0	0	0	70	0	0	0	0	3,828	0
	HV	0	0	130	7	0	56	108	0	0	0	62	0	0	0	0	363	0
	HV%	-	-	14%	3%	-	57%	4%	-	-	-	89%	-	-	-	-	9%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	14	43	2	0	59	0	0	0	0	0	0	0	0	0	0
7:15 AM	20	31	3	0	54	0	0	0	0	0	0	0	0	0	0
7:30 AM	25	41	10	0	76	0	0	0	0	0	0	0	0	0	0
7:45 AM	32	41	7	0	80	0	0	0	0	0	0	0	0	0	0
8:00 AM	19	34	7	0	60	0	0	0	0	0	0	0	0	0	0
8:15 AM	27	52	7	0	86	0	0	0	0	0	0	0	0	0	0
8:30 AM	28	33	12	0	73	0	0	0	0	0	0	0	0	0	0
8:45 AM	29	48	14	0	91	0	0	0	0	0	0	0	0	0	0
<b>9:00 AM</b>	<b>35</b>	<b>39</b>	<b>16</b>	<b>0</b>	<b>90</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:15 AM</b>	<b>30</b>	<b>41</b>	<b>16</b>	<b>0</b>	<b>87</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:30 AM</b>	<b>27</b>	<b>41</b>	<b>13</b>	<b>0</b>	<b>81</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:45 AM</b>	<b>45</b>	<b>43</b>	<b>17</b>	<b>0</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Count Total	331	487	124	0	942	0	0	0	0	0	0	0	0	0	0
Peak Hr	137	164	62	0	363	0	0	0	0	0	0	0	0	0	0

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Bayfront Expy				Bayfront Expy				MPK 20 Dwy East				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	14	0	0	4	39	0	0	0	0	2	0	0	0	0	59	0
7:15 AM	0	0	20	0	0	4	27	0	0	0	0	3	0	0	0	0	54	0
7:30 AM	0	0	25	0	0	8	33	0	0	0	0	10	0	0	0	0	76	0
7:45 AM	0	0	32	0	0	8	33	0	0	0	0	7	0	0	0	0	80	269
8:00 AM	0	0	17	2	0	6	28	0	0	0	0	7	0	0	0	0	60	270
8:15 AM	0	0	26	1	0	12	40	0	0	0	0	7	0	0	0	0	86	302
8:30 AM	0	0	25	3	0	10	23	0	0	0	0	12	0	0	0	0	73	299
8:45 AM	0	0	29	0	0	13	35	0	0	0	0	14	0	0	0	0	91	310
<b>9:00 AM</b>	<b>0</b>	<b>0</b>	<b>33</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>30</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>90</b>	<b>340</b>
<b>9:15 AM</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>1</b>	<b>0</b>	<b>14</b>	<b>27</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>87</b>	<b>341</b>
<b>9:30 AM</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>2</b>	<b>0</b>	<b>13</b>	<b>28</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>81</b>	<b>349</b>
<b>9:45 AM</b>	<b>0</b>	<b>0</b>	<b>43</b>	<b>2</b>	<b>0</b>	<b>20</b>	<b>23</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>105</b>	<b>363</b>
Count Total	0	0	318	13	0	121	366	0	0	0	0	124	0	0	0	0	942	0
Peak Hour	0	0	130	7	0	56	108	0	0	0	0	62	0	0	0	0	363	0

### Three-Hour Count Summaries - Bikes

Interval Start	Bayfront Expy			Bayfront Expy			MPK 20 Dwy East			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>9:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0

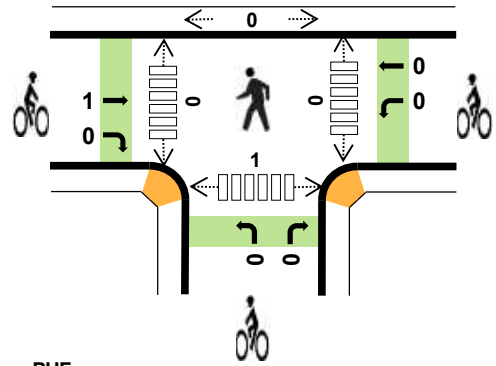
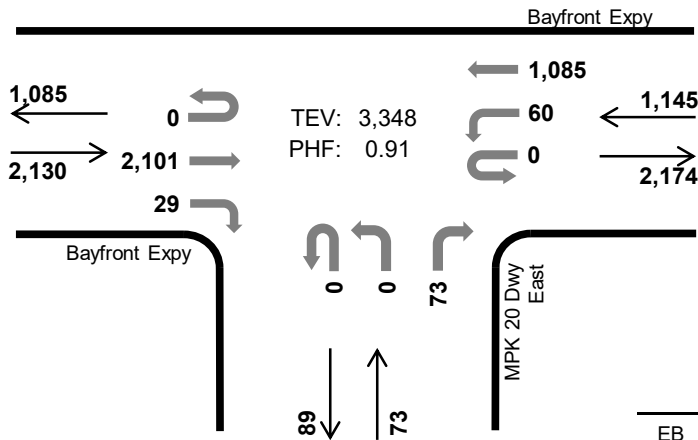
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# MPK 20 Dwy East Bayfront Expy



Peak Hour

Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	3.8%	0.90
WB	8.6%	0.94
NB	19.2%	0.83
SB	-	-
TOTAL	5.8%	0.91

### Three-Hour Count Summaries

Interval Start	Bayfront Expy				Bayfront Expy				MPK 20 Dwy East				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	500	9	0	18	286	0	0	0	0	15	0	0	0	0	828	0
4:15 PM	0	0	580	10	0	13	292	0	0	0	0	22	0	0	0	0	917	0
4:30 PM	0	0	481	6	0	18	274	0	0	0	0	19	0	0	0	0	798	0
4:45 PM	0	0	540	4	0	11	233	0	0	0	0	17	0	0	0	0	805	3,348
Peak Hour	All	0	0	2,101	29	0	60	1,085	0	0	0	73	0	0	0	0	3,348	0
	HV	0	0	76	4	0	46	53	0	0	0	14	0	0	0	0	193	0
	HV%	-	-	4%	14%	-	77%	5%	-	-	-	19%	-	-	-	-	6%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	22	33	5	0	60	1	0	0	0	1	0	0	0	1	1
4:15 PM	22	20	2	0	44	0	0	0	0	0	0	0	0	0	0
4:30 PM	12	27	4	0	43	0	0	0	0	0	0	0	0	0	0
4:45 PM	24	19	3	0	46	0	0	0	0	0	0	0	0	0	0
Peak Hour	80	99	14	0	193	1	0	0	0	1	0	0	0	1	1

**Three-Hour Count Summaries**

Interval Start	Bayfront Expy				Bayfront Expy				MPK 20 Dwy East				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	500	9	0	18	286	0	0	0	0	15	0	0	0	0	828	0
4:15 PM	0	0	580	10	0	13	292	0	0	0	0	22	0	0	0	0	917	0
4:30 PM	0	0	481	6	0	18	274	0	0	0	0	19	0	0	0	0	798	0
4:45 PM	0	0	540	4	0	11	233	0	0	0	0	17	0	0	0	0	805	3,348
5:00 PM	0	0	417	4	0	22	245	0	0	0	0	27	0	0	0	0	715	3,235
5:15 PM	0	0	494	3	0	17	267	0	0	0	0	27	0	0	0	0	808	3,126
5:30 PM	0	0	403	4	0	19	270	0	0	0	0	18	0	0	0	0	714	3,042
5:45 PM	0	0	490	6	0	14	241	0	0	0	0	28	0	0	0	0	779	3,016
6:00 PM	0	0	409	8	0	15	232	0	0	0	0	16	0	0	0	0	680	2,981
6:15 PM	0	0	494	5	0	10	238	0	0	0	0	22	0	0	0	0	769	2,942
6:30 PM	0	0	433	3	0	21	235	0	0	0	0	24	0	0	0	0	716	2,944
6:45 PM	0	0	477	7	0	13	186	0	0	0	0	25	0	0	0	0	708	2,873
Count Total	0	0	5,718	69	0	191	2,999	0	0	0	0	260	0	0	0	0	9,237	0
Peak Hour	All	0	0	2,101	29	0	60	1,085	0	0	0	73	0	0	0	0	3,348	0
	HV	0	0	76	4	0	46	53	0	0	0	14	0	0	0	0	193	0
	HV%	-	-	4%	14%	-	77%	5%	-	-	-	19%	-	-	-	-	6%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	22	33	5	0	60	1	0	0	0	1	0	0	0	1	1
4:15 PM	22	20	2	0	44	0	0	0	0	0	0	0	0	0	0
4:30 PM	12	27	4	0	43	0	0	0	0	0	0	0	0	0	0
4:45 PM	24	19	3	0	46	0	0	0	0	0	0	0	0	0	0
5:00 PM	12	34	3	0	49	0	0	0	0	0	0	0	0	0	0
5:15 PM	23	20	8	0	51	0	0	0	0	0	0	0	0	0	0
5:30 PM	10	19	4	0	33	0	0	0	0	0	0	0	0	0	0
5:45 PM	21	23	4	0	48	0	0	0	0	0	0	0	0	0	0
6:00 PM	16	21	2	0	39	0	0	0	0	0	0	0	0	0	0
6:15 PM	17	17	6	0	40	0	0	0	0	0	0	0	0	0	0
6:30 PM	13	27	3	0	43	0	0	0	0	0	0	0	0	0	0
6:45 PM	20	23	8	0	51	0	0	0	0	0	0	0	0	0	0
Count Total	212	283	52	0	547	1	0	0	0	1	0	0	0	1	1
Peak Hr	80	99	14	0	193	1	0	0	0	1	0	0	0	1	1

**Three-Hour Count Summaries - Heavy Vehicles**

Interval Start	Bayfront Expy				Bayfront Expy				MPK 20 Dwy East				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	21	1	0	15	18	0	0	0	0	5	0	0	0	0	60	0
4:15 PM	0	0	22	0	0	10	10	0	0	0	0	2	0	0	0	0	44	0
4:30 PM	0	0	11	1	0	12	15	0	0	0	0	4	0	0	0	0	43	0
4:45 PM	0	0	22	2	0	9	10	0	0	0	0	3	0	0	0	0	46	193
5:00 PM	0	0	11	1	0	18	16	0	0	0	0	3	0	0	0	0	49	182
5:15 PM	0	0	22	1	0	12	8	0	0	0	0	8	0	0	0	0	51	189
5:30 PM	0	0	8	2	0	12	7	0	0	0	0	4	0	0	0	0	33	179
5:45 PM	0	0	17	4	0	10	13	0	0	0	0	4	0	0	0	0	48	181
6:00 PM	0	0	14	2	0	12	9	0	0	0	0	2	0	0	0	0	39	171
6:15 PM	0	0	17	0	0	9	8	0	0	0	0	6	0	0	0	0	40	160
6:30 PM	0	0	11	2	0	19	8	0	0	0	0	3	0	0	0	0	43	170
6:45 PM	0	0	20	0	0	13	10	0	0	0	0	8	0	0	0	0	51	173
Count Total	0	0	196	16	0	151	132	0	0	0	0	52	0	0	0	0	547	0
Peak Hour	0	0	76	4	0	46	53	0	0	0	0	14	0	0	0	0	193	0

**Three-Hour Count Summaries - Bikes**

Interval Start	Bayfront Expy			Bayfront Expy			MPK 20 Dwy East			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Peak Hour	0	1	0	0	0	0	0	0	0	0	0	0	1	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 59AM FINAL  
 Site Code : 00000059  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Vehicles

Start Time	CONSTITUTION DR Southbound					CHRYSLER DR Westbound					CONSTITUTION DR Northbound					CHRYSLER DR Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	1	8	4	13	0	98	26	0	124	14	0	7	1	22	1	15	0	5	21	180
07:15 AM	1	0	2	0	3	1	97	24	0	122	19	0	5	1	25	4	13	0	2	19	169
07:30 AM	0	0	5	0	5	0	141	24	0	165	31	0	13	2	46	3	23	0	1	27	243
07:45 AM	1	0	3	0	4	0	157	27	0	184	39	0	16	3	58	3	31	0	1	35	281
Total	2	1	18	4	25	1	493	101	0	595	103	0	41	7	151	11	82	0	9	102	873
08:00 AM	2	0	4	17	23	0	153	20	0	173	37	0	7	4	48	1	34	0	1	36	280
08:15 AM	1	1	2	3	7	0	198	13	0	211	23	0	9	0	32	0	37	0	0	37	287
08:30 AM	5	2	2	0	9	0	182	23	0	205	19	0	9	5	33	9	29	0	0	38	285
08:45 AM	1	0	3	7	11	0	185	23	0	208	21	0	11	1	33	9	53	0	1	63	315
Total	9	3	11	27	50	0	718	79	0	797	100	0	36	10	146	19	153	0	2	174	1167
09:00 AM	4	0	4	8	16	1	138	27	1	167	11	0	11	0	22	2	37	0	0	39	244
09:15 AM	1	0	3	0	4	0	158	23	0	181	11	0	11	1	23	2	34	0	0	36	244
09:30 AM	4	1	8	1	14	0	132	25	0	157	8	0	12	0	20	5	39	0	0	44	235
09:45 AM	0	1	4	9	14	0	174	28	0	202	12	0	8	1	21	2	39	0	0	41	278
Total	9	2	19	18	48	1	602	103	1	707	42	0	42	2	86	11	149	0	0	160	1001
Grand Total	20	6	48	49	123	2	1813	283	1	2099	245	0	119	19	383	41	384	0	11	436	3041
Apprch %	16.3	4.9	39	39.8		0.1	86.4	13.5	0		64	0	31.1	5		9.4	88.1	0	2.5		
Total %	0.7	0.2	1.6	1.6	4	0.1	59.6	9.3	0	69	8.1	0	3.9	0.6	12.6	1.3	12.6	0	0.4	14.3	

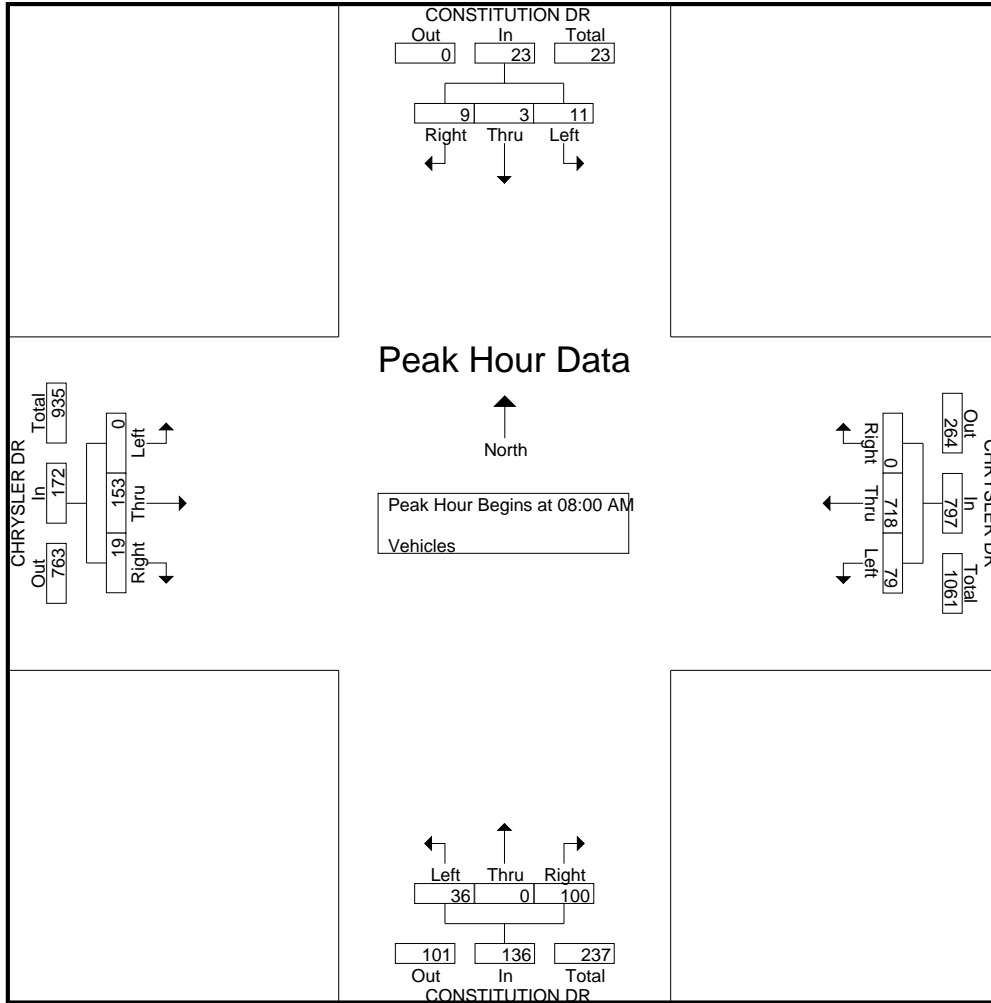
Start Time	CONSTITUTION DR Southbound				CHRYSLER DR Westbound				CONSTITUTION DR Northbound				CHRYSLER DR Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	2	0	4	6	0	153	20	173	37	0	7	44	1	34	0	35	258
08:15 AM	1	1	2	4	0	198	13	211	23	0	9	32	0	37	0	37	284
08:30 AM	5	2	2	9	0	182	23	205	19	0	9	28	9	29	0	38	280
08:45 AM	1	0	3	4	0	185	23	208	21	0	11	32	9	53	0	62	306
Total Volume	9	3	11	23	0	718	79	797	100	0	36	136	19	153	0	172	1128
% App. Total	39.1	13	47.8		0	90.1	9.9		73.5	0	26.5		11	89	0		
PHF	.450	.375	.688	.639	.000	.907	.859	.944	.676	.000	.818	.773	.528	.722	.000	.694	.922



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 59AM FINAL  
 Site Code : 00000059  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 59AM FINAL  
 Site Code : 00000059  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

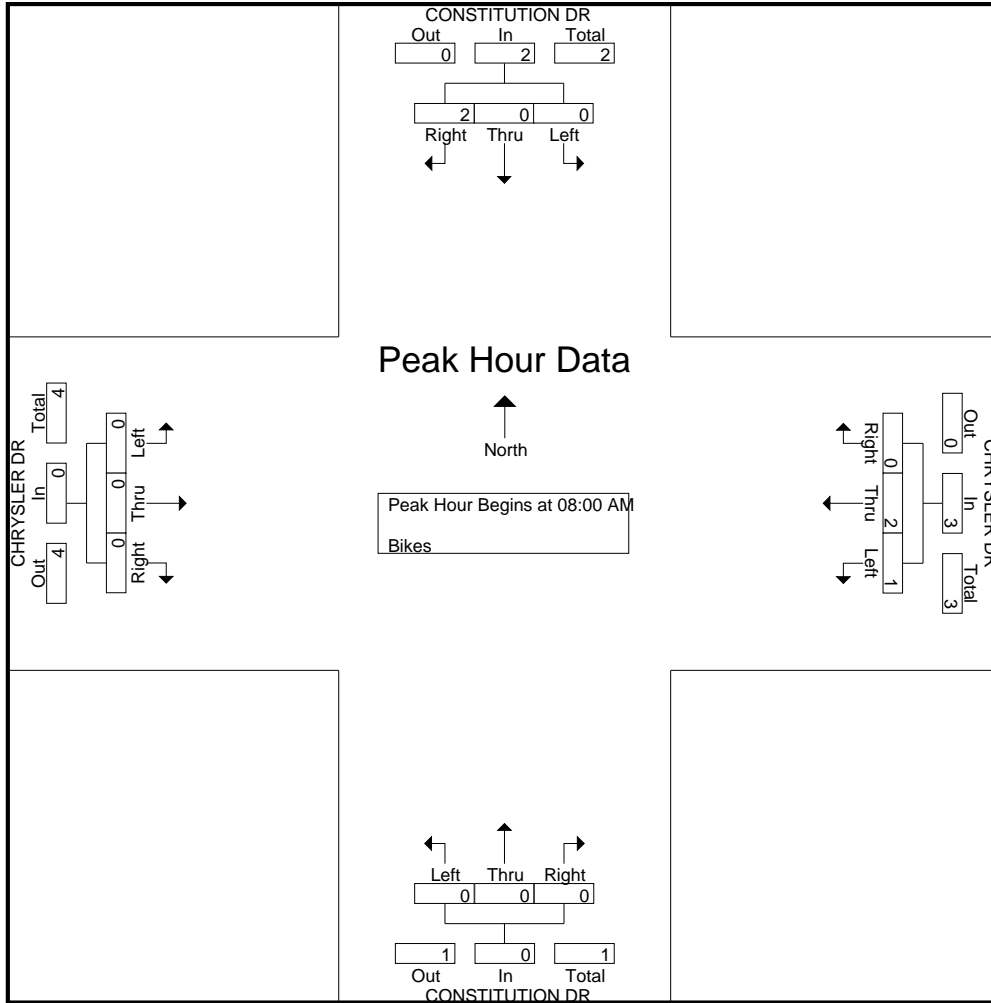
Start Time	CONSTITUTION DR Southbound					CHRYSLER DR Westbound					CONSTITUTION DR Northbound					CHRYSLER DR Eastbound					Int. Total	
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total		
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	2	0	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4
Total	2	0	0	0	2	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	5
09:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	2	0	0	0	2	0	2	2	0	4	0	1	0	0	1	0	0	0	0	0	0	7
Apprch %	100	0	0	0		0	50	50	0		0	100	0	0		0	0	0	0			
Total %	28.6	0	0	0	28.6	0	28.6	28.6	0	57.1	0	14.3	0	0	14.3	0	0	0	0	0		

Start Time	CONSTITUTION DR Southbound				CHRYSLER DR Westbound				CONSTITUTION DR Northbound				CHRYSLER DR Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	2	0	0	2	0	2	0	2	0	0	0	0	0	0	0	0	4
Total Volume	2	0	0	2	0	2	1	3	0	0	0	0	0	0	0	0	5
% App. Total	100	0	0		0	66.7	33.3		0	0	0		0	0	0		
PHF	.250	.000	.000	.250	.000	.250	.250	.375	.000	.000	.000	.000	.000	.000	.000	.000	.313

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 59AM FINAL  
 Site Code : 00000059  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 59PM FINAL  
 Site Code : 00000059  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Vehicles

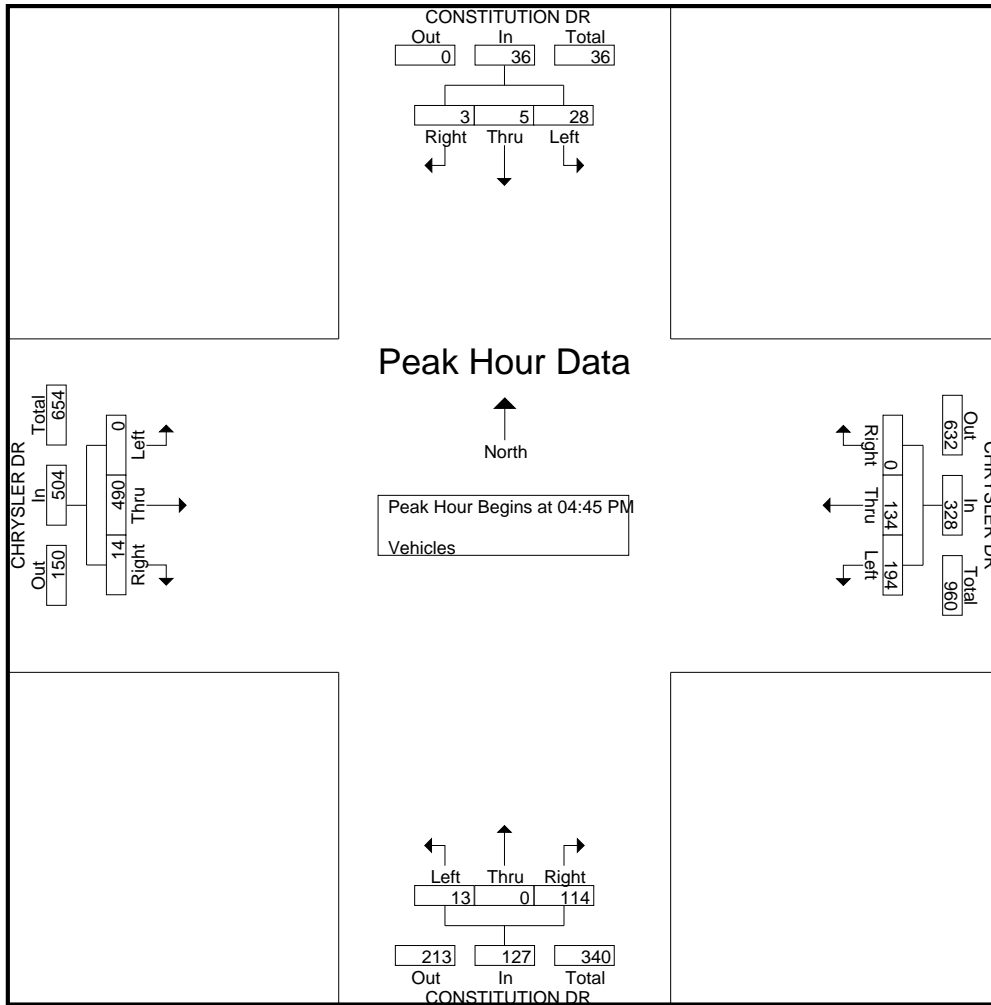
Start Time	CONSTITUTION DR Southbound					CHRYSLER DR Westbound					CONSTITUTION DR Northbound					CHRYSLER DR Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	3	13	0	16	0	41	25	0	66	31	0	5	3	39	4	142	0	0	146	267
04:15 PM	0	0	7	0	7	0	39	24	0	63	32	0	8	6	46	1	115	0	0	116	232
04:30 PM	0	0	9	0	9	0	38	30	0	68	36	0	2	7	45	1	94	0	0	95	217
04:45 PM	0	0	15	0	15	0	39	40	0	79	22	0	3	4	29	4	130	0	0	134	257
Total	0	3	44	0	47	0	157	119	0	276	121	0	18	20	159	10	481	0	0	491	973
05:00 PM	3	2	5	0	10	0	24	42	0	66	35	0	6	3	44	4	138	0	0	142	262
05:15 PM	0	3	6	0	9	0	34	68	0	102	32	0	1	3	36	1	104	0	0	105	252
05:30 PM	0	0	2	0	2	0	37	44	0	81	25	0	3	5	33	5	118	0	0	123	239
05:45 PM	1	0	2	0	3	0	30	43	0	73	36	0	3	1	40	1	112	1	0	114	230
Total	4	5	15	0	24	0	125	197	0	322	128	0	13	12	153	11	472	1	0	484	983
06:00 PM	0	1	12	0	13	0	39	52	0	91	26	0	2	3	31	5	104	0	0	109	244
06:15 PM	0	0	5	0	5	0	42	58	0	100	31	0	9	3	43	4	103	0	0	107	255
06:30 PM	0	0	7	0	7	0	39	17	0	56	26	0	1	3	30	1	105	0	0	106	199
06:45 PM	0	0	3	0	3	0	37	13	0	50	27	0	6	2	35	0	109	0	0	109	197
Total	0	1	27	0	28	0	157	140	0	297	110	0	18	11	139	10	421	0	0	431	895
Grand Total	4	9	86	0	99	0	439	456	0	895	359	0	49	43	451	31	1374	1	0	1406	2851
Apprch %	4	9.1	86.9	0		0	49.1	50.9	0		79.6	0	10.9	9.5		2.2	97.7	0.1	0		
Total %	0.1	0.3	3	0	3.5	0	15.4	16	0	31.4	12.6	0	1.7	1.5	15.8	1.1	48.2	0	0	49.3	

Start Time	CONSTITUTION DR Southbound				CHRYSLER DR Westbound				CONSTITUTION DR Northbound				CHRYSLER DR Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	15	15	0	39	40	79	22	0	3	25	4	130	0	134	253
05:00 PM	3	2	5	10	0	24	42	66	35	0	6	41	4	138	0	142	259
05:15 PM	0	3	6	9	0	34	68	102	32	0	1	33	1	104	0	105	249
05:30 PM	0	0	2	2	0	37	44	81	25	0	3	28	5	118	0	123	234
Total Volume	3	5	28	36	0	134	194	328	114	0	13	127	14	490	0	504	995
% App. Total	8.3	13.9	77.8		0	40.9	59.1		89.8	0	10.2		2.8	97.2	0		
PHF	.250	.417	.467	.600	.000	.859	.713	.804	.814	.000	.542	.774	.700	.888	.000	.887	.960

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 59PM FINAL  
 Site Code : 00000059  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 59PM FINAL  
 Site Code : 00000059  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

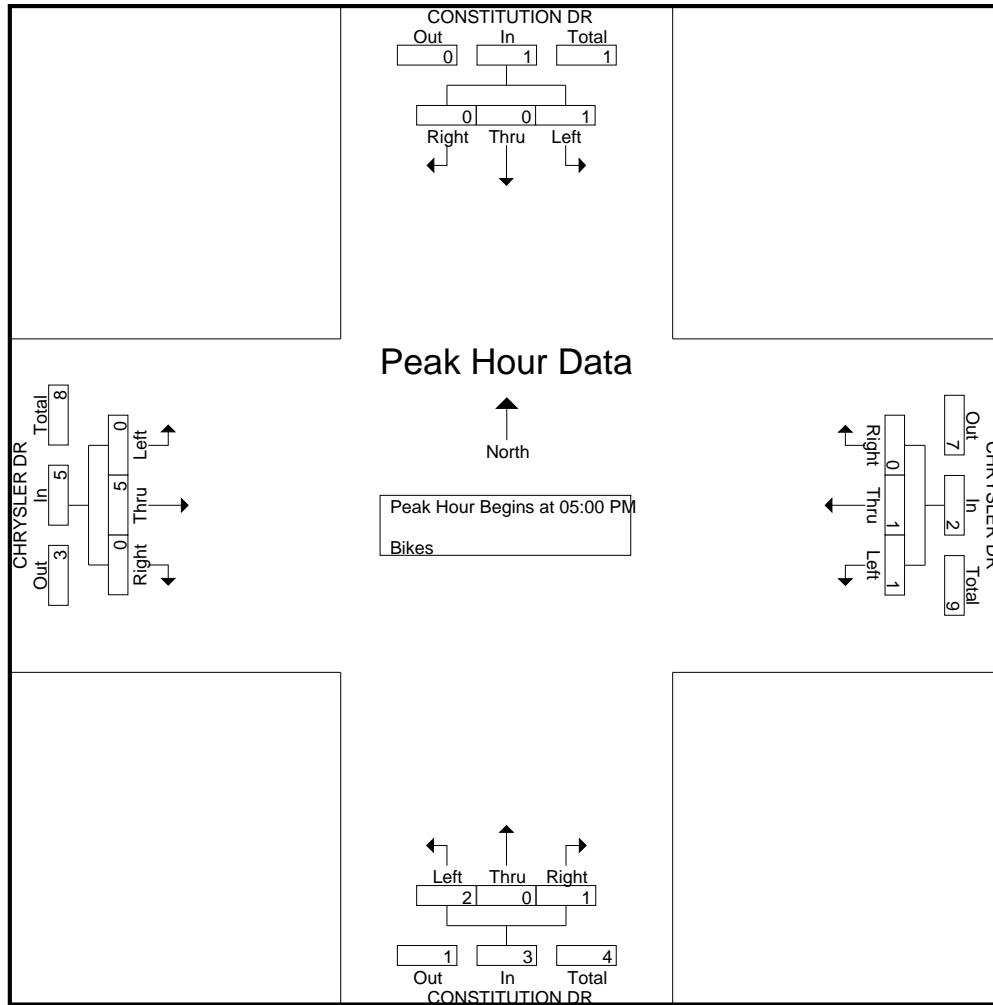
Start Time	CONSTITUTION DR Southbound					CHRYSLER DR Westbound					CONSTITUTION DR Northbound					CHRYSLER DR Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	0	3	0	0	0	3
05:45 PM	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	2
Total	0	0	1	0	1	0	1	1	0	2	1	0	2	0	3	0	5	0	0	0	5
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
Grand Total	0	0	1	0	1	0	1	1	0	2	1	0	2	0	3	1	8	0	0	0	9
Apprch %	0	0	100	0		0	50	50	0		33.3	0	66.7	0		11.1	88.9	0	0		
Total %	0	0	6.7	0	6.7	0	6.7	6.7	0	13.3	6.7	0	13.3	0	20	6.7	53.3	0	0	60	

Start Time	CONSTITUTION DR Southbound				CHRYSLER DR Westbound				CONSTITUTION DR Northbound				CHRYSLER DR Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	1	1	0	0	2	2	0	3	0	3	6
05:45 PM	0	0	1	1	0	1	0	1	0	0	0	0	0	2	0	2	4
Total Volume	0	0	1	1	0	1	1	2	1	0	2	3	0	5	0	5	11
% App. Total	0	0	100		0	50	50		33.3	0	66.7		0	100	0		
PHF	.000	.000	.250	.250	.000	.250	.250	.500	.250	.000	.250	.375	.000	.417	.000	.417	.458

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 59PM FINAL  
 Site Code : 00000059  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 58AM FINAL  
Site Code : 00000058  
Start Date : 3/21/2019  
Page No : 1

Groups Printed- Vehicles

Start Time	CONSTITUTION DR Southbound					CHILCO ST Westbound					CONSTITUTION DR Northbound					CHILCO ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	4	5	3	0	12	27	23	12	0	62	13	5	7	2	27	6	31	12	0	49	150
07:15 AM	8	2	11	0	21	34	20	19	0	73	7	3	4	9	23	5	42	20	4	71	188
07:30 AM	20	1	18	0	39	34	32	15	2	83	6	1	6	8	21	3	70	38	0	111	254
07:45 AM	6	5	18	0	29	48	49	34	0	131	4	1	6	5	16	5	49	46	2	102	278
<b>Total</b>	<b>38</b>	<b>13</b>	<b>50</b>	<b>0</b>	<b>101</b>	<b>143</b>	<b>124</b>	<b>80</b>	<b>2</b>	<b>349</b>	<b>30</b>	<b>10</b>	<b>23</b>	<b>24</b>	<b>87</b>	<b>19</b>	<b>192</b>	<b>116</b>	<b>6</b>	<b>333</b>	<b>870</b>
08:00 AM	10	5	12	0	27	57	59	38	0	154	8	2	9	10	29	5	57	40	4	106	316
08:15 AM	12	4	11	0	27	83	49	34	2	168	2	6	6	24	38	8	51	29	6	94	327
08:30 AM	17	6	22	0	45	84	54	24	0	162	6	8	6	14	34	8	43	23	6	80	321
08:45 AM	17	5	15	0	37	93	46	38	0	177	12	4	9	21	46	7	56	25	2	90	350
<b>Total</b>	<b>56</b>	<b>20</b>	<b>60</b>	<b>0</b>	<b>136</b>	<b>317</b>	<b>208</b>	<b>134</b>	<b>2</b>	<b>661</b>	<b>28</b>	<b>20</b>	<b>30</b>	<b>69</b>	<b>147</b>	<b>28</b>	<b>207</b>	<b>117</b>	<b>18</b>	<b>370</b>	<b>1314</b>
09:00 AM	13	5	19	0	37	116	44	45	0	205	6	8	8	40	62	9	46	15	8	78	382
09:15 AM	18	5	16	0	39	108	53	49	0	210	14	5	7	30	56	18	39	18	4	79	384
09:30 AM	25	5	19	0	49	106	50	43	0	199	11	11	10	44	76	12	66	14	3	95	419
09:45 AM	14	6	15	0	35	70	56	51	0	177	17	6	5	38	66	9	52	24	6	91	369
<b>Total</b>	<b>70</b>	<b>21</b>	<b>69</b>	<b>0</b>	<b>160</b>	<b>400</b>	<b>203</b>	<b>188</b>	<b>0</b>	<b>791</b>	<b>48</b>	<b>30</b>	<b>30</b>	<b>152</b>	<b>260</b>	<b>48</b>	<b>203</b>	<b>71</b>	<b>21</b>	<b>343</b>	<b>1554</b>
Grand Total	164	54	179	0	397	860	535	402	4	1801	106	60	83	245	494	95	602	304	45	1046	3738
Apprch %	41.3	13.6	45.1	0		47.8	29.7	22.3	0.2		21.5	12.1	16.8	49.6		9.1	57.6	29.1	4.3		
Total %	4.4	1.4	4.8	0	10.6	23	14.3	10.8	0.1	48.2	2.8	1.6	2.2	6.6	13.2	2.5	16.1	8.1	1.2	28	

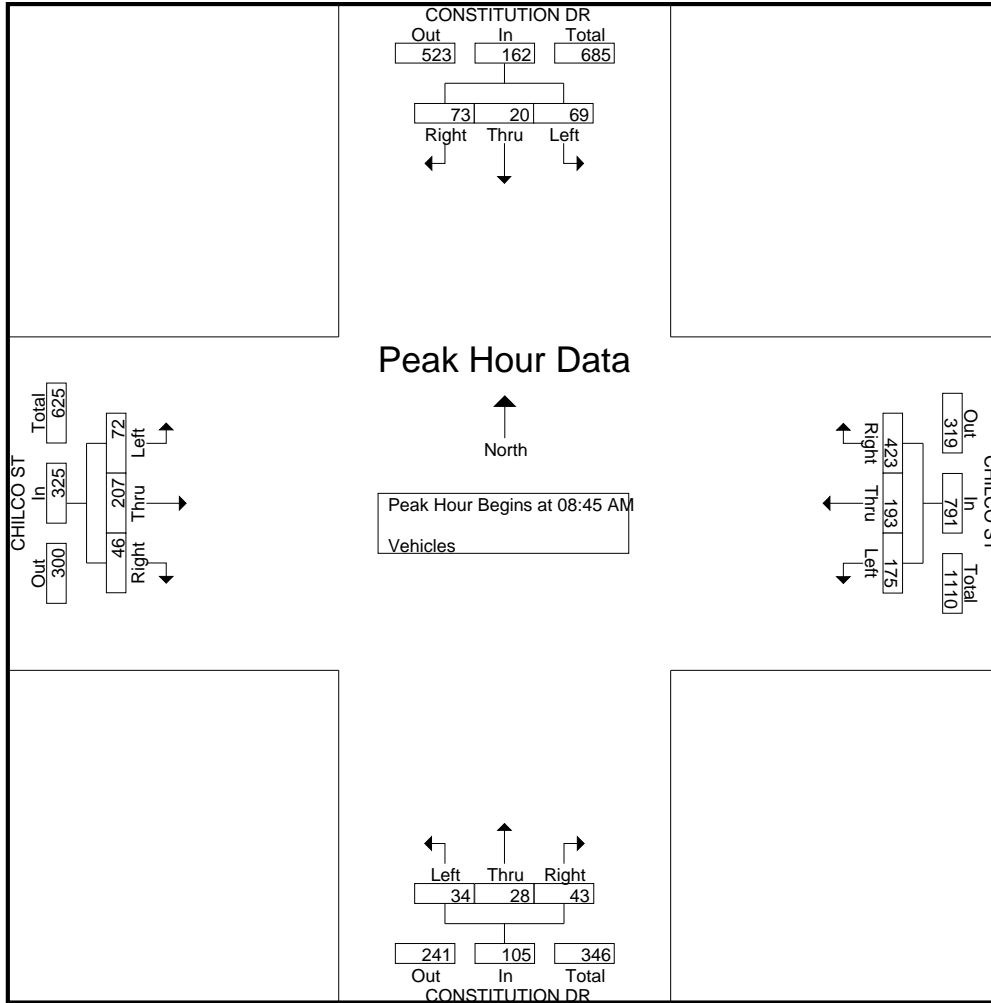
Start Time	CONSTITUTION DR Southbound				CHILCO ST Westbound				CONSTITUTION DR Northbound				CHILCO ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:45 AM																	
08:45 AM	17	5	15	37	93	46	38	177	12	4	9	25	7	56	25	88	327
09:00 AM	13	5	19	37	116	44	45	205	6	8	8	22	9	46	15	70	334
09:15 AM	18	5	16	39	108	53	49	210	14	5	7	26	18	39	18	75	350
09:30 AM	25	5	19	49	106	50	43	199	11	11	10	32	12	66	14	92	372
Total Volume	73	20	69	162	423	193	175	791	43	28	34	105	46	207	72	325	1383
% App. Total	45.1	12.3	42.6		53.5	24.4	22.1		41	26.7	32.4		14.2	63.7	22.2		
PHF	.730	1.00	.908	.827	.912	.910	.893	.942	.768	.636	.850	.820	.639	.784	.720	.883	.929



# Traffic Data Service

San Jose, CA  
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 tdsbay@cs.com

File Name : 58AM FINAL  
 Site Code : 00000058  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 58AM FINAL  
 Site Code : 00000058  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

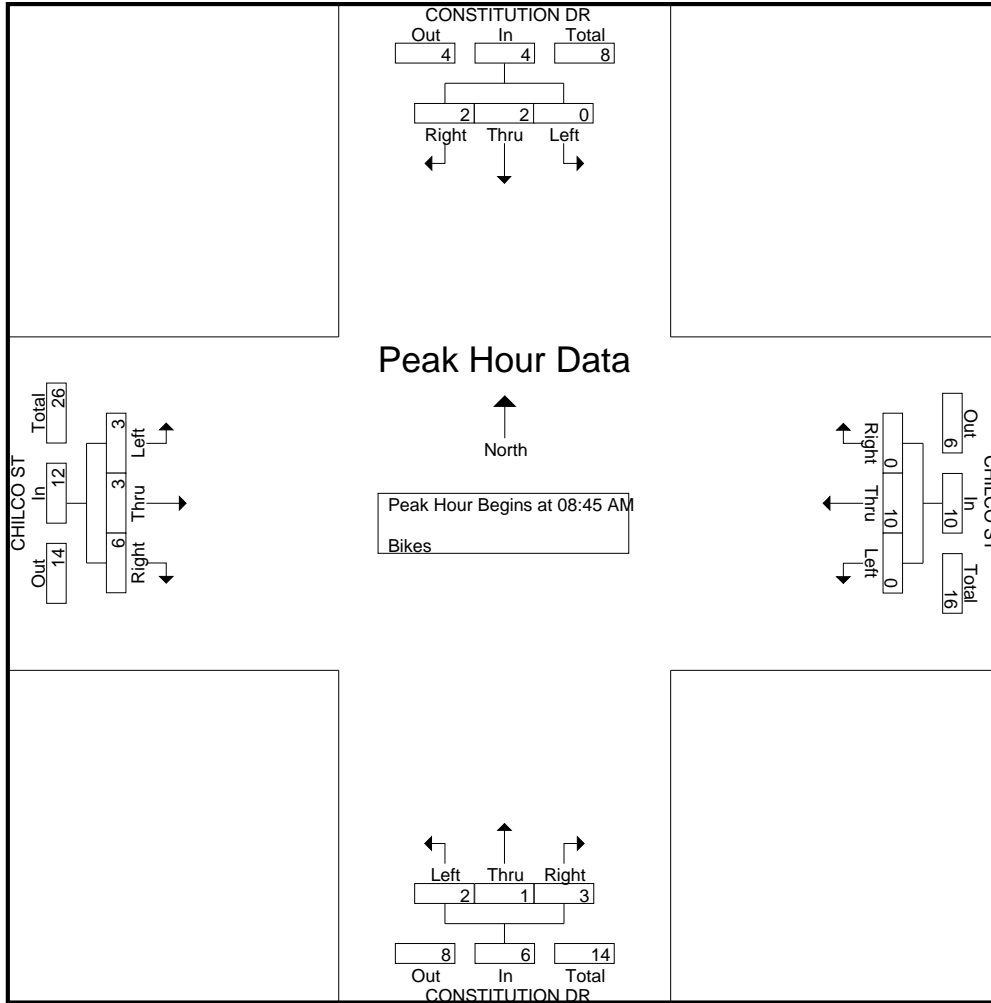
Start Time	CONSTITUTION DR Southbound					CHILCO ST Westbound					CONSTITUTION DR Northbound					CHILCO ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	1	1	0	0	2	4
07:15 AM	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	3
<b>Total</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>9</b>
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	4
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	2	1	0	0	3	0	2	0	0	2	0	0	0	0	0	1	2	3	0	6	11
<b>Total</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>8</b>	<b>15</b>
09:00 AM	0	1	0	0	1	0	1	0	0	1	2	1	1	0	4	3	0	0	0	3	9
09:15 AM	0	0	0	0	0	0	7	0	0	7	0	0	1	0	1	0	1	0	0	1	9
09:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	0	0	0	2	3
09:45 AM	2	1	0	0	3	2	1	0	0	3	0	0	1	0	1	0	0	0	0	0	7
<b>Total</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>28</b>
Grand Total	4	5	0	0	9	3	14	0	0	17	3	3	3	0	9	7	6	4	0	17	52
Apprch %	44.4	55.6	0	0		17.6	82.4	0	0		33.3	33.3	33.3	0		41.2	35.3	23.5	0		
Total %	7.7	9.6	0	0	17.3	5.8	26.9	0	0	32.7	5.8	5.8	5.8	0	17.3	13.5	11.5	7.7	0	32.7	

Start Time	CONSTITUTION DR Southbound				CHILCO ST Westbound				CONSTITUTION DR Northbound				CHILCO ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:45 AM																	
08:45 AM	2	1	0	3	0	2	0	2	0	0	0	0	1	2	3	6	11
09:00 AM	0	1	0	1	0	1	0	1	2	1	1	4	3	0	0	3	9
09:15 AM	0	0	0	0	0	7	0	7	0	0	1	1	0	1	0	1	9
09:30 AM	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	2	3
Total Volume	2	2	0	4	0	10	0	10	3	1	2	6	6	3	3	12	32
% App. Total	50	50	0		0	100	0		50	16.7	33.3		50	25	25		
PHF	.250	.500	.000	.333	.000	.357	.000	.357	.375	.250	.500	.375	.500	.375	.250	.500	.727

# Traffic Data Service

San Jose, CA  
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 tdsbay@cs.com

File Name : 58AM FINAL  
 Site Code : 00000058  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
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tdsbay@cs.com

File Name : 58PM FINAL  
Site Code : 00000058  
Start Date : 3/21/2019  
Page No : 1

## Groups Printed- Vehicles

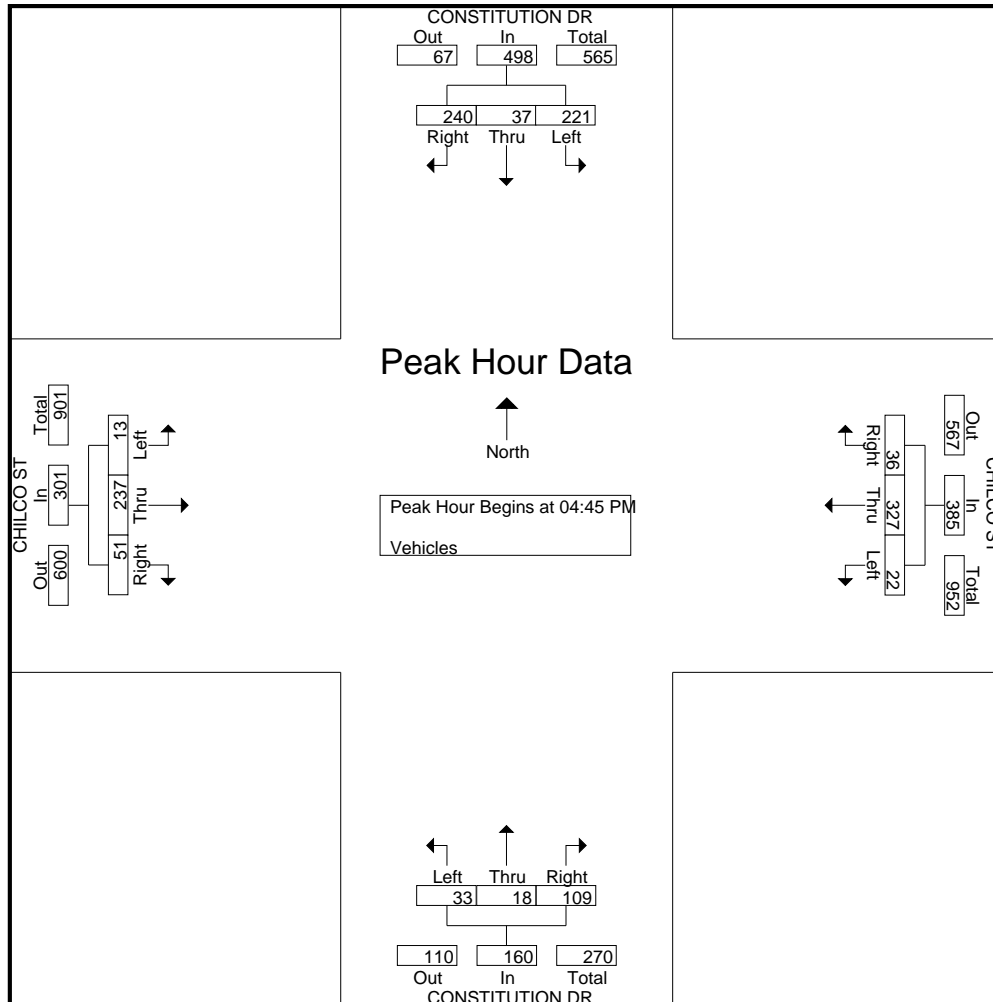
Start Time	CONSTITUTION DR Southbound					CHILCO ST Westbound					CONSTITUTION DR Northbound					CHILCO ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	33	10	58	0	101	12	79	10	0	101	17	8	9	5	39	10	51	8	5	74	315
04:15 PM	27	11	42	0	80	15	95	11	0	121	24	8	8	7	47	12	49	7	2	70	318
04:30 PM	25	11	60	0	96	7	63	2	0	72	18	10	7	18	53	13	47	1	10	71	292
04:45 PM	63	13	58	0	134	14	79	5	0	98	16	4	8	20	48	10	44	3	6	63	343
Total	148	45	218	0	411	48	316	28	0	392	75	30	32	50	187	45	191	19	23	278	1268
05:00 PM	58	9	60	0	127	5	81	6	0	92	29	4	7	31	71	13	62	2	13	90	380
05:15 PM	68	7	59	0	134	7	74	4	0	85	33	3	13	17	66	11	74	2	10	97	382
05:30 PM	51	8	44	0	103	10	93	7	0	110	31	7	5	12	55	17	57	6	9	89	357
05:45 PM	54	7	33	0	94	4	77	10	0	91	30	10	6	19	65	13	48	6	7	74	324
Total	231	31	196	0	458	26	325	27	0	378	123	24	31	79	257	54	241	16	39	350	1443
06:00 PM	45	9	49	0	103	8	63	6	0	77	28	9	7	22	66	12	53	7	20	92	338
06:15 PM	50	16	51	0	117	8	83	6	0	97	21	7	13	22	63	10	39	6	6	61	338
06:30 PM	20	10	36	0	66	11	66	12	0	89	30	8	5	25	68	8	54	4	17	83	306
06:45 PM	17	5	47	0	69	12	79	8	0	99	33	5	12	26	76	6	53	2	17	78	322
Total	132	40	183	0	355	39	291	32	0	362	112	29	37	95	273	36	199	19	60	314	1304
Grand Total	511	116	597	0	1224	113	932	87	0	1132	310	83	100	224	717	135	631	54	122	942	4015
Apprch %	41.7	9.5	48.8	0		10	82.3	7.7	0		43.2	11.6	13.9	31.2		14.3	67	5.7	13		
Total %	12.7	2.9	14.9	0	30.5	2.8	23.2	2.2	0	28.2	7.7	2.1	2.5	5.6	17.9	3.4	15.7	1.3	3	23.5	

Start Time	CONSTITUTION DR Southbound				CHILCO ST Westbound				CONSTITUTION DR Northbound				CHILCO ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	63	13	58	134	14	79	5	98	16	4	8	28	10	44	3	57	317
05:00 PM	58	9	60	127	5	81	6	92	29	4	7	40	13	62	2	77	336
05:15 PM	68	7	59	134	7	74	4	85	33	3	13	49	11	74	2	87	355
05:30 PM	51	8	44	103	10	93	7	110	31	7	5	43	17	57	6	80	336
Total Volume	240	37	221	498	36	327	22	385	109	18	33	160	51	237	13	301	1344
% App. Total	48.2	7.4	44.4		9.4	84.9	5.7		68.1	11.2	20.6		16.9	78.7	4.3		
PHF	.882	.712	.921	.929	.643	.879	.786	.875	.826	.643	.635	.816	.750	.801	.542	.865	.946

# Traffic Data Service

San Jose, CA  
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File Name : 58PM FINAL  
 Site Code : 00000058  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 58PM FINAL  
 Site Code : 00000058  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

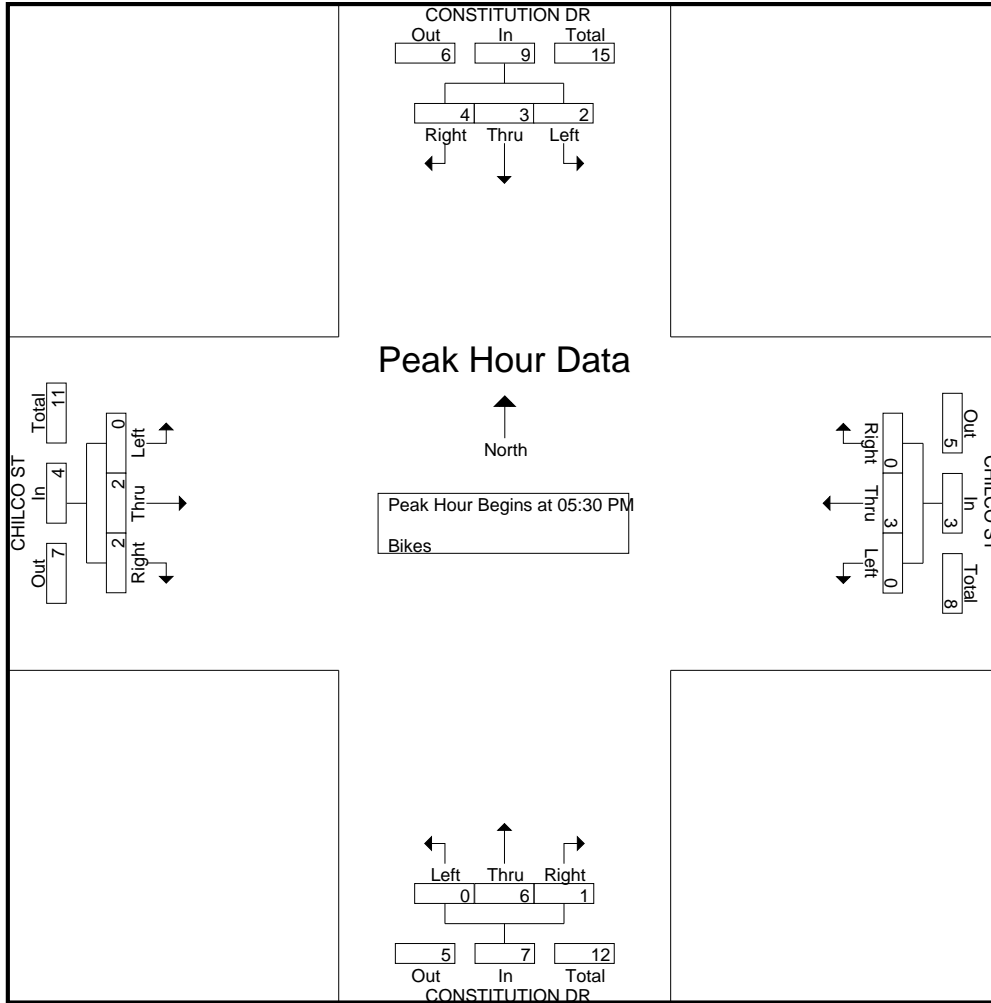
Start Time	CONSTITUTION DR Southbound					CHILCO ST Westbound					CONSTITUTION DR Northbound					CHILCO ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
04:15 PM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	1	0	1	0	2	0	1	0	0	1	0	1	1	0	2	1	0	0	0	0	1
<b>Total</b>	<b>2</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>15</b>
05:00 PM	1	1	0	0	2	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0
05:15 PM	1	0	0	0	1	0	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	1	0	0	1	0	1	0	0	1	0	3	0	0	3	2	0	0	0	0	2
05:45 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>18</b>
06:00 PM	2	2	1	0	5	0	1	0	0	1	1	0	0	0	1	0	1	0	0	0	1
06:15 PM	0	0	1	0	1	0	1	0	0	1	0	3	0	0	3	0	1	0	0	0	1
06:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>16</b>
Grand Total	8	12	4	0	24	1	5	3	0	9	1	8	1	0	10	4	2	0	0	6	49
Apprch %	33.3	50	16.7	0		11.1	55.6	33.3	0		10	80	10	0		66.7	33.3	0	0		
Total %	16.3	24.5	8.2	0	49	2	10.2	6.1	0	18.4	2	16.3	2	0	20.4	8.2	4.1	0	0	12.2	

Start Time	CONSTITUTION DR Southbound				CHILCO ST Westbound				CONSTITUTION DR Northbound				CHILCO ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:30 PM																	
05:30 PM	0	1	0	1	0	1	0	1	0	3	0	3	2	0	0	2	7
05:45 PM	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
06:00 PM	2	2	1	5	0	1	0	1	1	0	0	1	0	1	0	1	8
06:15 PM	0	0	1	1	0	1	0	1	0	3	0	3	0	1	0	1	6
Total Volume	4	3	2	9	0	3	0	3	1	6	0	7	2	2	0	4	23
% App. Total	44.4	33.3	22.2		0	100	0		14.3	85.7	0		50	50	0		
PHF	.500	.375	.500	.450	.000	.750	.000	.750	.250	.500	.000	.583	.250	.500	.000	.500	.719

# Traffic Data Service

San Jose, CA  
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File Name : 58PM FINAL  
 Site Code : 00000058  
 Start Date : 3/21/2019  
 Page No : 2



42 ↑

Intersection Setup

Enter text to search...

	↑			↓			→			←		
Number	131											
Intersection	Chilco Street/Hamilton Avenue											
Notes												
Control Type	All-way stop											
Analysis Method	HCM 6th Edition											
Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Show Name	✓			✓			✓			✓		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	13	88	10	50	79	15	37	41	16	22	51	131
Total Analysis Volume [veh/h]	14	92	10	63	99	19	47	52	20	24	56	144
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0





# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 14AM FINAL  
 Site Code : 00000014  
 Start Date : 3/19/2019  
 Page No : 1

Groups Printed- Vehicles

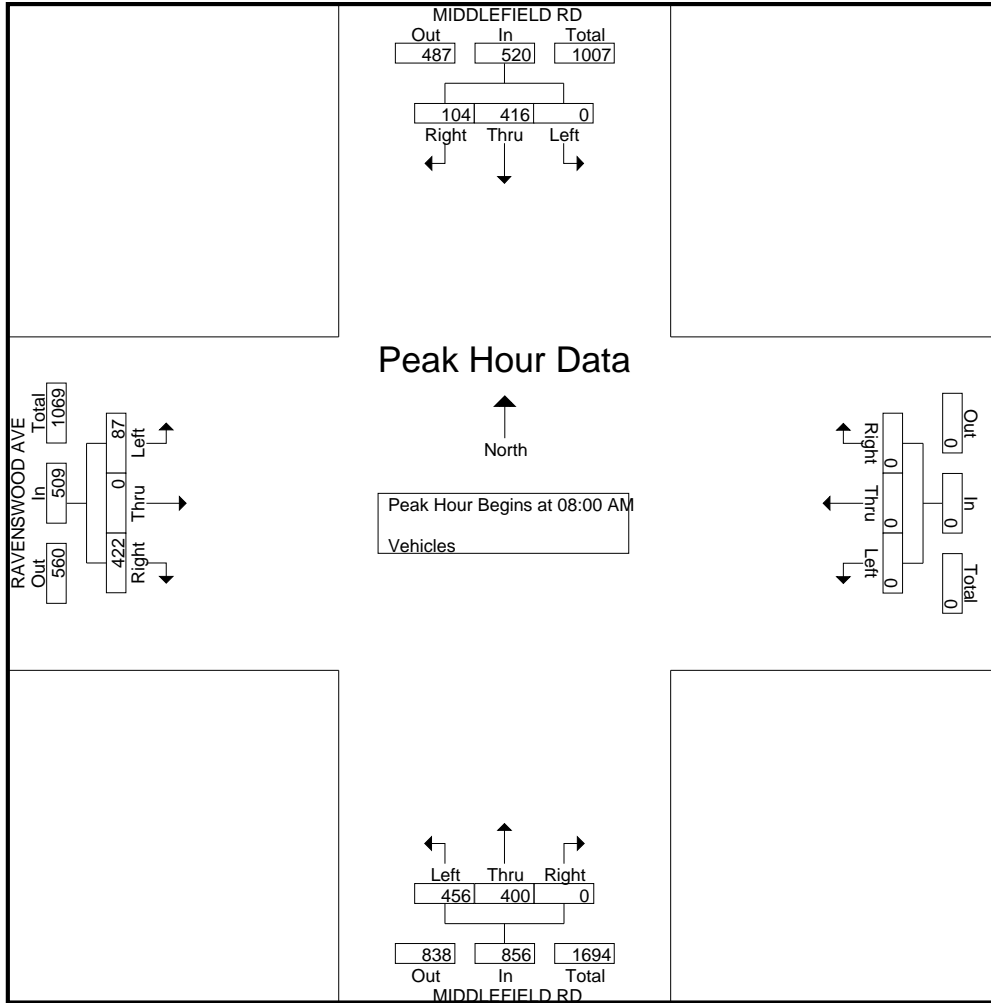
Start Time	MIDDLEFIELD RD Southbound					Westbound					MIDDLEFIELD RD Northbound					RAVENSWOOD AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	14	50	0	0	64	0	0	0	0	0	0	43	83	1	127	34	0	10	1	45	236
07:15 AM	25	59	0	0	84	0	0	0	0	0	0	84	88	0	172	38	0	12	1	51	307
07:30 AM	24	65	0	0	89	0	0	0	0	0	0	113	114	9	236	46	0	19	9	74	399
07:45 AM	18	89	0	0	107	0	0	0	0	0	0	132	109	7	248	77	0	22	5	104	459
Total	81	263	0	0	344	0	0	0	0	0	0	372	394	17	783	195	0	63	16	274	1401
08:00 AM	19	111	0	0	130	0	0	0	0	0	0	111	103	11	225	101	0	25	14	140	495
08:15 AM	37	105	0	0	142	0	0	0	0	0	0	101	116	1	218	85	0	27	1	113	473
08:30 AM	28	98	0	0	126	0	0	0	0	0	0	93	117	4	214	117	0	13	4	134	474
08:45 AM	20	102	0	1	123	0	0	0	0	0	0	95	120	18	233	119	0	22	2	143	499
Total	104	416	0	1	521	0	0	0	0	0	0	400	456	34	890	422	0	87	21	530	1941
09:00 AM	24	91	0	0	115	0	0	0	0	0	0	92	96	5	193	101	0	23	1	125	433
09:15 AM	19	85	0	0	104	0	0	0	0	0	0	85	84	6	175	67	0	26	1	94	373
09:30 AM	23	60	0	0	83	0	0	0	0	0	0	83	86	6	175	72	0	32	2	106	364
09:45 AM	22	77	0	0	99	0	0	0	0	0	0	75	92	6	173	74	0	14	0	88	360
Total	88	313	0	0	401	0	0	0	0	0	0	335	358	23	716	314	0	95	4	413	1530
Grand Total	273	992	0	1	1266	0	0	0	0	0	0	1107	1208	74	2389	931	0	245	41	1217	4872
Apprch %	21.6	78.4	0	0.1		0	0	0	0	0	0	46.3	50.6	3.1		76.5	0	20.1	3.4		
Total %	5.6	20.4	0	0	26	0	0	0	0	0	0	22.7	24.8	1.5	49	19.1	0	5	0.8	25	

Start Time	MIDDLEFIELD RD Southbound				Westbound				MIDDLEFIELD RD Northbound				RAVENSWOOD AVE Eastbound				Int. Total	
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total		
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 08:00 AM																		
08:00 AM	19	111	0	130	0	0	0	0	0	0	111	103	214	101	0	25	126	470
08:15 AM	37	105	0	142	0	0	0	0	0	0	101	116	217	85	0	27	112	471
08:30 AM	28	98	0	126	0	0	0	0	0	0	93	117	210	117	0	13	130	466
08:45 AM	20	102	0	122	0	0	0	0	0	0	95	120	215	119	0	22	141	478
Total Volume	104	416	0	520	0	0	0	0	0	0	400	456	856	422	0	87	509	1885
% App. Total	20	80	0		0	0	0		0	0	46.7	53.3		82.9	0	17.1		
PHF	.703	.937	.000	.915	.000	.000	.000	.000	.000	.000	.901	.950	.986	.887	.000	.806	.902	.986

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 14AM FINAL  
 Site Code : 00000014  
 Start Date : 3/19/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 14AM FINAL  
 Site Code : 00000014  
 Start Date : 3/19/2019  
 Page No : 1

Groups Printed- Bikes

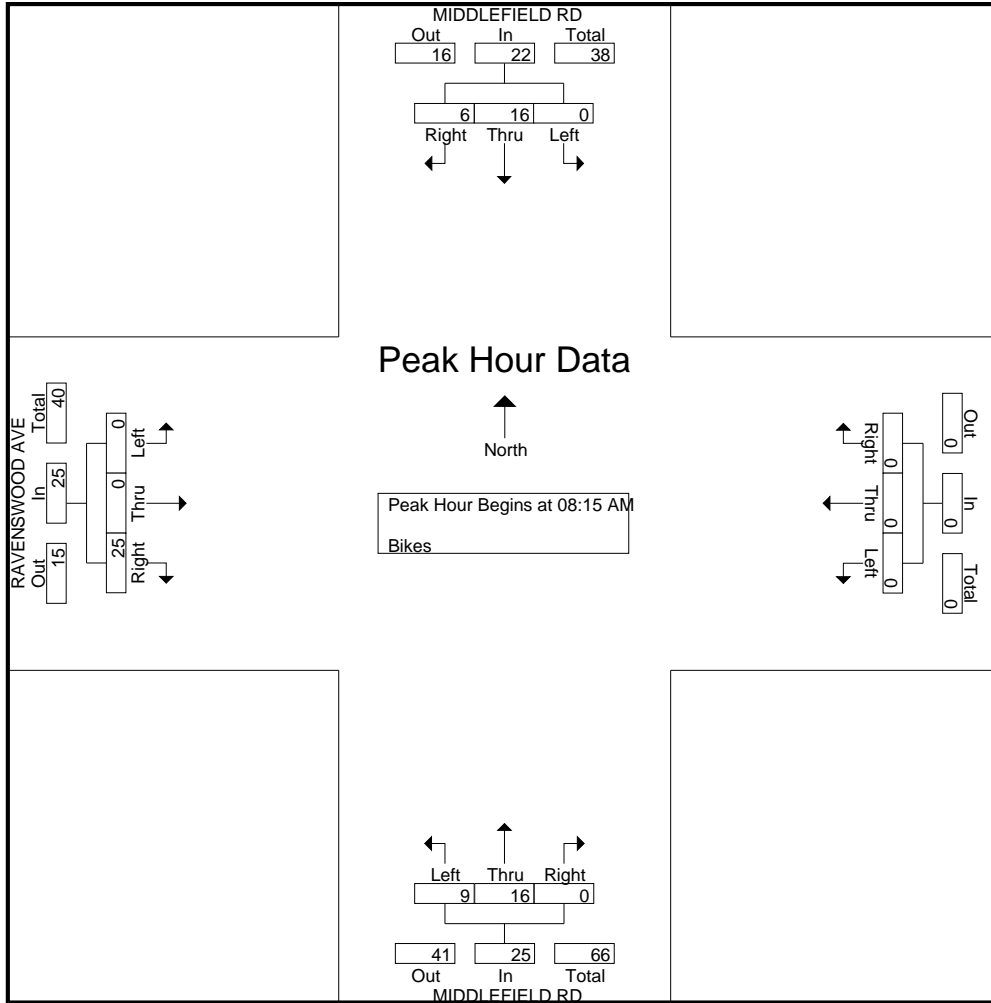
Start Time	MIDDLEFIELD RD Southbound					Westbound					MIDDLEFIELD RD Northbound					RAVENSWOOD AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4
07:15 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	4
07:30 AM	1	1	0	0	2	0	0	0	0	0	0	2	8	0	10	4	0	0	0	4	16
07:45 AM	0	4	0	0	4	0	0	0	0	0	0	4	5	0	9	0	0	0	0	0	13
<b>Total</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>13</b>	<b>0</b>	<b>22</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>37</b>
08:00 AM	3	3	0	0	6	0	0	0	0	0	0	1	3	0	4	3	0	0	0	3	13
08:15 AM	2	1	0	0	3	0	0	0	0	0	0	6	3	0	9	6	0	0	0	6	18
08:30 AM	3	3	0	0	6	0	0	0	0	0	0	3	0	0	3	10	0	0	0	10	19
08:45 AM	1	6	0	0	7	0	0	0	0	0	0	1	1	0	2	3	0	0	0	3	12
<b>Total</b>	<b>9</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>7</b>	<b>0</b>	<b>18</b>	<b>22</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>62</b>
09:00 AM	0	6	0	0	6	0	0	0	0	0	0	6	5	0	11	6	0	0	0	6	23
09:15 AM	3	3	0	0	6	0	0	0	0	0	0	2	3	0	5	4	0	1	0	5	16
09:30 AM	2	4	0	0	6	0	0	0	0	0	0	2	1	0	3	5	0	0	0	5	14
09:45 AM	2	4	0	0	6	0	0	0	0	0	0	4	4	0	8	1	0	1	0	2	16
<b>Total</b>	<b>7</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>13</b>	<b>0</b>	<b>27</b>	<b>16</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>18</b>	<b>69</b>
Grand Total	17	38	0	0	55	0	0	0	0	0	0	34	33	0	67	43	0	3	0	46	168
Apprch %	30.9	69.1	0	0		0	0	0	0		0	50.7	49.3	0		93.5	0	6.5	0		
Total %	10.1	22.6	0	0	32.7	0	0	0	0	0	0	20.2	19.6	0	39.9	25.6	0	1.8	0	27.4	

Start Time	MIDDLEFIELD RD Southbound				Westbound				MIDDLEFIELD RD Northbound				RAVENSWOOD AVE Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	2	1	0	3	0	0	0	0	0	6	3	9	6	0	0	6	18
08:30 AM	3	3	0	6	0	0	0	0	0	3	0	3	10	0	0	10	19
08:45 AM	1	6	0	7	0	0	0	0	0	1	1	2	3	0	0	3	12
09:00 AM	0	6	0	6	0	0	0	0	0	6	5	11	6	0	0	6	23
Total Volume	6	16	0	22	0	0	0	0	0	16	9	25	25	0	0	25	72
% App. Total	27.3	72.7	0		0	0	0		0	64	36		100	0	0		
PHF	.500	.667	.000	.786	.000	.000	.000	.000	.000	.667	.450	.568	.625	.000	.000	.625	.783

# Traffic Data Service

San Jose, CA  
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File Name : 14AM FINAL  
 Site Code : 00000014  
 Start Date : 3/19/2019  
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# Traffic Data Service

San Jose, CA  
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tdsbay@cs.com

File Name : 14PM FINAL  
Site Code : 00000014  
Start Date : 3/19/2019  
Page No : 1

Groups Printed- Vehicles

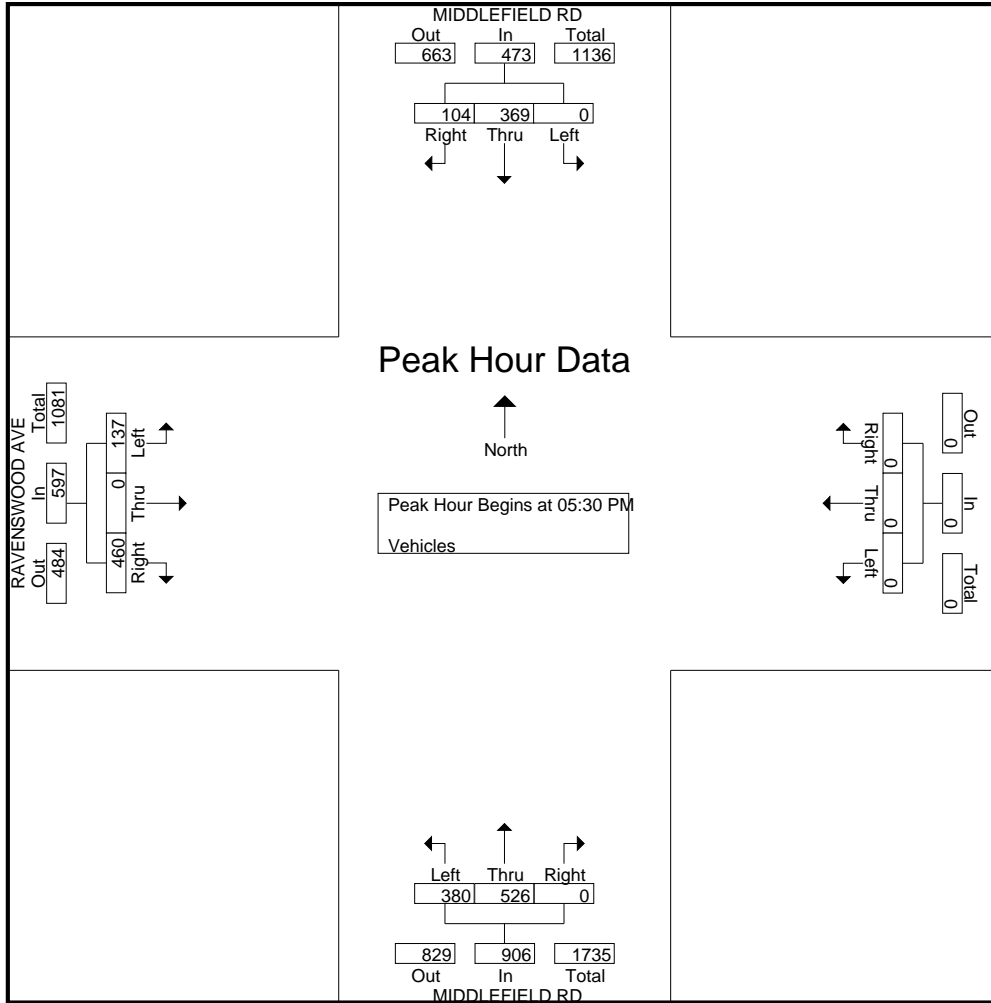
Start Time	MIDDLEFIELD RD Southbound					Westbound					MIDDLEFIELD RD Northbound					RAVENSWOOD AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	25	96	0	0	121	0	0	0	0	0	0	125	78	26	229	124	0	35	1	160	510
04:15 PM	20	84	0	0	104	0	0	0	0	0	0	138	75	6	219	115	0	35	1	151	474
04:30 PM	25	99	0	0	124	0	0	0	0	0	0	112	71	15	198	108	0	36	3	147	469
04:45 PM	29	97	0	0	126	0	0	0	0	0	0	147	83	1	231	104	0	48	1	153	510
<b>Total</b>	<b>99</b>	<b>376</b>	<b>0</b>	<b>0</b>	<b>475</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>522</b>	<b>307</b>	<b>48</b>	<b>877</b>	<b>451</b>	<b>0</b>	<b>154</b>	<b>6</b>	<b>611</b>	<b>1963</b>
05:00 PM	18	98	0	1	117	0	0	0	0	0	0	130	82	3	215	110	0	41	1	152	484
05:15 PM	24	79	0	0	103	0	0	0	0	0	0	153	82	9	244	93	0	41	1	135	482
05:30 PM	20	97	0	0	117	0	0	0	0	0	0	154	83	6	243	113	0	32	4	149	509
05:45 PM	20	92	0	0	112	0	0	0	0	0	0	135	82	8	225	131	0	36	2	169	506
<b>Total</b>	<b>82</b>	<b>366</b>	<b>0</b>	<b>1</b>	<b>449</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>572</b>	<b>329</b>	<b>26</b>	<b>927</b>	<b>447</b>	<b>0</b>	<b>150</b>	<b>8</b>	<b>605</b>	<b>1981</b>
06:00 PM	34	102	0	0	136	0	0	0	0	0	0	126	107	4	237	114	0	20	4	138	511
06:15 PM	30	78	0	0	108	0	0	0	0	0	0	111	108	5	224	102	0	49	1	152	484
06:30 PM	33	74	0	0	107	0	0	0	0	0	0	97	71	3	171	95	0	32	2	129	407
06:45 PM	17	80	0	0	97	0	0	0	0	0	0	100	65	1	166	95	0	35	0	130	393
<b>Total</b>	<b>114</b>	<b>334</b>	<b>0</b>	<b>0</b>	<b>448</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>434</b>	<b>351</b>	<b>13</b>	<b>798</b>	<b>406</b>	<b>0</b>	<b>136</b>	<b>7</b>	<b>549</b>	<b>1795</b>
Grand Total	295	1076	0	1	1372	0	0	0	0	0	0	1528	987	87	2602	1304	0	440	21	1765	5739
Apprch %	21.5	78.4	0	0.1		0	0	0	0		0	58.7	37.9	3.3		73.9	0	24.9	1.2		
Total %	5.1	18.7	0	0	23.9	0	0	0	0	0	0	26.6	17.2	1.5	45.3	22.7	0	7.7	0.4	30.8	

Start Time	MIDDLEFIELD RD Southbound				Westbound				MIDDLEFIELD RD Northbound				RAVENSWOOD AVE Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:30 PM																	
05:30 PM	20	97	0	117	0	0	0	0	0	<b>154</b>	83	<b>237</b>	113	0	32	145	499
05:45 PM	20	92	0	112	0	0	0	0	0	135	82	217	<b>131</b>	0	36	<b>167</b>	496
06:00 PM	<b>34</b>	<b>102</b>	0	<b>136</b>	0	0	0	0	0	126	107	233	114	0	20	134	<b>503</b>
06:15 PM	30	78	0	108	0	0	0	0	0	111	<b>108</b>	219	102	0	<b>49</b>	151	478
Total Volume	104	369	0	473	0	0	0	0	0	526	380	906	460	0	137	597	1976
% App. Total	22	78	0		0	0	0		0	58.1	41.9		77.1	0	22.9		
PHF	.765	.904	.000	.869	.000	.000	.000	.000	.000	.854	.880	.956	.878	.000	.699	.894	.982

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 14PM FINAL  
 Site Code : 00000014  
 Start Date : 3/19/2019  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 14PM FINAL  
 Site Code : 00000014  
 Start Date : 3/19/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	MIDDLEFIELD RD Southbound					Westbound					MIDDLEFIELD RD Northbound					RAVENSWOOD AVE Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	1	0	0	0	1	4
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	4	0	5	1	0	0	0	1	7
04:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	3	0	4	2	0	0	0	2	8
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	2	1	0	3	2	0	1	0	3	7
Total	0	5	0	0	5	0	0	0	0	0	0	6	8	0	14	6	0	1	0	7	26
05:00 PM	0	5	0	0	5	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	8
05:15 PM	0	2	0	0	2	0	0	0	0	0	0	0	7	0	7	3	0	0	0	3	12
05:30 PM	0	2	0	0	2	0	0	0	0	0	0	7	6	0	13	1	0	2	0	3	18
05:45 PM	1	1	0	0	2	0	0	0	0	0	0	5	2	0	7	1	0	2	0	3	12
Total	1	10	0	0	11	0	0	0	0	0	0	13	15	0	28	7	0	4	0	11	50
06:00 PM	2	1	0	0	3	0	0	0	0	0	0	0	1	0	1	3	0	1	0	4	8
06:15 PM	0	2	0	0	2	0	0	0	0	0	0	3	3	0	6	1	0	0	0	1	9
06:30 PM	2	4	0	0	6	0	0	0	0	0	0	9	3	0	12	2	0	0	0	2	20
06:45 PM	2	2	0	0	4	0	0	0	0	0	0	1	4	0	5	2	0	0	0	2	11
Total	6	9	0	0	15	0	0	0	0	0	0	13	11	0	24	8	0	1	0	9	48
Grand Total	7	24	0	0	31	0	0	0	0	0	0	32	34	0	66	21	0	6	0	27	124
Apprch %	22.6	77.4	0	0		0	0	0	0		0	48.5	51.5	0		77.8	0	22.2	0		
Total %	5.6	19.4	0	0	25	0	0	0	0	0	0	25.8	27.4	0	53.2	16.9	0	4.8	0	21.8	

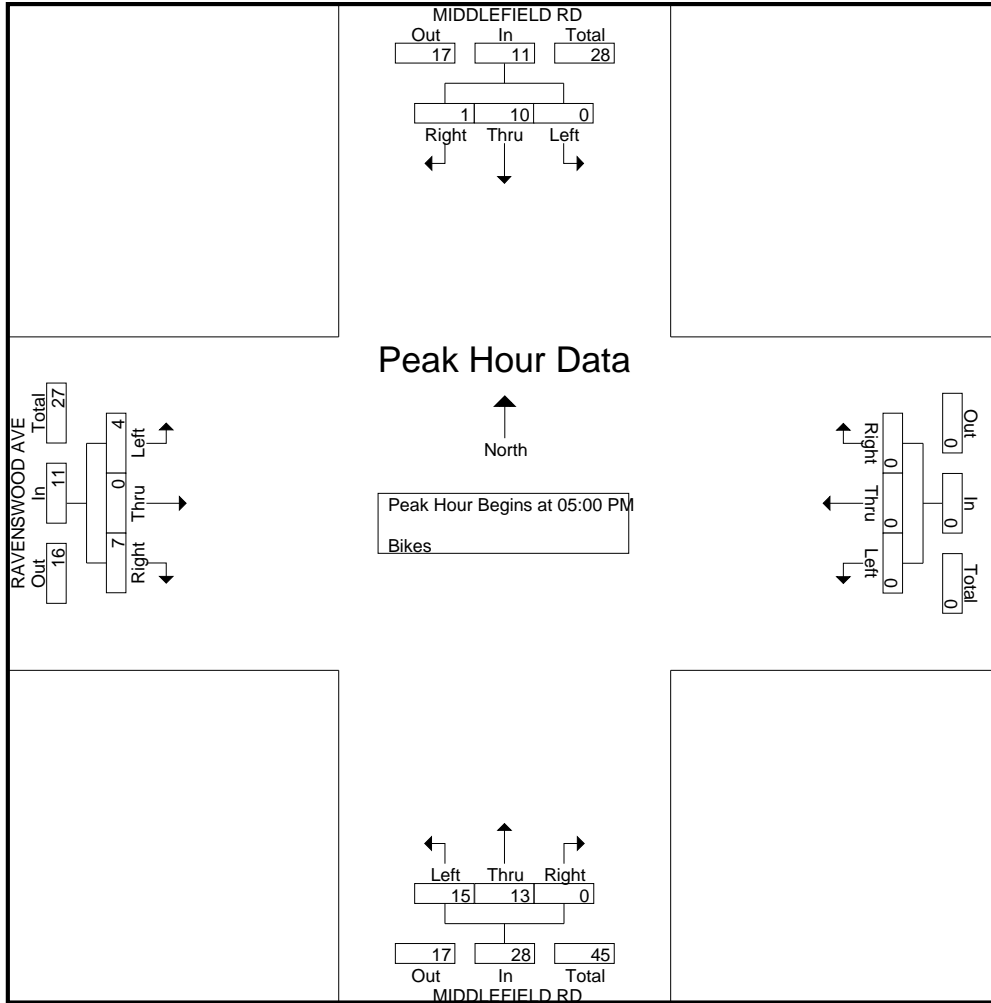
Start Time	MIDDLEFIELD RD Southbound				Westbound				MIDDLEFIELD RD Northbound				RAVENSWOOD AVE Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	5	0	5	0	0	0	0	0	1	0	1	2	0	0	2	8
05:15 PM	0	2	0	2	0	0	0	0	0	0	7	7	3	0	0	3	12
05:30 PM	0	2	0	2	0	0	0	0	0	7	6	13	1	0	2	3	18
05:45 PM	1	1	0	2	0	0	0	0	0	5	2	7	1	0	2	3	12
Total Volume	1	10	0	11	0	0	0	0	0	13	15	28	7	0	4	11	50
% App. Total	9.1	90.9	0		0	0	0		0	46.4	53.6		63.6	0	36.4		
PHF	.250	.500	.000	.550	.000	.000	.000	.000	.000	.464	.536	.538	.583	.000	.500	.917	.694



# Traffic Data Service

San Jose, CA  
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File Name : 14PM FINAL  
 Site Code : 00000014  
 Start Date : 3/19/2019  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 15AM FINAL  
 Site Code : 00000015  
 Start Date : 4/23/2019  
 Page No : 1

Groups Printed- Vehicles

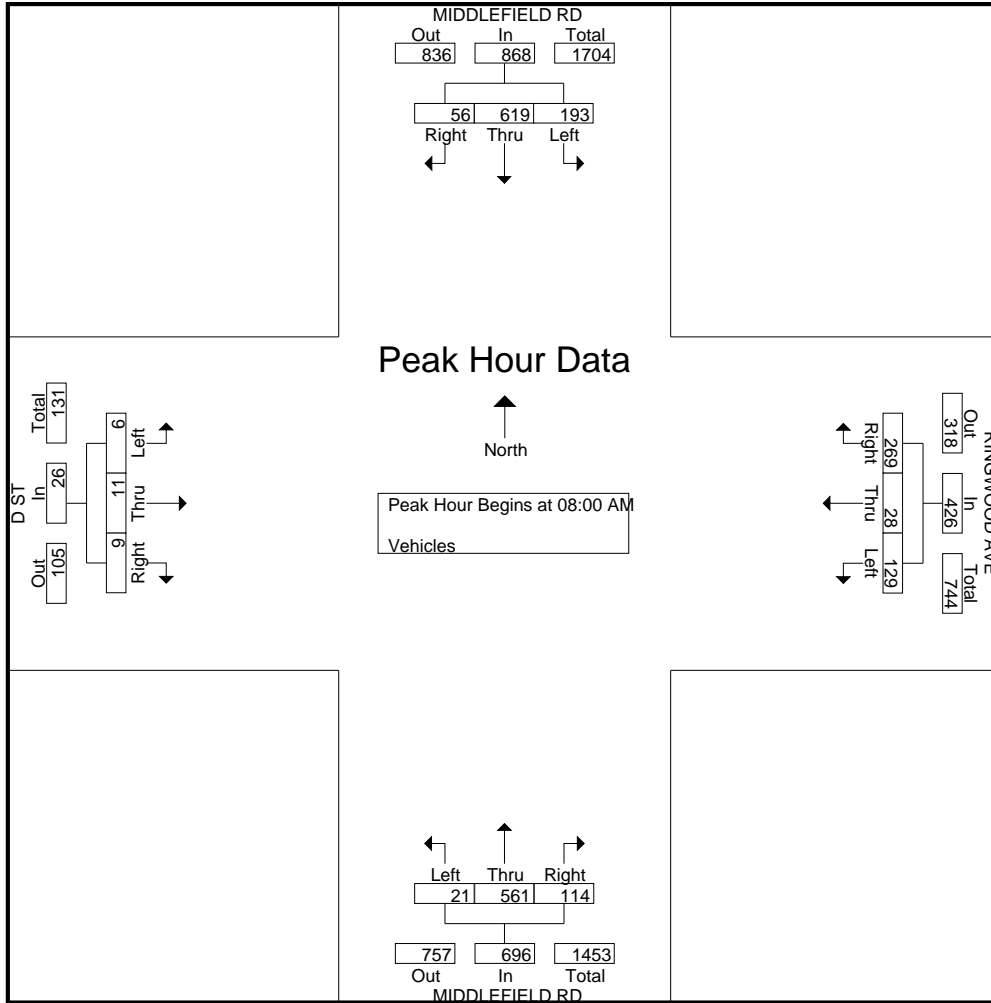
Start Time	MIDDLEFIELD RD Southbound					RINGWOOD AVE Westbound					MIDDLEFIELD RD Northbound					D ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	6	70	9	1	86	25	12	5	1	43	2	78	9	0	89	1	0	1	2	4	222
07:15 AM	8	77	6	1	92	42	8	13	5	68	10	125	3	0	138	0	0	2	1	3	301
07:30 AM	14	89	16	1	120	60	7	20	22	109	17	164	5	1	187	2	0	2	2	6	422
07:45 AM	8	142	32	2	184	84	7	29	24	144	22	143	6	0	171	0	0	2	1	3	502
Total	36	378	63	5	482	211	34	67	52	364	51	510	23	1	585	3	0	7	6	16	1447
08:00 AM	13	166	29	2	210	90	11	21	2	124	23	148	5	0	176	5	0	0	4	9	519
08:15 AM	9	142	46	1	198	54	7	19	13	93	17	140	6	1	164	2	0	2	5	9	464
08:30 AM	16	140	79	2	237	55	7	40	34	136	27	122	3	2	154	1	6	2	2	11	538
08:45 AM	18	171	39	6	234	70	3	49	32	154	47	151	7	0	205	1	5	2	6	14	607
Total	56	619	193	11	879	269	28	129	81	507	114	561	21	3	699	9	11	6	17	43	2128
09:00 AM	18	146	41	1	206	58	6	29	5	98	8	109	8	0	125	0	1	0	0	1	430
09:15 AM	11	134	26	0	171	42	11	10	6	69	7	128	7	2	144	1	0	1	1	3	387
09:30 AM	13	107	31	1	152	35	7	18	2	62	7	125	5	2	139	3	0	1	2	6	359
09:45 AM	12	118	32	1	163	52	9	20	7	88	10	126	4	0	140	2	2	4	0	8	399
Total	54	505	130	3	692	187	33	77	20	317	32	488	24	4	548	6	3	6	3	18	1575
Grand Total	146	1502	386	19	2053	667	95	273	153	1188	197	1559	68	8	1832	18	14	19	26	77	5150
Apprch %	7.1	73.2	18.8	0.9		56.1	8	23	12.9		10.8	85.1	3.7	0.4		23.4	18.2	24.7	33.8		
Total %	2.8	29.2	7.5	0.4	39.9	13	1.8	5.3	3	23.1	3.8	30.3	1.3	0.2	35.6	0.3	0.3	0.4	0.5	1.5	

Start Time	MIDDLEFIELD RD Southbound				RINGWOOD AVE Westbound				MIDDLEFIELD RD Northbound				D ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	13	166	29	208	<b>90</b>	<b>11</b>	<b>21</b>	<b>122</b>	23	148	5	176	<b>5</b>	0	0	5	511
08:15 AM	9	142	46	197	54	7	19	80	17	140	6	163	2	0	2	4	444
08:30 AM	16	140	<b>79</b>	<b>235</b>	55	7	40	102	27	122	3	152	1	<b>6</b>	2	<b>9</b>	498
08:45 AM	<b>18</b>	<b>171</b>	39	228	70	3	<b>49</b>	122	<b>47</b>	<b>151</b>	<b>7</b>	<b>205</b>	1	5	2	8	<b>563</b>
Total Volume	56	619	193	868	269	28	129	426	114	561	21	696	9	11	6	26	2016
% App. Total	6.5	71.3	22.2		63.1	6.6	30.3		16.4	80.6	3		34.6	42.3	23.1		
PHF	.778	.905	.611	.923	.747	.636	.658	.873	.606	.929	.750	.849	.450	.458	.750	.722	.895

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 15AM FINAL  
 Site Code : 00000015  
 Start Date : 4/23/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 15AM FINAL  
 Site Code : 00000015  
 Start Date : 4/23/2019  
 Page No : 1

Groups Printed- Bikes

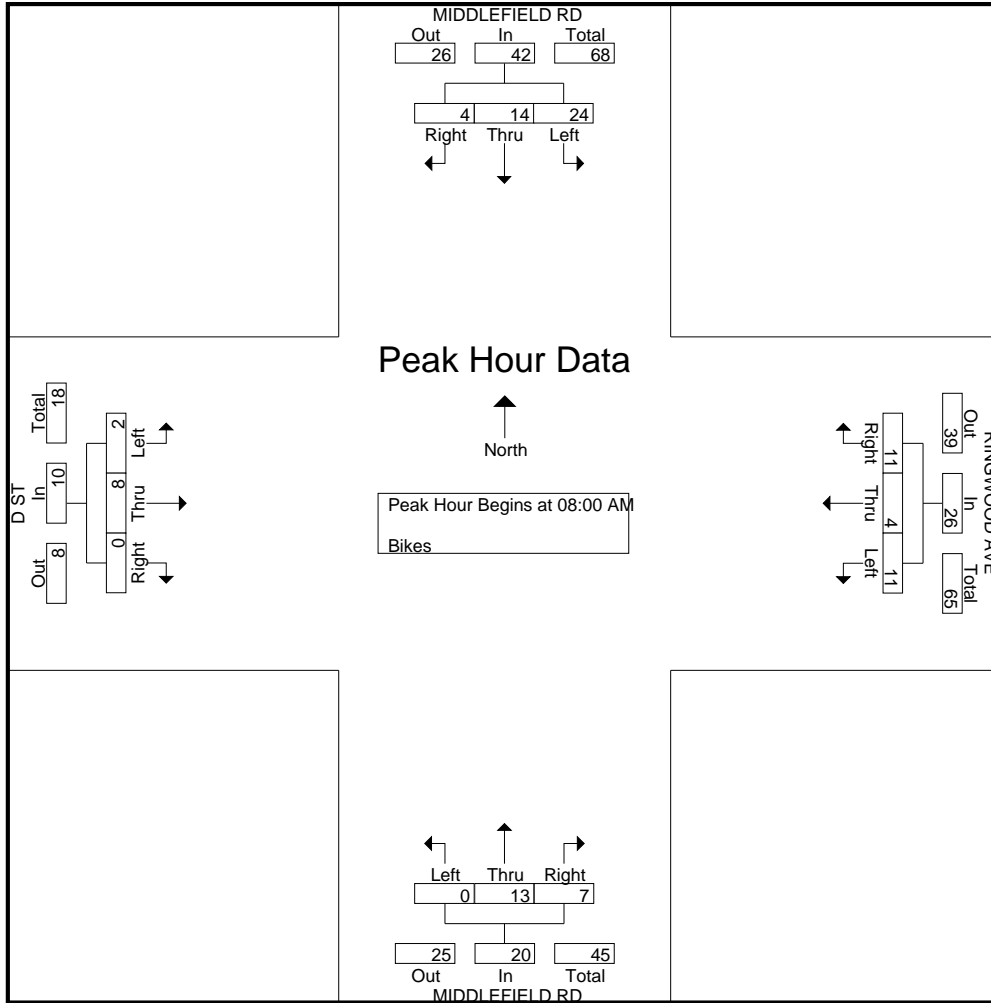
Start Time	MIDDLEFIELD RD Southbound					RINGWOOD AVE Westbound					MIDDLEFIELD RD Northbound					D ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	1	1	0	2	0	1	1	0	2	0	4	0	0	4	0	0	0	0	0	8
07:15 AM	0	1	1	0	2	2	1	5	0	8	0	0	0	0	0	0	0	0	0	0	10
07:30 AM	0	4	6	0	10	5	0	2	0	7	0	8	0	0	8	0	0	0	0	0	25
07:45 AM	0	2	3	0	5	5	0	3	0	8	0	5	0	0	5	0	1	0	0	1	19
<b>Total</b>	0	8	11	0	19	12	2	11	0	25	0	17	0	0	17	0	1	0	0	1	62
08:00 AM	1	0	3	0	4	2	0	1	0	3	0	5	0	0	5	0	1	1	0	2	14
08:15 AM	0	5	10	0	15	4	0	1	0	5	0	1	0	0	1	0	0	0	0	0	21
08:30 AM	2	6	6	0	14	5	4	6	0	15	6	3	0	0	9	0	1	0	0	1	39
08:45 AM	1	3	5	0	9	0	0	3	0	3	1	4	0	0	5	0	6	1	0	7	24
<b>Total</b>	4	14	24	0	42	11	4	11	0	26	7	13	0	0	20	0	8	2	0	10	98
09:00 AM	0	3	4	0	7	2	1	0	0	3	0	3	0	0	3	0	0	0	0	0	13
09:15 AM	0	1	3	0	4	1	0	6	0	7	4	4	0	0	8	0	0	0	0	0	19
09:30 AM	0	0	2	0	2	1	0	2	0	3	1	1	0	0	2	0	0	0	0	0	7
09:45 AM	1	1	1	0	3	0	1	1	0	2	0	2	0	0	2	0	0	0	0	0	7
<b>Total</b>	1	5	10	0	16	4	2	9	0	15	5	10	0	0	15	0	0	0	0	0	46
Grand Total	5	27	45	0	77	27	8	31	0	66	12	40	0	0	52	0	9	2	0	11	206
Apprch %	6.5	35.1	58.4	0		40.9	12.1	47	0		23.1	76.9	0	0		0	81.8	18.2	0		
Total %	2.4	13.1	21.8	0	37.4	13.1	3.9	15	0	32	5.8	19.4	0	0	25.2	0	4.4	1	0	5.3	

Start Time	MIDDLEFIELD RD Southbound				RINGWOOD AVE Westbound				MIDDLEFIELD RD Northbound				D ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	0	3	4	2	0	1	3	0	5	0	5	0	1	1	2	14
08:15 AM	0	5	10	15	4	0	1	5	0	1	0	1	0	0	0	0	21
08:30 AM	2	6	6	14	5	4	6	15	6	3	0	9	0	1	0	1	39
08:45 AM	1	3	5	9	0	0	3	3	1	4	0	5	0	6	1	7	24
Total Volume	4	14	24	42	11	4	11	26	7	13	0	20	0	8	2	10	98
% App. Total	9.5	33.3	57.1		42.3	15.4	42.3		35	65	0		0	80	20		
PHF	.500	.583	.600	.700	.550	.250	.458	.433	.292	.650	.000	.556	.000	.333	.500	.357	.628

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 15AM FINAL  
 Site Code : 00000015  
 Start Date : 4/23/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 15PM FINAL  
 Site Code : 00000015  
 Start Date : 4/23/2019  
 Page No : 1

Groups Printed- Vehicles

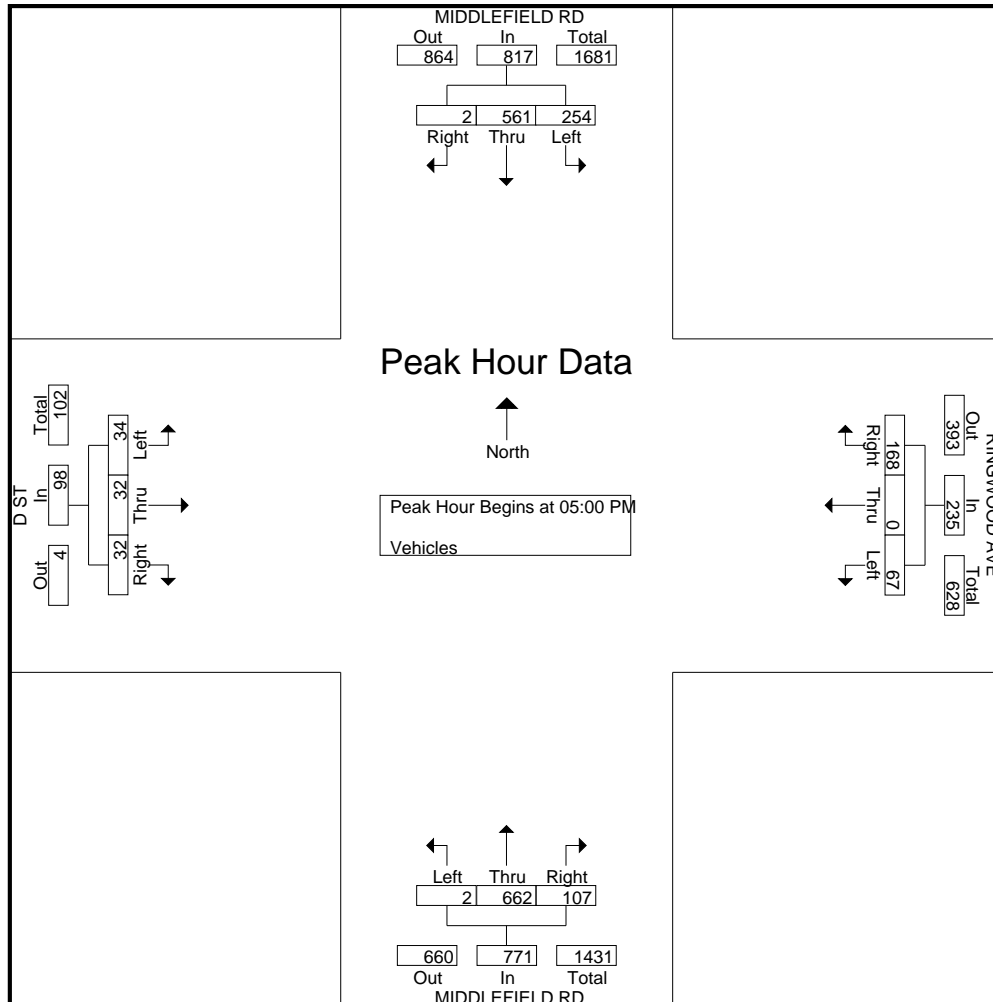
Start Time	MIDDLEFIELD RD Southbound					RINGWOOD AVE Westbound					MIDDLEFIELD RD Northbound					D ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	115	61	3	179	32	0	10	0	42	20	117	1	2	140	16	4	15	2	37	398
04:15 PM	1	155	61	1	218	25	0	17	2	44	23	163	0	1	187	9	4	11	3	27	476
04:30 PM	3	120	67	0	190	31	0	18	0	49	25	171	1	2	199	5	11	13	4	33	471
04:45 PM	2	120	89	2	213	33	1	15	1	50	30	173	0	2	205	7	9	9	2	27	495
Total	6	510	278	6	800	121	1	60	3	185	98	624	2	7	731	37	28	48	11	124	1840
05:00 PM	2	147	77	0	226	43	0	10	0	53	28	151	1	5	185	11	12	12	7	42	506
05:15 PM	0	132	46	0	178	36	0	14	1	51	23	179	0	2	204	10	7	9	2	28	461
05:30 PM	0	138	73	0	211	38	0	24	2	64	21	159	0	3	183	7	6	8	3	24	482
05:45 PM	0	144	58	1	203	51	0	19	0	70	35	173	1	2	211	4	7	5	3	19	503
Total	2	561	254	1	818	168	0	67	3	238	107	662	2	12	783	32	32	34	15	113	1952
06:00 PM	1	119	82	0	202	34	0	24	1	59	26	151	0	1	178	5	1	9	0	15	454
06:15 PM	2	113	76	0	191	49	0	14	2	65	16	108	1	0	125	6	4	6	1	17	398
06:30 PM	1	114	57	1	173	30	0	8	2	40	15	142	0	1	158	4	1	6	2	13	384
06:45 PM	1	135	62	1	199	41	0	4	0	45	12	113	1	1	127	5	2	5	0	12	383
Total	5	481	277	2	765	154	0	50	5	209	69	514	2	3	588	20	8	26	3	57	1619
Grand Total	13	1552	809	9	2383	443	1	177	11	632	274	1800	6	22	2102	89	68	108	29	294	5411
Apprch %	0.5	65.1	33.9	0.4		70.1	0.2	28	1.7		13	85.6	0.3	1		30.3	23.1	36.7	9.9		
Total %	0.2	28.7	15	0.2	44	8.2	0	3.3	0.2	11.7	5.1	33.3	0.1	0.4	38.8	1.6	1.3	2	0.5	5.4	

Start Time	MIDDLEFIELD RD Southbound				RINGWOOD AVE Westbound				MIDDLEFIELD RD Northbound				D ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	147	77	226	43	0	10	53	28	151	1	180	11	12	12	35	494
05:15 PM	0	132	46	178	36	0	14	50	23	179	0	202	10	7	9	26	456
05:30 PM	0	138	73	211	38	0	24	62	21	159	0	180	7	6	8	21	474
05:45 PM	0	144	58	202	51	0	19	70	35	173	1	209	4	7	5	16	497
Total Volume	2	561	254	817	168	0	67	235	107	662	2	771	32	32	34	98	1921
% App. Total	0.2	68.7	31.1		71.5	0	28.5		13.9	85.9	0.3		32.7	32.7	34.7		
PHF	.250	.954	.825	.904	.824	.000	.698	.839	.764	.925	.500	.922	.727	.667	.708	.700	.966

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 15PM FINAL  
 Site Code : 00000015  
 Start Date : 4/23/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 15PM FINAL  
 Site Code : 00000015  
 Start Date : 4/23/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	MIDDLEFIELD RD Southbound					RINGWOOD AVE Westbound					MIDDLEFIELD RD Northbound					D ST Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	2	1	0	3	4	0	0	0	4	2	1	0	0	3	0	0	1	0	1	11
04:15 PM	1	2	2	0	5	1	0	2	0	3	3	2	0	0	5	1	3	1	0	5	18
04:30 PM	1	2	0	0	3	4	0	3	0	7	1	1	0	0	2	0	1	0	0	1	13
04:45 PM	2	0	0	0	2	1	1	3	0	5	1	1	0	0	2	0	1	0	0	1	10
Total	4	6	3	0	13	10	1	8	0	19	7	5	0	0	12	1	5	2	0	8	52
05:00 PM	0	9	0	0	9	1	1	2	0	4	2	0	0	0	2	0	4	0	0	4	19
05:15 PM	0	0	0	0	0	2	0	5	0	7	0	2	0	0	2	0	1	0	0	1	10
05:30 PM	0	1	2	0	3	4	0	4	0	8	5	3	0	0	8	0	0	0	0	0	19
05:45 PM	0	1	1	0	2	0	0	2	0	2	4	2	0	0	6	0	0	0	0	0	10
Total	0	11	3	0	14	7	1	13	0	21	11	7	0	0	18	0	5	0	0	5	58
06:00 PM	0	1	0	0	1	2	0	6	0	8	1	1	0	0	2	0	1	1	0	2	13
06:15 PM	0	0	2	0	2	5	0	3	0	8	3	3	0	0	6	0	0	0	0	0	16
06:30 PM	0	0	1	0	1	3	0	2	0	5	6	3	0	0	9	0	1	0	0	1	16
06:45 PM	0	1	2	0	3	3	0	0	0	3	2	2	0	0	4	0	1	0	0	1	11
Total	0	2	5	0	7	13	0	11	0	24	12	9	0	0	21	0	3	1	0	4	56
Grand Total	4	19	11	0	34	30	2	32	0	64	30	21	0	0	51	1	13	3	0	17	166
Apprch %	11.8	55.9	32.4	0		46.9	3.1	50	0		58.8	41.2	0	0		5.9	76.5	17.6	0		
Total %	2.4	11.4	6.6	0	20.5	18.1	1.2	19.3	0	38.6	18.1	12.7	0	0	30.7	0.6	7.8	1.8	0	10.2	

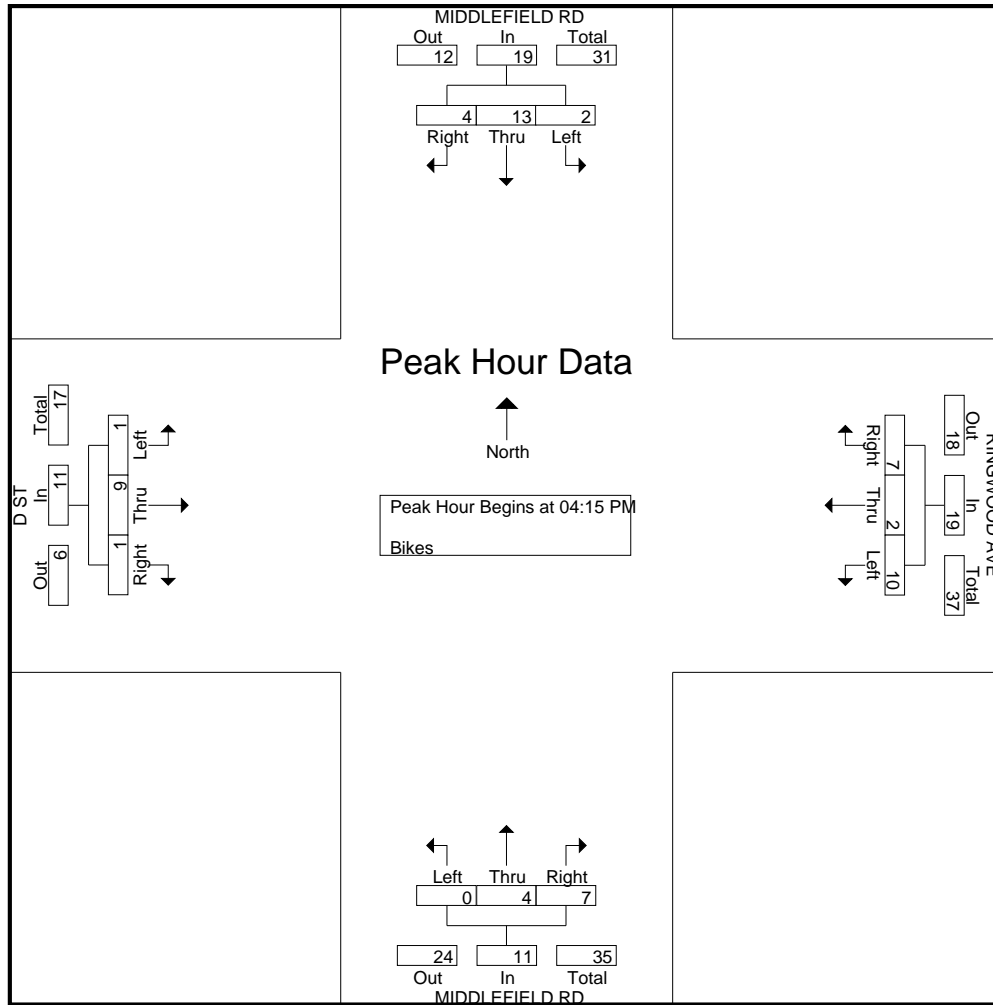
Start Time	MIDDLEFIELD RD Southbound				RINGWOOD AVE Westbound				MIDDLEFIELD RD Northbound				D ST Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	1	2	2	5	1	0	2	3	3	2	0	5	1	3	1	5	18
04:30 PM	1	2	0	3	4	0	3	7	1	1	0	2	0	1	0	1	13
04:45 PM	2	0	0	2	1	1	3	5	1	1	0	2	0	1	0	1	10
05:00 PM	0	9	0	9	1	1	2	4	2	0	0	2	0	4	0	4	19
Total Volume	4	13	2	19	7	2	10	19	7	4	0	11	1	9	1	11	60
% App. Total	21.1	68.4	10.5		36.8	10.5	52.6		63.6	36.4	0		9.1	81.8	9.1		
PHF	.500	.361	.250	.528	.438	.500	.833	.679	.583	.500	.000	.550	.250	.563	.250	.550	.789



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 15PM FINAL  
 Site Code : 00000015  
 Start Date : 4/23/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 37AM FINAL  
 Site Code : 00000037  
 Start Date : 4/23/2019  
 Page No : 1

Groups Printed- Vehicles

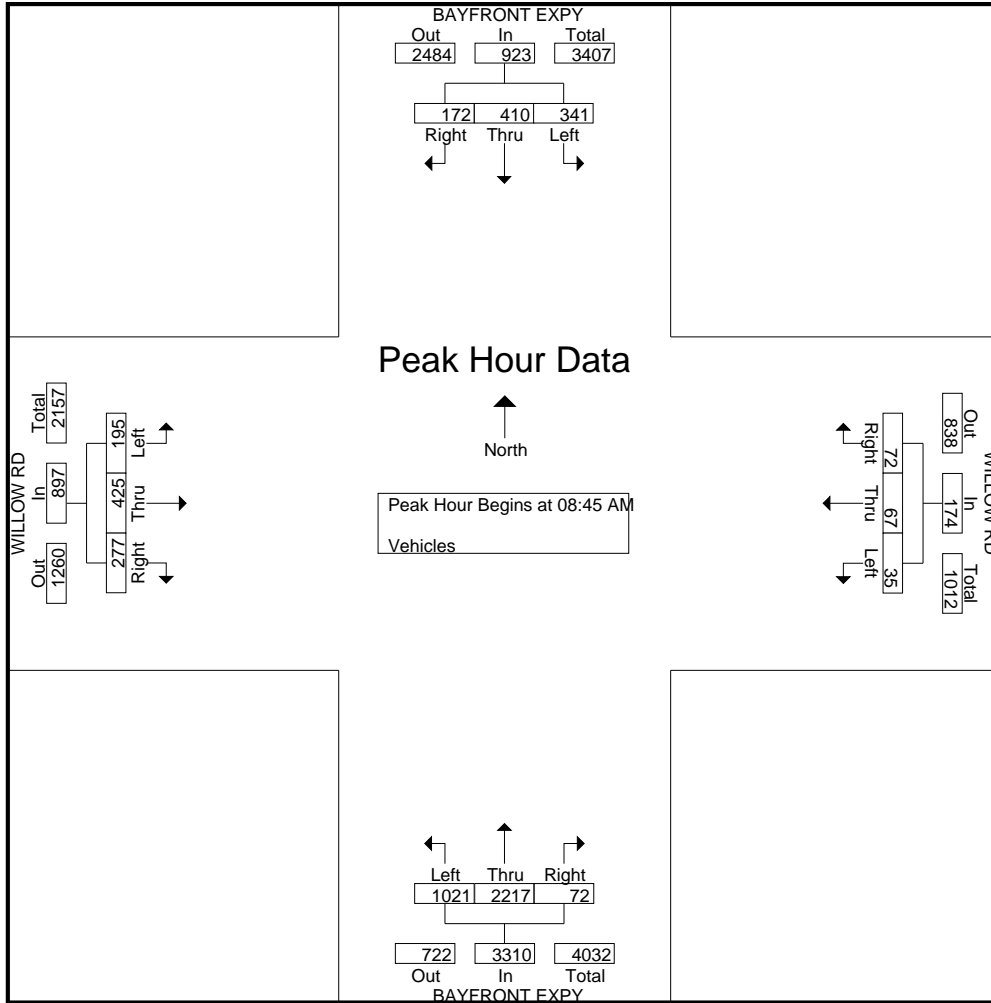
Start Time	BAYFRONT EXPY Southbound					WILLOW RD Westbound					BAYFRONT EXPY Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	15	125	17	1	158	3	9	3	0	15	6	610	344	0	960	41	24	14	2	81	1214
07:15 AM	21	166	32	2	221	5	10	2	1	18	10	653	289	1	953	72	45	32	2	151	1343
07:30 AM	16	129	47	1	193	11	9	3	0	23	4	639	179	0	822	61	45	47	1	154	1192
07:45 AM	28	157	65	1	251	18	15	10	0	43	13	498	76	0	587	79	65	40	2	186	1067
Total	80	577	161	5	823	37	43	18	1	99	33	2400	888	1	3322	253	179	133	7	572	4816
08:00 AM	48	162	69	5	284	14	20	5	0	39	9	352	229	0	590	91	57	43	2	193	1106
08:15 AM	45	129	70	5	249	9	10	5	1	25	9	385	201	0	595	81	76	38	7	202	1071
08:30 AM	25	118	66	2	211	23	15	6	2	46	15	466	278	4	763	70	101	48	1	220	1240
08:45 AM	49	131	95	0	275	19	14	8	0	41	16	553	255	0	824	69	105	43	2	219	1359
Total	167	540	300	12	1019	65	59	24	3	151	49	1756	963	4	2772	311	339	172	12	834	4776
09:00 AM	30	103	89	2	224	10	16	6	0	32	16	587	267	0	870	75	98	50	1	224	1350
09:15 AM	54	83	76	1	214	29	18	7	0	54	21	533	268	0	822	68	113	46	3	230	1320
09:30 AM	39	93	81	2	215	14	19	14	0	47	19	544	231	0	794	65	109	56	1	231	1287
09:45 AM	36	119	80	1	236	21	14	17	0	52	22	553	242	0	817	53	87	50	5	195	1300
Total	159	398	326	6	889	74	67	44	0	185	78	2217	1008	0	3303	261	407	202	10	880	5257
Grand Total	406	1515	787	23	2731	176	169	86	4	435	160	6373	2859	5	9397	825	925	507	29	2286	14849
Apprch %	14.9	55.5	28.8	0.8		40.5	38.9	19.8	0.9		1.7	67.8	30.4	0.1		36.1	40.5	22.2	1.3		
Total %	2.7	10.2	5.3	0.2	18.4	1.2	1.1	0.6	0	2.9	1.1	42.9	19.3	0	63.3	5.6	6.2	3.4	0.2	15.4	

Start Time	BAYFRONT EXPY Southbound				WILLOW RD Westbound				BAYFRONT EXPY Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:45 AM																	
08:45 AM	49	<b>131</b>	<b>95</b>	<b>275</b>	19	14	8	41	16	553	255	824	69	105	43	217	<b>1357</b>
09:00 AM	30	103	89	222	10	16	6	32	16	<b>587</b>	267	<b>870</b>	<b>75</b>	98	50	223	1347
09:15 AM	<b>54</b>	83	76	213	<b>29</b>	18	7	<b>54</b>	<b>21</b>	533	<b>268</b>	822	68	<b>113</b>	46	227	1316
09:30 AM	39	93	81	213	14	<b>19</b>	<b>14</b>	47	19	544	231	794	65	109	<b>56</b>	<b>230</b>	1284
Total Volume	172	410	341	923	72	67	35	174	72	2217	1021	3310	277	425	195	897	5304
% App. Total	18.6	44.4	36.9		41.4	38.5	20.1		2.2	67	30.8		30.9	47.4	21.7		
PHF	.796	.782	.897	.839	.621	.882	.625	.806	.857	.944	.952	.951	.923	.940	.871	.975	.977

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 37AM FINAL  
 Site Code : 00000037  
 Start Date : 4/23/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 37AM FINAL  
 Site Code : 00000037  
 Start Date : 4/23/2019  
 Page No : 1

Groups Printed- Bikes

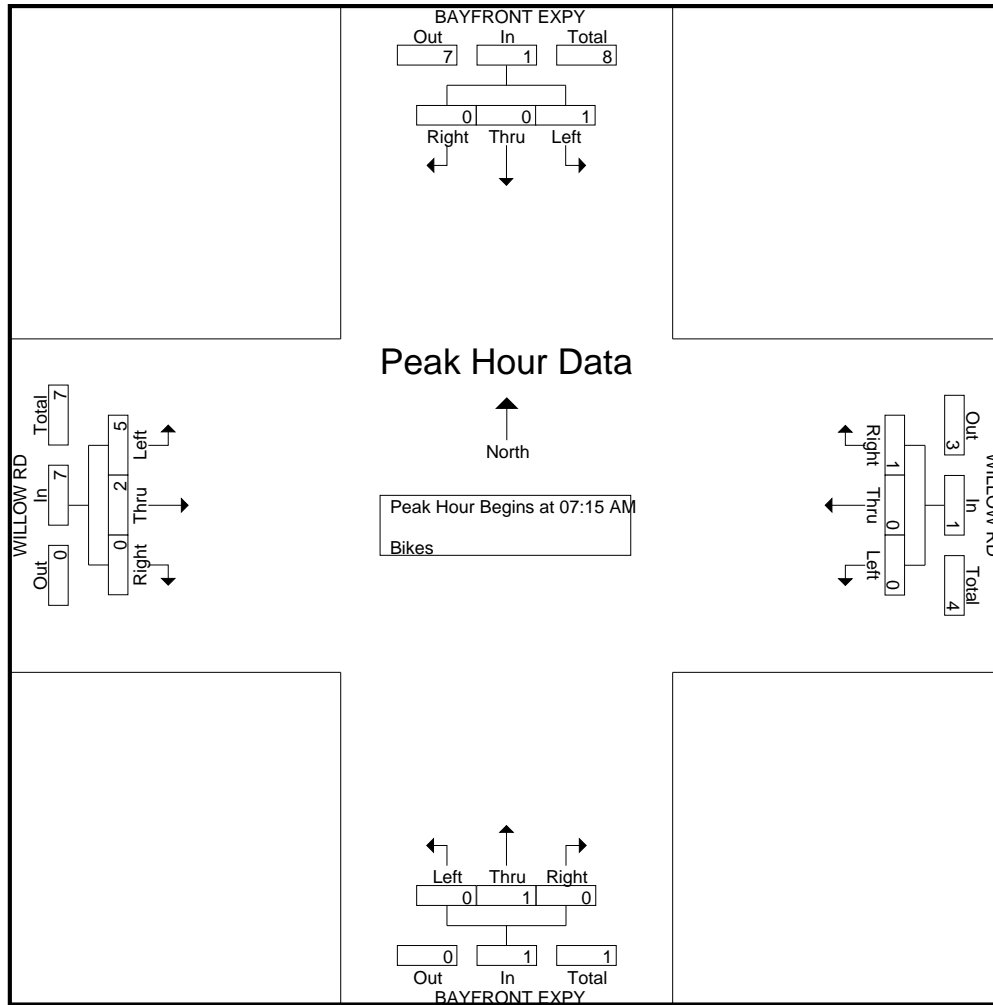
Start Time	BAYFRONT EXPY Southbound					WILLOW RD Westbound					BAYFRONT EXPY Northbound					WILLOW RD Eastbound					Int. Total	
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total		
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	2	0	3	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	0	1	5	0	6	0	0
08:00 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	4	0	0	4	0	0
Grand Total	0	0	1	0	1	1	0	0	0	1	0	4	0	0	4	0	7	5	0	12	0	0
Apprch %	0	0	100	0		100	0	0	0		0	100	0	0		0	58.3	41.7	0		0	0
Total %	0	0	5.6	0	5.6	5.6	0	0	0	5.6	0	22.2	0	0	22.2	0	38.9	27.8	0	66.7	0	0

Start Time	BAYFRONT EXPY Southbound				WILLOW RD Westbound				BAYFRONT EXPY Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3	3	4
07:30 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	1	2	3	4
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	1	1	1	0	0	1	0	1	0	1	0	2	5	7	10
% App. Total	0	0	100		100	0	0		0	100	0		0	28.6	71.4		
PHF	.000	.000	.250	.250	.250	.000	.000	.250	.000	.250	.000	.250	.000	.500	.417	.583	.625

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 37AM FINAL  
 Site Code : 00000037  
 Start Date : 4/23/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 37PM FINAL  
 Site Code : 00000037  
 Start Date : 4/23/2019  
 Page No : 1

Groups Printed- Vehicles

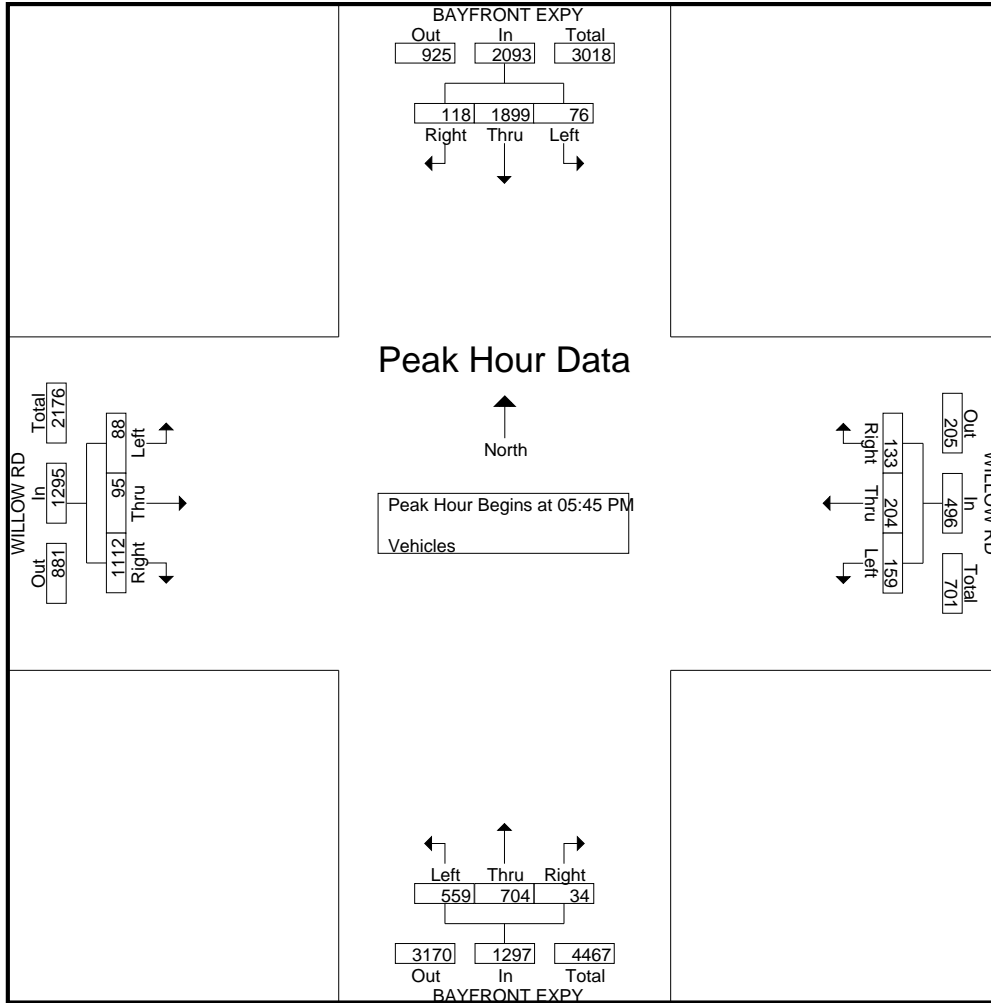
Start Time	BAYFRONT EXPY Southbound					WILLOW RD Westbound					BAYFRONT EXPY Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	23	506	15	2	546	22	45	32	0	99	9	194	85	0	288	273	19	27	0	319	1252
04:15 PM	21	426	16	0	463	18	30	44	1	93	5	178	125	0	308	276	14	30	0	320	1184
04:30 PM	28	526	15	4	573	28	41	40	0	109	6	194	102	0	302	263	23	21	0	307	1291
04:45 PM	30	430	8	3	471	37	31	41	0	109	7	187	127	0	321	267	15	21	2	305	1206
Total	102	1888	54	9	2053	105	147	157	1	410	27	753	439	0	1219	1079	71	99	2	1251	4933
05:00 PM	17	514	13	1	545	40	36	39	1	116	14	193	114	0	321	295	13	28	1	337	1319
05:15 PM	21	440	8	7	476	34	44	54	1	133	7	225	137	0	369	264	15	26	7	312	1290
05:30 PM	15	522	23	12	572	23	32	38	0	93	10	212	106	0	328	279	24	24	4	331	1324
05:45 PM	25	441	15	2	483	33	48	49	0	130	7	204	152	0	363	253	22	29	2	306	1282
Total	78	1917	59	22	2076	130	160	180	2	472	38	834	509	0	1381	1091	74	107	14	1286	5215
06:00 PM	24	500	15	12	551	32	53	36	0	121	4	162	141	0	307	288	29	20	6	343	1322
06:15 PM	32	413	22	2	469	38	59	43	0	140	14	160	149	0	323	302	20	26	6	354	1286
06:30 PM	37	545	24	6	612	30	44	31	1	106	9	178	117	1	305	269	24	13	2	308	1331
06:45 PM	29	355	16	1	401	35	27	34	0	96	8	134	107	0	249	296	17	13	3	329	1075
Total	122	1813	77	21	2033	135	183	144	1	463	35	634	514	1	1184	1155	90	72	17	1334	5014
Grand Total	302	5618	190	52	6162	370	490	481	4	1345	100	2221	1462	1	3784	3325	235	278	33	3871	15162
Apprch %	4.9	91.2	3.1	0.8		27.5	36.4	35.8	0.3		2.6	58.7	38.6	0		85.9	6.1	7.2	0.9		
Total %	2	37.1	1.3	0.3	40.6	2.4	3.2	3.2	0	8.9	0.7	14.6	9.6	0	25	21.9	1.5	1.8	0.2	25.5	

Start Time	BAYFRONT EXPY Southbound				WILLOW RD Westbound				BAYFRONT EXPY Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:45 PM																	
05:45 PM	25	441	15	481	33	48	<b>49</b>	130	7	<b>204</b>	<b>152</b>	<b>363</b>	253	22	<b>29</b>	304	1278
06:00 PM	24	500	15	539	32	53	36	121	4	162	141	307	288	<b>29</b>	20	337	1304
06:15 PM	32	413	22	467	<b>38</b>	<b>59</b>	43	<b>140</b>	<b>14</b>	160	149	323	<b>302</b>	20	26	<b>348</b>	1278
06:30 PM	<b>37</b>	<b>545</b>	<b>24</b>	<b>606</b>	30	44	31	105	9	178	117	304	269	24	13	306	<b>1321</b>
Total Volume	118	1899	76	2093	133	204	159	496	34	704	559	1297	1112	95	88	1295	5181
% App. Total	5.6	90.7	3.6		26.8	41.1	32.1		2.6	54.3	43.1		85.9	7.3	6.8		
PHF	.797	.871	.792	.863	.875	.864	.811	.886	.607	.863	.919	.893	.921	.819	.759	.930	.981

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 37PM FINAL  
 Site Code : 00000037  
 Start Date : 4/23/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 37PM FINAL  
 Site Code : 00000037  
 Start Date : 4/23/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	BAYFRONT EXPY Southbound					WILLOW RD Westbound					BAYFRONT EXPY Northbound					WILLOW RD Eastbound					Int. Total	
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total		
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	2	1	0	0	3	0	6
05:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	2	0	2	0	0	2	0	2	0	0	0	0	0	2	1	0	0	3	0	7
06:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	2
06:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
06:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	2
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	2	0	3	0	0	0	0	0	0	0	1	1	2	0	5
Grand Total	0	0	2	0	2	1	1	4	0	6	0	0	0	0	0	2	1	1	1	5	0	13
Apprch %	0	0	100	0		16.7	16.7	66.7	0		0	0	0	0		40	20	20	20			
Total %	0	0	15.4	0	15.4	7.7	7.7	30.8	0	46.2	0	0	0	0	0	15.4	7.7	7.7	7.7	38.5		

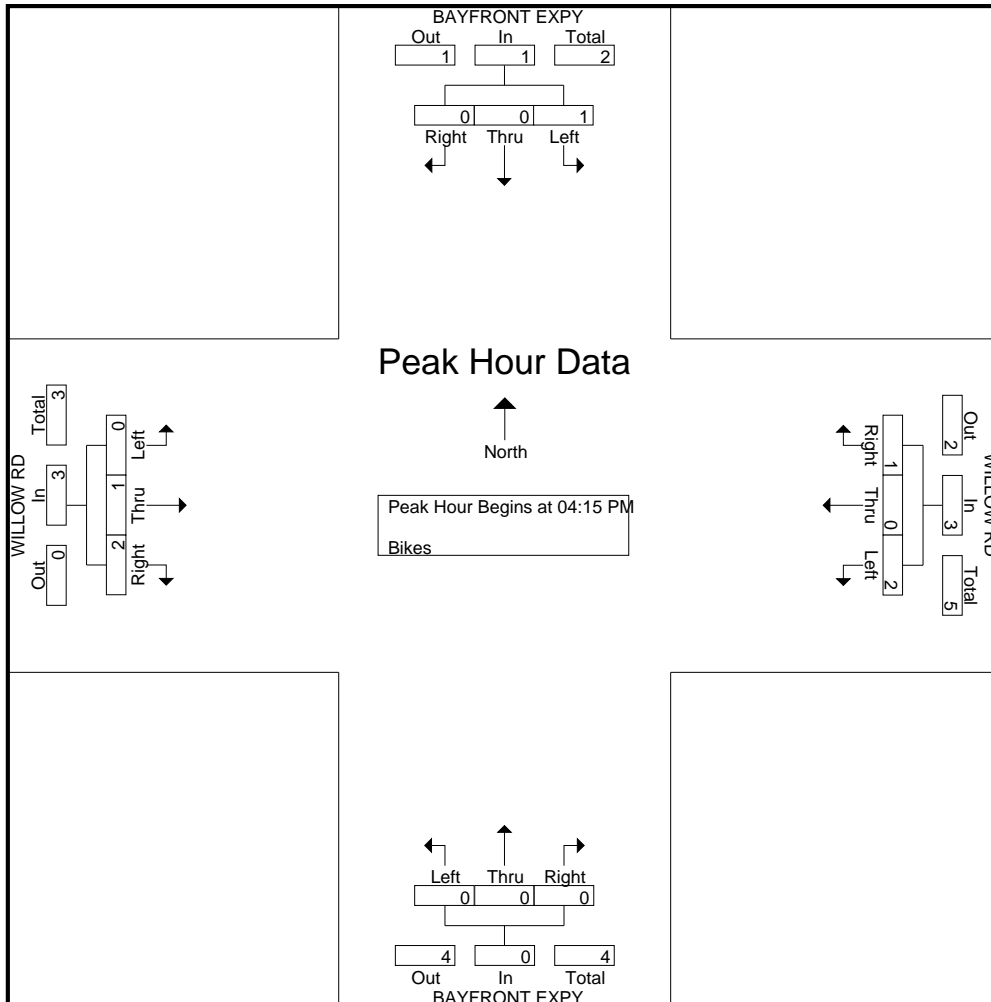
Start Time	BAYFRONT EXPY Southbound				WILLOW RD Westbound				BAYFRONT EXPY Northbound				WILLOW RD Eastbound				Int. Total	
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total		
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 04:15 PM																		
04:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	1	1	0	0	2	2	0	0	0	0	2	1	0	3	0	6
Total Volume	0	0	1	1	1	0	2	3	0	0	0	0	2	1	0	3	0	7
% App. Total	0	0	100		33.3	0	66.7		0	0	0		66.7	33.3	0			
PHF	.000	.000	.250	.250	.250	.000	.250	.375	.000	.000	.000	.000	.250	.250	.000	.250		.292



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 37PM FINAL  
 Site Code : 00000037  
 Start Date : 4/23/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 36AM FINAL  
 Site Code : 00000036  
 Start Date : 3/21/2019  
 Page No : 1

## Groups Printed- Vehicles

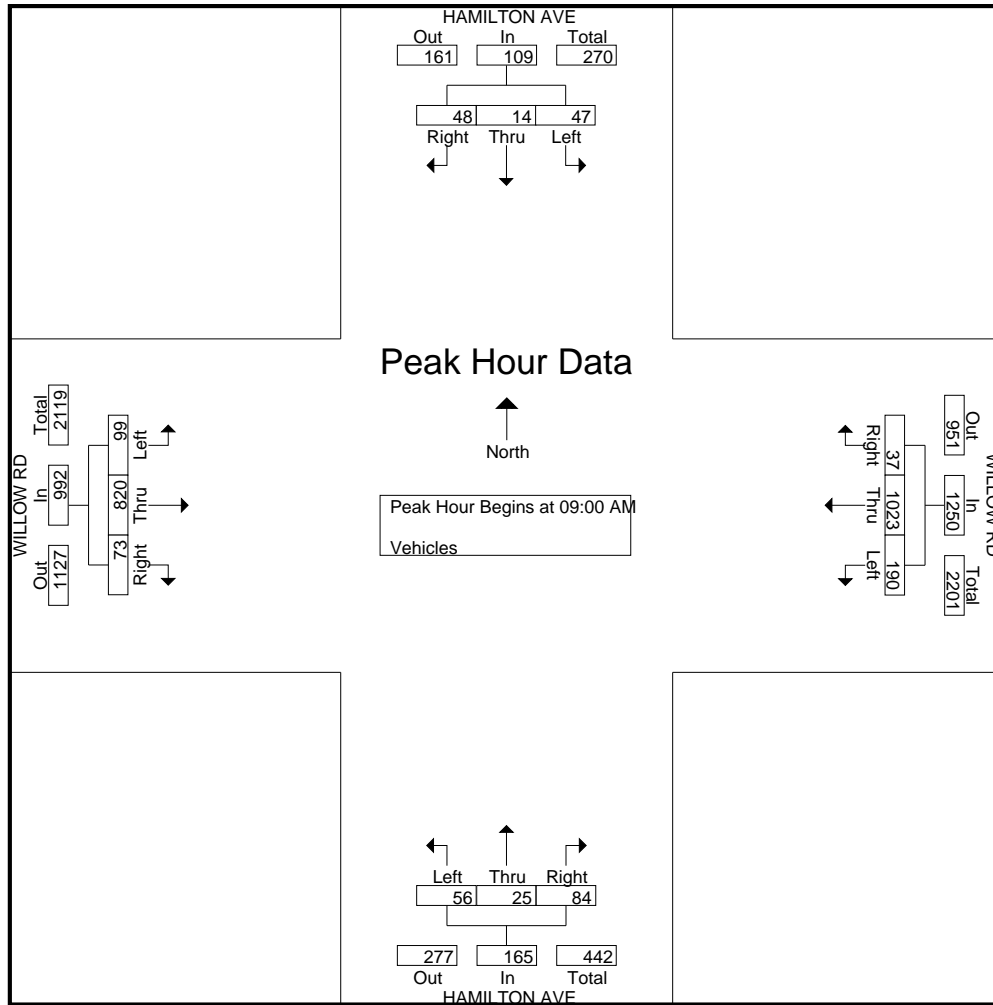
Start Time	HAMILTON AVE Southbound					WILLOW RD Westbound					HAMILTON AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	13	5	15	2	35	13	288	19	4	324	16	4	7	2	29	8	92	18	2	120	508
07:15 AM	15	7	22	3	47	18	321	24	8	371	15	1	5	3	24	20	113	28	0	161	603
07:30 AM	14	14	34	3	65	17	242	49	7	315	25	9	5	2	41	28	139	24	1	192	613
07:45 AM	17	12	25	1	55	14	171	48	7	240	21	8	10	0	39	19	169	29	2	219	553
Total	59	38	96	9	202	62	1022	140	26	1250	77	22	27	7	133	75	513	99	5	692	2277
08:00 AM	6	13	20	2	41	13	116	38	22	189	9	18	5	3	35	18	159	33	2	212	477
08:15 AM	11	21	15	4	51	22	157	53	13	245	14	6	10	4	34	21	180	33	3	237	567
08:30 AM	8	7	16	9	40	22	139	39	15	215	15	13	4	4	36	17	207	32	4	260	551
08:45 AM	9	10	22	11	52	17	164	74	20	275	27	10	33	4	74	27	180	32	5	244	645
Total	34	51	73	26	184	74	576	204	70	924	65	47	52	15	179	83	726	130	14	953	2240
09:00 AM	13	4	16	5	38	8	241	61	17	327	34	9	20	4	67	20	193	30	1	244	676
09:15 AM	17	5	13	11	46	4	241	46	24	315	18	5	10	4	37	23	220	27	3	273	671
09:30 AM	10	3	6	13	32	13	283	47	37	380	19	6	12	1	38	17	186	23	4	230	680
09:45 AM	8	2	12	7	29	12	258	36	36	342	13	5	14	2	34	13	221	19	3	256	661
Total	48	14	47	36	145	37	1023	190	114	1364	84	25	56	11	176	73	820	99	11	1003	2688
Grand Total	141	103	216	71	531	173	2621	534	210	3538	226	94	135	33	488	231	2059	328	30	2648	7205
Apprch %	26.6	19.4	40.7	13.4		4.9	74.1	15.1	5.9		46.3	19.3	27.7	6.8		8.7	77.8	12.4	1.1		
Total %	2	1.4	3	1	7.4	2.4	36.4	7.4	2.9	49.1	3.1	1.3	1.9	0.5	6.8	3.2	28.6	4.6	0.4	36.8	

Start Time	HAMILTON AVE Southbound				WILLOW RD Westbound				HAMILTON AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 09:00 AM																	
09:00 AM	13	4	16	33	8	241	61	310	34	9	20	63	20	193	30	243	649
09:15 AM	17	5	13	35	4	241	46	291	18	5	10	33	23	220	27	270	629
09:30 AM	10	3	6	19	13	283	47	343	19	6	12	37	17	186	23	226	625
09:45 AM	8	2	12	22	12	258	36	306	13	5	14	32	13	221	19	253	613
Total Volume	48	14	47	109	37	1023	190	1250	84	25	56	165	73	820	99	992	2516
% App. Total	44	12.8	43.1		3	81.8	15.2		50.9	15.2	33.9		7.4	82.7	10		
PHF	.706	.700	.734	.779	.712	.904	.779	.911	.618	.694	.700	.655	.793	.928	.825	.919	.969

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 36AM FINAL  
 Site Code : 00000036  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 36AM FINAL  
 Site Code : 00000036  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

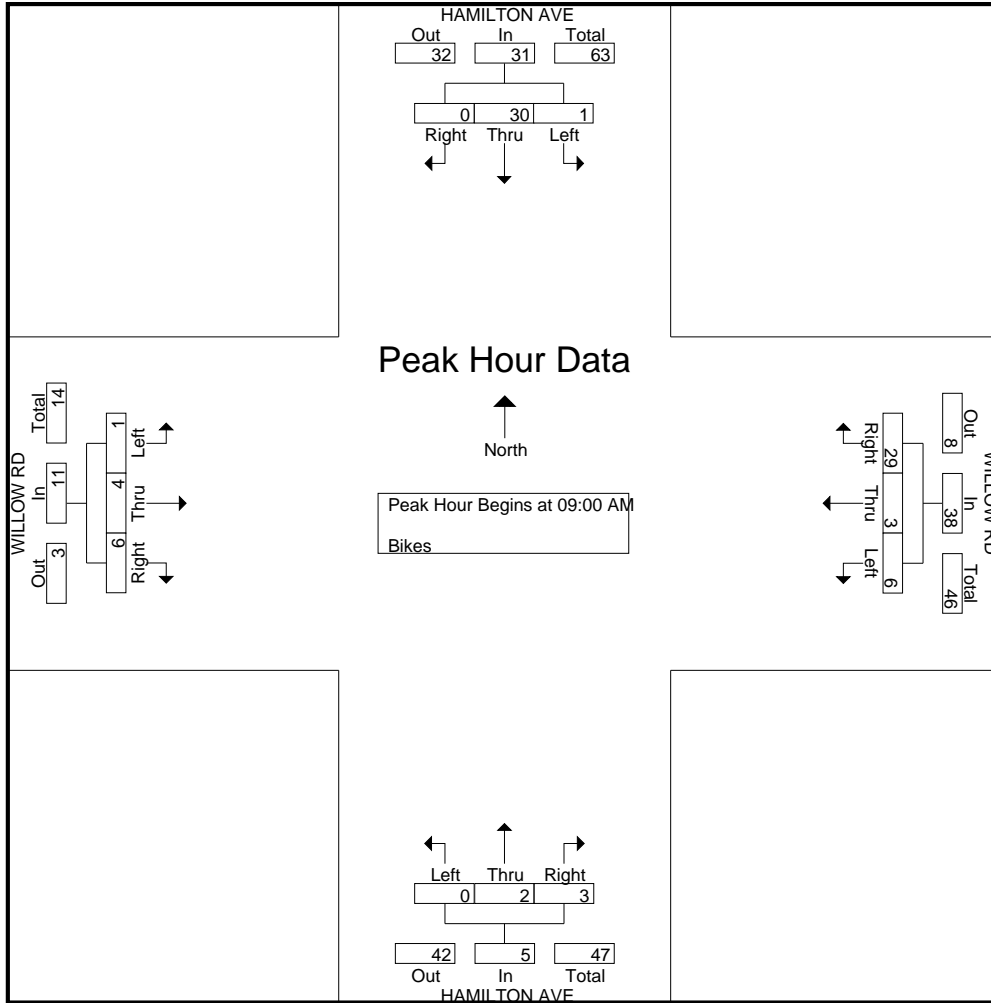
Start Time	HAMILTON AVE Southbound					WILLOW RD Westbound					HAMILTON AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	2	0	0	2	0	0	1	0	1	0	1	0	0	1	1	0	0	0	1	5
07:15 AM	0	0	1	0	1	0	0	0	0	0	1	0	1	0	2	1	0	0	0	1	4
07:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
07:45 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	5	1	0	6	0	0	1	0	1	1	1	1	0	3	2	1	0	0	3	13
08:00 AM	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	3
08:15 AM	0	6	0	0	6	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	7
08:30 AM	0	8	0	0	8	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	10
08:45 AM	0	7	0	0	7	2	0	0	0	2	0	0	0	0	0	0	0	1	0	1	10
Total	0	22	0	0	22	2	2	0	0	4	0	2	0	0	2	1	0	1	0	2	30
09:00 AM	0	4	0	0	4	6	0	4	0	10	0	0	0	0	0	0	0	1	0	1	15
09:15 AM	0	9	0	0	9	11	2	1	0	14	2	1	0	0	3	2	0	0	0	2	28
09:30 AM	0	7	0	0	7	8	1	0	0	9	0	0	0	0	0	2	1	0	0	3	19
09:45 AM	0	10	1	0	11	4	0	1	0	5	1	1	0	0	2	2	3	0	0	5	23
Total	0	30	1	0	31	29	3	6	0	38	3	2	0	0	5	6	4	1	0	11	85
Grand Total	0	57	2	0	59	31	5	7	0	43	4	5	1	0	10	9	5	2	0	16	128
Apprch %	0	96.6	3.4	0		72.1	11.6	16.3	0		40	50	10	0		56.2	31.2	12.5	0		
Total %	0	44.5	1.6	0	46.1	24.2	3.9	5.5	0	33.6	3.1	3.9	0.8	0	7.8	7	3.9	1.6	0	12.5	

Start Time	HAMILTON AVE Southbound				WILLOW RD Westbound				HAMILTON AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 09:00 AM																	
09:00 AM	0	4	0	4	6	0	4	10	0	0	0	0	0	0	1	1	15
09:15 AM	0	9	0	9	11	2	1	14	2	1	0	3	2	0	0	2	28
09:30 AM	0	7	0	7	8	1	0	9	0	0	0	0	2	1	0	3	19
09:45 AM	0	10	1	11	4	0	1	5	1	1	0	2	2	3	0	5	23
Total Volume	0	30	1	31	29	3	6	38	3	2	0	5	6	4	1	11	85
% App. Total	0	96.8	3.2		76.3	7.9	15.8		60	40	0		54.5	36.4	9.1		
PHF	.000	.750	.250	.705	.659	.375	.375	.679	.375	.500	.000	.417	.750	.333	.250	.550	.759

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 36AM FINAL  
 Site Code : 00000036  
 Start Date : 3/21/2019  
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# Traffic Data Service

San Jose, CA  
(408) 622-4787  
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File Name : 36PM FINAL  
Site Code : 00000036  
Start Date : 3/21/2019  
Page No : 1

Groups Printed- Vehicles

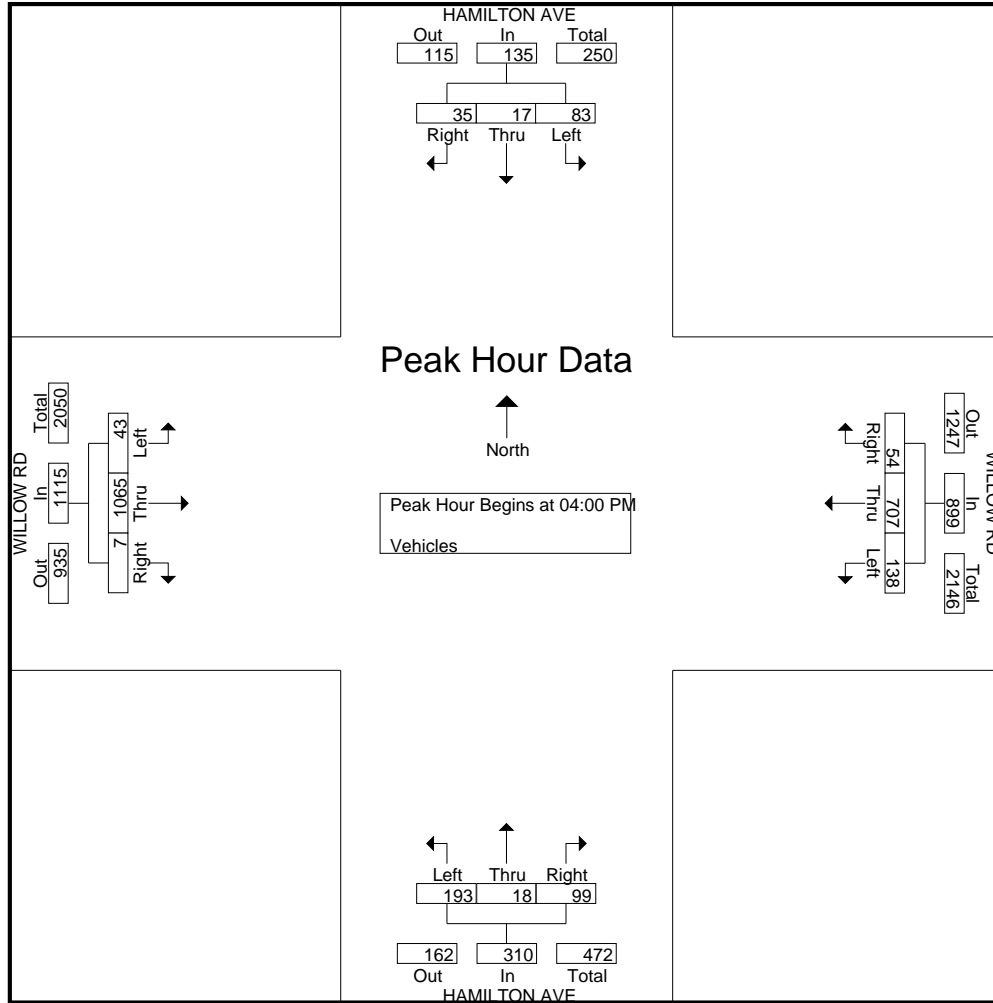
Start Time	HAMILTON AVE Southbound					WILLOW RD Westbound					HAMILTON AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	10	8	19	8	45	11	158	31	64	264	25	3	52	4	84	1	277	10	4	292	685
04:15 PM	13	3	19	5	40	14	166	43	39	262	22	9	52	7	90	2	288	10	3	303	695
04:30 PM	8	3	21	11	43	16	186	36	29	267	23	2	45	5	75	0	270	13	7	290	675
04:45 PM	4	3	24	4	35	13	197	28	39	277	29	4	44	10	87	4	230	10	9	253	652
<b>Total</b>	<b>35</b>	<b>17</b>	<b>83</b>	<b>28</b>	<b>163</b>	<b>54</b>	<b>707</b>	<b>138</b>	<b>171</b>	<b>1070</b>	<b>99</b>	<b>18</b>	<b>193</b>	<b>26</b>	<b>336</b>	<b>7</b>	<b>1065</b>	<b>43</b>	<b>23</b>	<b>1138</b>	<b>2707</b>
05:00 PM	3	7	31	7	48	13	190	36	37	276	17	1	36	2	56	2	231	9	5	247	627
05:15 PM	4	3	24	3	34	14	217	28	36	295	24	3	54	4	85	2	238	7	1	248	662
05:30 PM	4	4	45	2	55	14	229	30	25	298	25	6	34	2	67	4	233	15	4	256	676
05:45 PM	4	6	21	6	37	11	218	30	33	292	12	2	25	2	41	2	203	9	4	218	588
<b>Total</b>	<b>15</b>	<b>20</b>	<b>121</b>	<b>18</b>	<b>174</b>	<b>52</b>	<b>854</b>	<b>124</b>	<b>131</b>	<b>1161</b>	<b>78</b>	<b>12</b>	<b>149</b>	<b>10</b>	<b>249</b>	<b>10</b>	<b>905</b>	<b>40</b>	<b>14</b>	<b>969</b>	<b>2553</b>
06:00 PM	0	7	25	1	33	11	248	27	17	303	24	5	20	1	50	3	263	5	4	275	661
06:15 PM	11	7	26	4	48	10	206	24	39	279	13	11	18	10	52	4	223	7	3	237	616
06:30 PM	12	4	30	4	50	12	235	25	26	298	21	4	27	2	54	4	257	18	0	279	681
06:45 PM	6	6	23	2	37	22	218	32	18	290	10	0	14	2	26	1	244	8	2	255	608
<b>Total</b>	<b>29</b>	<b>24</b>	<b>104</b>	<b>11</b>	<b>168</b>	<b>55</b>	<b>907</b>	<b>108</b>	<b>100</b>	<b>1170</b>	<b>68</b>	<b>20</b>	<b>79</b>	<b>15</b>	<b>182</b>	<b>12</b>	<b>987</b>	<b>38</b>	<b>9</b>	<b>1046</b>	<b>2566</b>
Grand Total	79	61	308	57	505	161	2468	370	402	3401	245	50	421	51	767	29	2957	121	46	3153	7826
Apprch %	15.6	12.1	61	11.3		4.7	72.6	10.9	11.8		31.9	6.5	54.9	6.6		0.9	93.8	3.8	1.5		
Total %	1	0.8	3.9	0.7	6.5	2.1	31.5	4.7	5.1	43.5	3.1	0.6	5.4	0.7	9.8	0.4	37.8	1.5	0.6	40.3	

Start Time	HAMILTON AVE Southbound					WILLOW RD Westbound					HAMILTON AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	10	8	19		37	11	158	31		200	25	3	52		80	1	277	10		288	605
04:15 PM	13	3	19		35	14	166	43		223	22	9	52		83	2	288	10		300	641
04:30 PM	8	3	21		32	16	186	36		238	23	2	45		70	0	270	13		283	623
04:45 PM	4	3	24		31	13	197	28		238	29	4	44		77	4	230	10		244	590
Total Volume	35	17	83		135	54	707	138		899	99	18	193		310	7	1065	43		1115	2459
% App. Total	25.9	12.6	61.5			6	78.6	15.4			31.9	5.8	62.3			0.6	95.5	3.9			
PHF	.673	.531	.865		.912	.844	.897	.802		.944	.853	.500	.928		.934	.438	.924	.827		.929	.959

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 36PM FINAL  
 Site Code : 00000036  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 36PM FINAL  
 Site Code : 00000036  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	HAMILTON AVE Southbound					WILLOW RD Westbound					HAMILTON AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	3	1	0	0	4	4	1	1	0	6	0	0	0	0	0	0
04:15 PM	2	2	0	0	4	4	1	0	0	5	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	1	0	0	0	1	1	1	0	0	2	3	3	0	0	6	0	0	0	0	0	0
04:45 PM	0	1	1	0	2	3	3	1	0	7	0	2	1	0	3	0	1	0	0	1	1
<b>Total</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>11</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>18</b>	<b>7</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>41</b>
05:00 PM	0	1	0	0	1	2	1	1	0	4	0	2	0	0	2	0	0	0	0	0	0
05:15 PM	0	1	2	0	3	4	2	0	0	6	0	0	2	0	2	0	3	0	0	3	14
05:30 PM	0	1	0	0	1	1	2	0	0	3	0	1	0	0	1	0	0	0	0	0	5
05:45 PM	0	0	0	0	0	5	2	0	0	7	0	1	0	0	1	0	1	0	0	1	9
<b>Total</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>12</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>35</b>
06:00 PM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	2
06:15 PM	0	1	1	0	2	1	3	0	0	4	0	0	0	0	0	0	0	1	0	1	7
06:30 PM	0	2	0	0	2	3	0	0	0	3	0	0	0	0	0	0	1	0	0	1	6
06:45 PM	0	3	0	0	3	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	4
<b>Total</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>19</b>
Grand Total	3	12	4	0	19	28	16	3	0	47	7	11	4	0	22	0	6	1	0	7	95
Apprch %	15.8	63.2	21.1	0		59.6	34	6.4	0		31.8	50	18.2	0		0	85.7	14.3	0		
Total %	3.2	12.6	4.2	0	20	29.5	16.8	3.2	0	49.5	7.4	11.6	4.2	0	23.2	0	6.3	1.1	0	7.4	

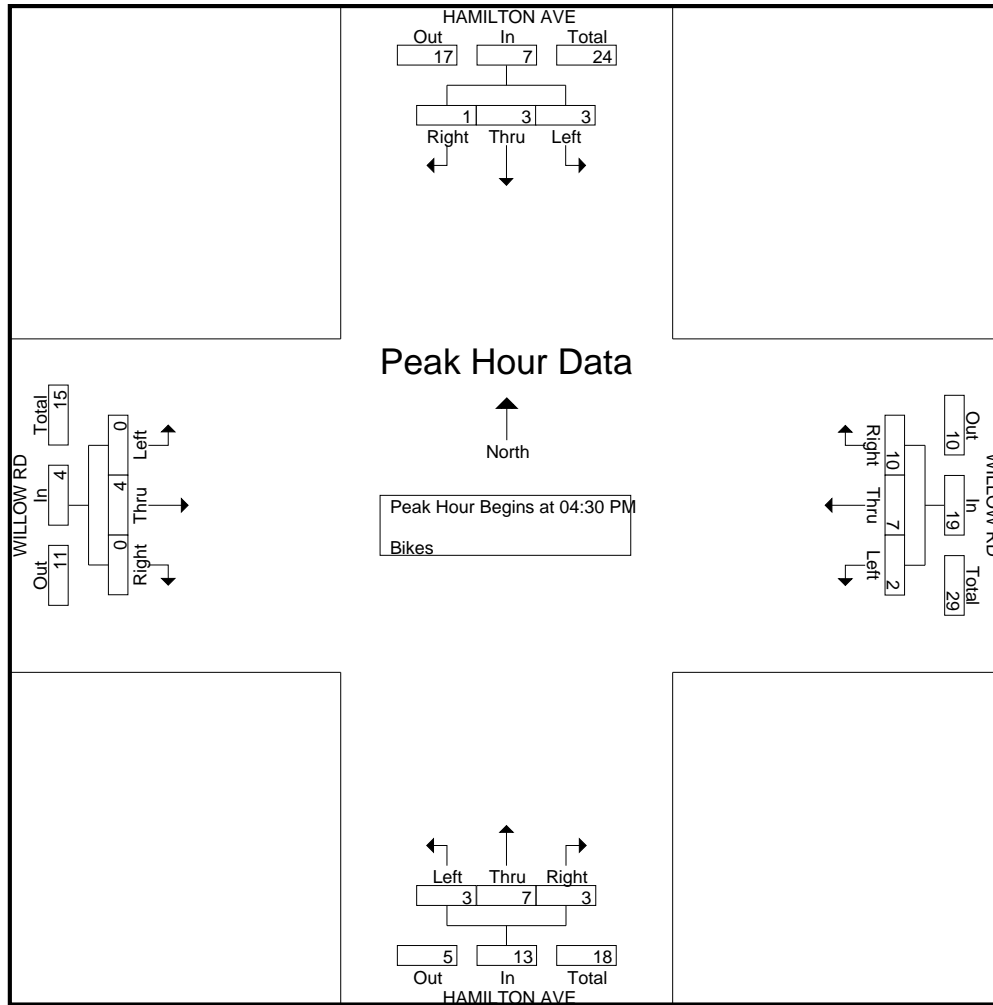
Start Time	HAMILTON AVE Southbound				WILLOW RD Westbound				HAMILTON AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	1	0	0	1	1	1	0	2	3	3	0	6	0	0	0	0	9
04:45 PM	0	1	1	2	3	3	1	7	0	2	1	3	0	1	0	1	13
05:00 PM	0	1	0	1	2	1	1	4	0	2	0	2	0	0	0	0	7
05:15 PM	0	1	2	3	4	2	0	6	0	0	2	2	0	3	0	3	14
Total Volume	1	3	3	7	10	7	2	19	3	7	3	13	0	4	0	4	43
% App. Total	14.3	42.9	42.9		52.6	36.8	10.5		23.1	53.8	23.1		0	100	0		
PHF	.250	.750	.375	.583	.625	.583	.500	.679	.250	.583	.375	.542	.000	.333	.000	.333	.768



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 36PM FINAL  
 Site Code : 00000036  
 Start Date : 3/21/2019  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 35AM FINAL  
 Site Code : 00000035  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Vehicles

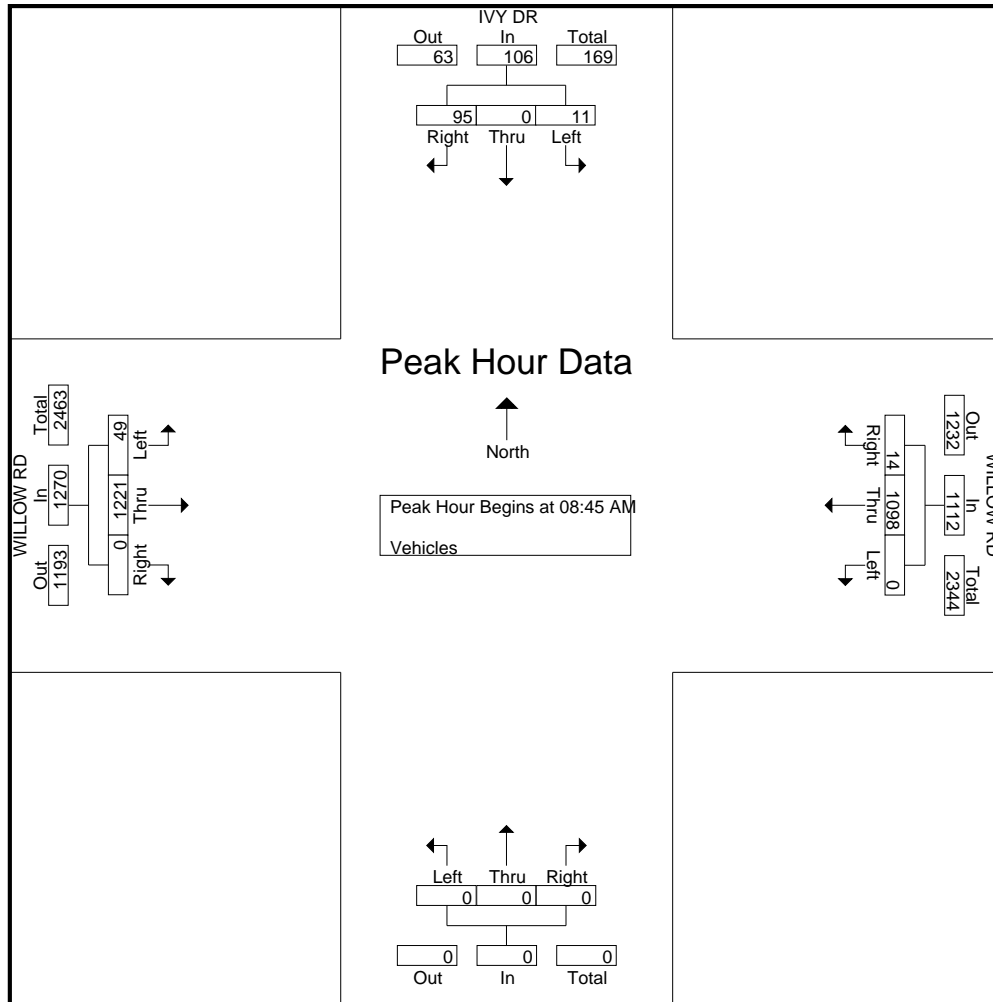
Start Time	IVY DR Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	40	0	3	0	43	2	324	0	1	327	0	0	0	0	0	0	133	4	1	138	508
07:15 AM	30	0	4	1	35	4	301	0	1	306	0	0	0	0	0	0	182	13	1	196	537
07:30 AM	38	0	3	0	41	2	308	0	2	312	0	0	0	0	0	0	199	7	0	206	559
07:45 AM	42	0	3	1	46	2	167	0	4	173	0	0	0	0	0	0	239	17	1	257	476
Total	150	0	13	2	165	10	1100	0	8	1118	0	0	0	0	0	0	753	41	3	797	2080
08:00 AM	29	0	3	0	32	5	130	0	0	135	0	0	0	0	0	0	253	19	2	274	441
08:15 AM	23	0	3	4	30	4	153	0	0	157	0	0	0	0	0	0	269	22	3	294	481
08:30 AM	37	0	7	4	48	4	154	0	1	159	0	0	0	0	0	0	303	25	1	329	536
08:45 AM	25	0	4	0	29	3	247	0	3	253	0	0	0	0	0	0	312	16	0	328	610
Total	114	0	17	8	139	16	684	0	4	704	0	0	0	0	0	0	1137	82	6	1225	2068
09:00 AM	26	0	2	2	30	5	288	0	11	304	0	0	0	0	0	0	326	15	1	342	676
09:15 AM	17	0	3	1	21	1	269	0	4	274	0	0	0	0	0	0	337	10	3	350	645
09:30 AM	27	0	2	1	30	5	294	0	0	299	0	0	0	0	0	0	246	8	3	257	586
09:45 AM	15	0	2	1	18	2	304	0	1	307	0	0	0	0	0	0	241	11	1	253	578
Total	85	0	9	5	99	13	1155	0	16	1184	0	0	0	0	0	0	1150	44	8	1202	2485
Grand Total	349	0	39	15	403	39	2939	0	28	3006	0	0	0	0	0	0	3040	167	17	3224	6633
Apprch %	86.6	0	9.7	3.7		1.3	97.8	0	0.9		0	0	0	0	0	0	94.3	5.2	0.5		
Total %	5.3	0	0.6	0.2	6.1	0.6	44.3	0	0.4	45.3	0	0	0	0	0	0	45.8	2.5	0.3	48.6	

Start Time	IVY DR Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				Int. Total	
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total		
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 08:45 AM																		
08:45 AM	25	0	4	29	3	247	0	250	0	0	0	0	0	0	312	16	328	607
09:00 AM	26	0	2	28	5	288	0	293	0	0	0	0	0	0	326	15	341	662
09:15 AM	17	0	3	20	1	269	0	270	0	0	0	0	0	337	10	347	637	
09:30 AM	27	0	2	29	5	294	0	299	0	0	0	0	0	246	8	254	582	
Total Volume	95	0	11	106	14	1098	0	1112	0	0	0	0	0	1221	49	1270	2488	
% App. Total	89.6	0	10.4		1.3	98.7	0		0	0	0		0	96.1	3.9			
PHF	.880	.000	.688	.914	.700	.934	.000	.930	.000	.000	.000	.000	.000	.906	.766	.915	.940	

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 35AM FINAL  
 Site Code : 00000035  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 35AM FINAL  
 Site Code : 00000035  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

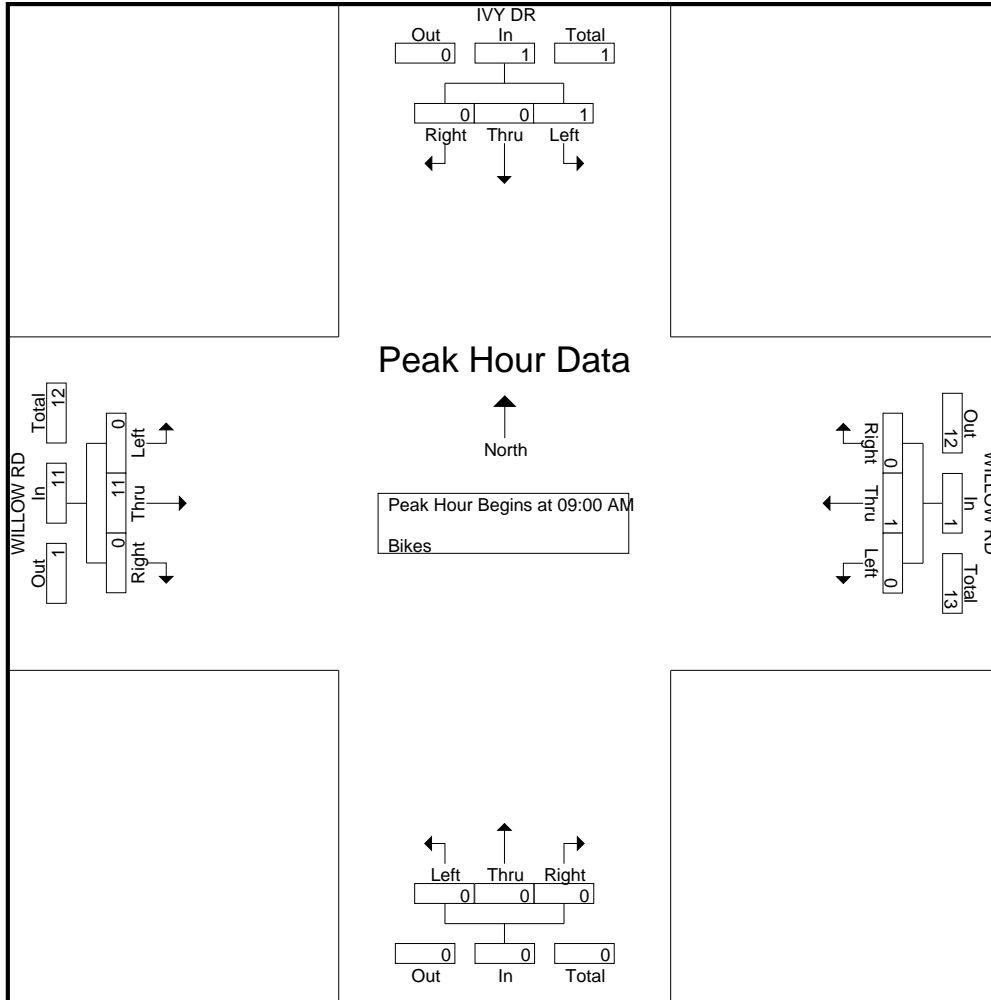
Start Time	IVY DR Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	4
09:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
Total	0	0	1	0	1	0	1	0	0	1	0	0	0	0	0	0	11	0	0	11	13
Grand Total	0	0	2	0	2	1	3	0	0	4	0	0	0	0	0	0	11	0	0	11	17
Apprch %	0	0	100	0		25	75	0	0		0	0	0	0		0	100	0	0		
Total %	0	0	11.8	0	11.8	5.9	17.6	0	0	23.5	0	0	0	0	0	0	64.7	0	0	64.7	

Start Time	IVY DR Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 09:00 AM																	
09:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	3	0	3	4
09:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
Total Volume	0	0	1	1	0	1	0	1	0	0	0	0	0	11	0	11	13
% App. Total	0	0	100		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.250	.250	.000	.250	.000	.250	.000	.000	.000	.000	.000	.917	.000	.917	.813

# Traffic Data Service

San Jose, CA  
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File Name : 35AM FINAL  
 Site Code : 00000035  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 35PM FINAL  
Site Code : 00000035  
Start Date : 3/21/2019  
Page No : 1

Groups Printed- Vehicles

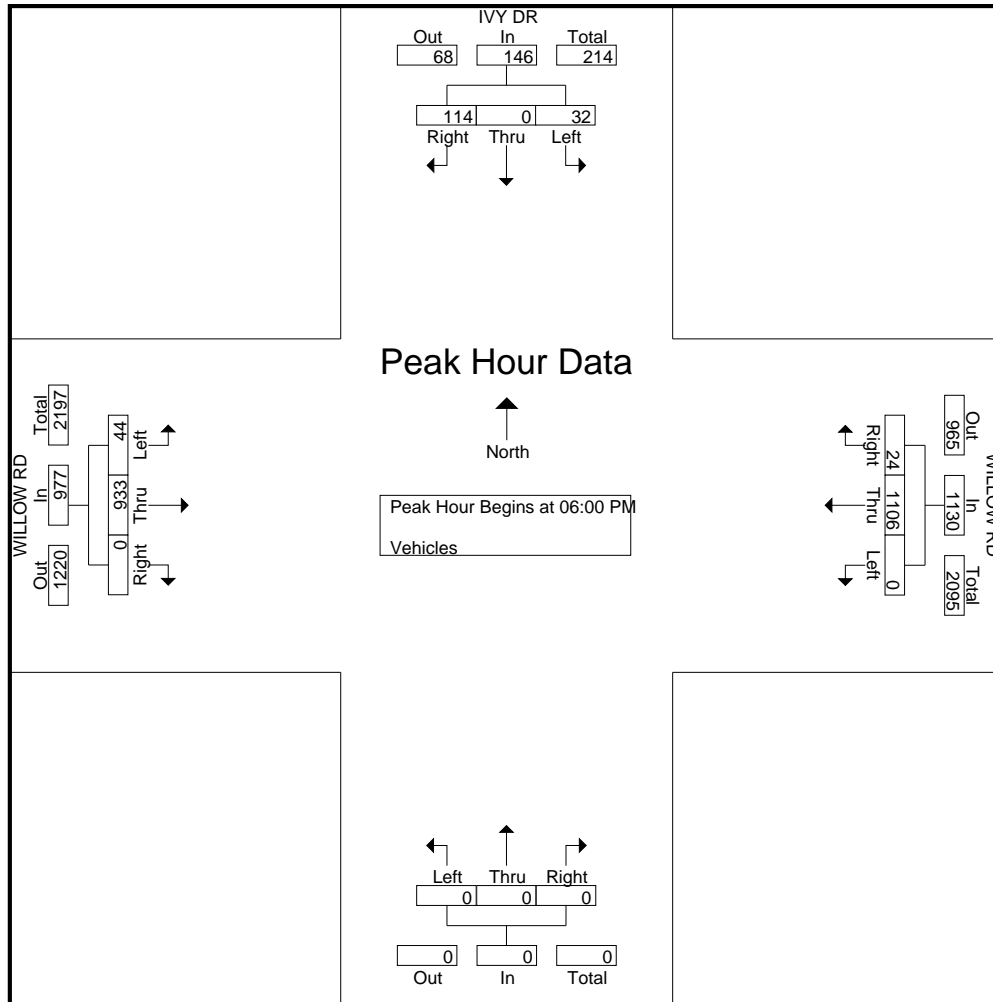
Start Time	IVY DR Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	25	0	5	2	32	9	242	0	4	255	0	0	0	0	0	0	230	13	0	243	530
04:15 PM	27	0	3	1	31	5	236	0	1	242	0	0	0	0	0	0	272	6	0	278	551
04:30 PM	26	0	12	1	39	5	265	0	1	271	0	0	0	0	0	0	227	10	1	238	548
04:45 PM	25	0	17	3	45	3	258	0	1	262	0	0	0	0	0	0	214	7	0	221	528
<b>Total</b>	103	0	37	7	147	22	1001	0	7	1030	0	0	0	0	0	0	943	36	1	980	2157
05:00 PM	40	0	9	0	49	3	257	0	0	260	0	0	0	0	0	0	221	10	0	231	540
05:15 PM	36	0	16	5	57	5	295	0	2	302	0	0	0	0	0	0	183	8	2	193	552
05:30 PM	21	0	8	2	31	4	291	0	1	296	0	0	0	0	0	0	226	5	1	232	559
05:45 PM	31	0	4	0	35	4	256	0	2	262	0	0	0	0	0	0	200	11	0	211	508
<b>Total</b>	128	0	37	7	172	16	1099	0	5	1120	0	0	0	0	0	0	830	34	3	867	2159
06:00 PM	34	0	5	0	39	10	306	0	10	326	0	0	0	0	0	0	226	15	0	241	606
06:15 PM	35	0	13	2	50	4	247	0	2	253	0	0	0	0	0	0	241	10	2	253	556
06:30 PM	24	0	9	2	35	6	305	0	0	311	0	0	0	0	0	0	240	8	0	248	594
06:45 PM	21	0	5	2	28	4	248	0	1	253	0	0	0	0	0	0	226	11	3	240	521
<b>Total</b>	114	0	32	6	152	24	1106	0	13	1143	0	0	0	0	0	0	933	44	5	982	2277
Grand Total	345	0	106	20	471	62	3206	0	25	3293	0	0	0	0	0	0	2706	114	9	2829	6593
Apprch %	73.2	0	22.5	4.2		1.9	97.4	0	0.8		0	0	0	0		0	95.7	4	0.3		
Total %	5.2	0	1.6	0.3	7.1	0.9	48.6	0	0.4	49.9	0	0	0	0	0	0	41	1.7	0.1	42.9	

Start Time	IVY DR Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:00 PM																	
06:00 PM	34	0	5	39	<b>10</b>	<b>306</b>	0	<b>316</b>	0	0	0	0	0	226	<b>15</b>	241	<b>596</b>
06:15 PM	35	0	13	48	4	247	0	251	0	0	0	0	0	241	10	251	550
06:30 PM	24	0	9	33	6	305	0	311	0	0	0	0	0	240	8	248	592
06:45 PM	21	0	5	26	4	248	0	252	0	0	0	0	0	226	11	237	515
Total Volume	114	0	32	146	24	1106	0	1130	0	0	0	0	0	933	44	977	2253
% App. Total	78.1	0	21.9		2.1	97.9	0		0	0	0		0	95.5	4.5		
PHF	.814	.000	.615	.760	.600	.904	.000	.894	.000	.000	.000	.000	.000	.968	.733	.973	.945

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 35PM FINAL  
 Site Code : 00000035  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 35PM FINAL  
Site Code : 00000035  
Start Date : 3/21/2019  
Page No : 1

Groups Printed- Bikes

Start Time	IVY DR Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
04:45 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	1	1	0	2	6
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>13</b>
05:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	3	0	0	3	5
05:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>10</b>
06:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
06:15 PM	2	0	0	0	2	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	5
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>
Grand Total	4	0	0	0	4	2	17	0	0	19	0	0	0	0	0	0	6	1	0	7	30
Apprch %	100	0	0	0		10.5	89.5	0	0		0	0	0	0		0	85.7	14.3	0		
Total %	13.3	0	0	0	13.3	6.7	56.7	0	0	63.3	0	0	0	0	0	0	20	3.3	0	23.3	

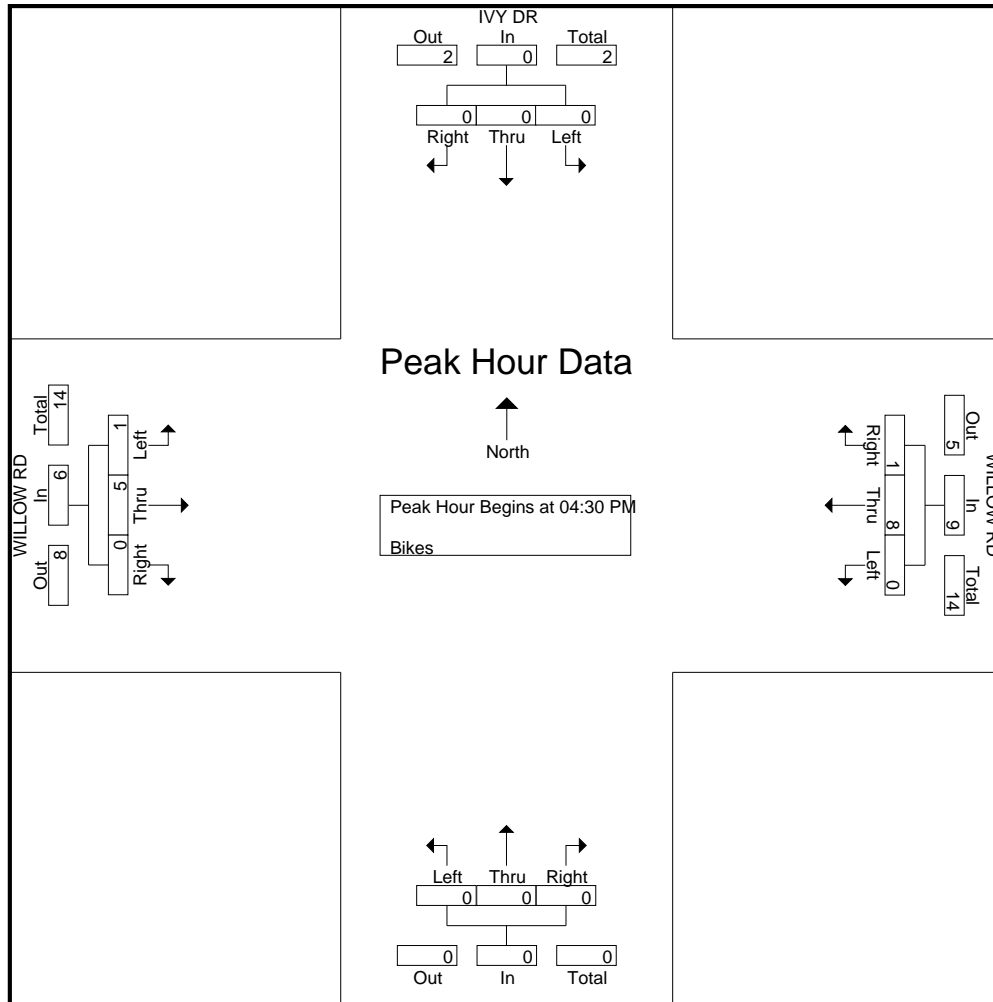
Start Time	IVY DR Southbound				App. Total	WILLOW RD Westbound				App. Total	Northbound				App. Total	WILLOW RD Eastbound				Int. Total	
	Right	Thru	Left	Peds		Right	Thru	Left	Peds		Right	Thru	Left	Peds		Right	Thru	Left	Peds		
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
04:45 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	1	1	0	2	6
05:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	3	0	0	3	5
Total Volume	0	0	0	0	0	1	8	0	0	9	0	0	0	0	0	0	5	1	0	6	15
% App. Total	0	0	0	0		11.1	88.9	0	0		0	0	0	0		0	83.3	16.7	0		
PHF	.000	.000	.000	.000		.250	.500	.000	.563		.000	.000	.000	.000		.000	.417	.250	.500		.625



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 35PM FINAL  
 Site Code : 00000035  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 34AM FINAL  
 Site Code : 00000034  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Vehicles

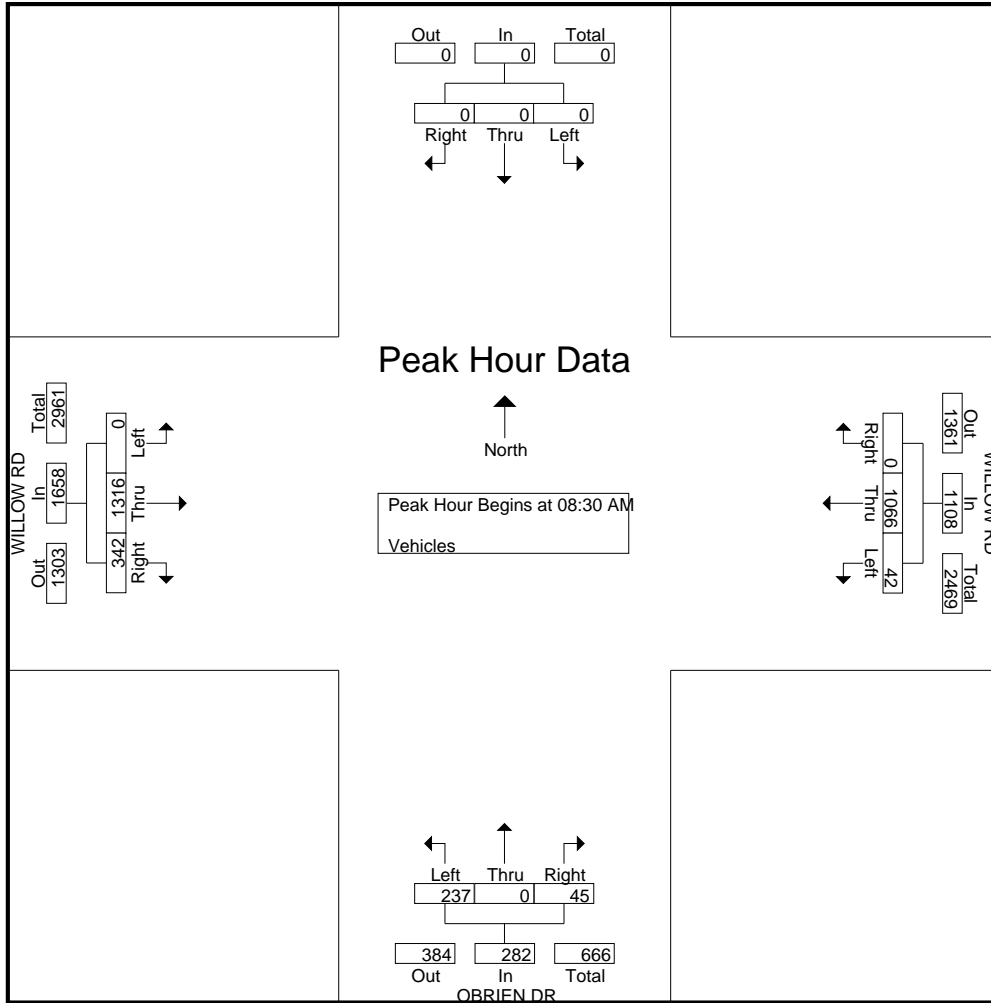
Start Time	Southbound					WILLOW RD Westbound					OBRIEN DR Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	372	6	0	378	6	0	38	2	46	50	133	0	0	183	607
07:15 AM	0	0	0	0	0	0	318	6	0	324	7	0	51	1	59	55	183	0	0	238	621
07:30 AM	0	0	0	0	0	0	351	8	0	359	10	0	75	1	86	53	194	0	0	247	692
07:45 AM	0	0	0	0	0	0	205	10	0	215	10	0	96	1	107	81	244	0	0	325	647
Total	0	0	0	0	0	0	1246	30	0	1276	33	0	260	5	298	239	754	0	0	993	2567
08:00 AM	0	0	0	0	0	0	152	4	0	156	10	0	76	6	92	83	272	0	0	355	603
08:15 AM	0	0	0	0	0	0	172	11	0	183	17	0	78	1	96	99	291	0	0	390	669
08:30 AM	0	0	0	0	0	0	179	9	0	188	13	0	81	3	97	80	329	0	0	409	694
08:45 AM	0	0	0	0	0	0	272	14	0	286	14	0	66	3	83	91	337	0	0	428	797
Total	0	0	0	0	0	0	775	38	0	813	54	0	301	13	368	353	1229	0	0	1582	2763
09:00 AM	0	0	0	0	0	0	319	13	0	332	9	0	53	5	67	91	324	0	0	415	814
09:15 AM	0	0	0	0	0	0	296	6	1	303	9	0	37	16	62	80	326	0	0	406	771
09:30 AM	0	0	0	0	0	0	310	7	0	317	3	0	27	1	31	70	241	0	0	311	659
09:45 AM	0	0	0	0	0	0	290	11	0	301	11	0	35	0	46	74	235	0	0	309	656
Total	0	0	0	0	0	0	1215	37	1	1253	32	0	152	22	206	315	1126	0	0	1441	2900
Grand Total	0	0	0	0	0	0	3236	105	1	3342	119	0	713	40	872	907	3109	0	0	4016	8230
Apprch %	0	0	0	0	0	0	96.8	3.1	0		13.6	0	81.8	4.6		22.6	77.4	0	0		
Total %	0	0	0	0	0	0	39.3	1.3	0	40.6	1.4	0	8.7	0.5	10.6	11	37.8	0	0	48.8	

Start Time	Southbound				WILLOW RD Westbound				OBRIEN DR Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:30 AM																	
08:30 AM	0	0	0	0	0	179	9	188	13	0	<b>81</b>	<b>94</b>	80	329	0	409	691
08:45 AM	0	0	0	0	0	272	<b>14</b>	286	<b>14</b>	0	66	80	<b>91</b>	<b>337</b>	0	<b>428</b>	794
09:00 AM	0	0	0	0	0	<b>319</b>	13	<b>332</b>	9	0	53	62	91	324	0	415	<b>809</b>
09:15 AM	0	0	0	0	0	296	6	302	9	0	37	46	80	326	0	406	754
Total Volume	0	0	0	0	0	1066	42	1108	45	0	237	282	342	1316	0	1658	3048
% App. Total	0	0	0	0	0	96.2	3.8		16	0	84		20.6	79.4	0		
PHF	.000	.000	.000	.000	.000	.835	.750	.834	.804	.000	.731	.750	.940	.976	.000	.968	.942

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 34AM FINAL  
 Site Code : 00000034  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 34AM FINAL  
 Site Code : 00000034  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

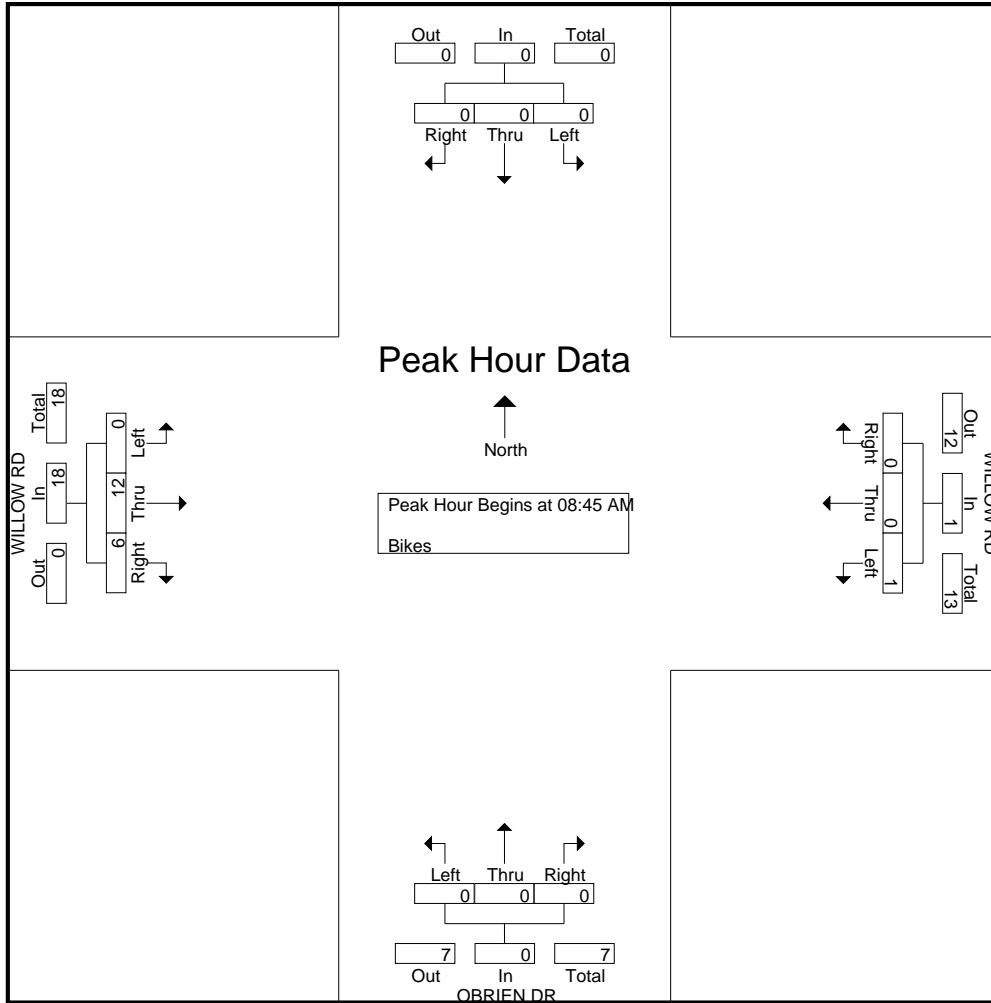
Start Time	Southbound					WILLOW RD Westbound					OBRIEN DR Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
07:30 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
<b>Total</b>	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	3	0	0	0	5
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	0	0	5
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	6	0	0	0	9
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	3
09:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	3	0	0	0	5
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	0	0	5
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	4
<b>Total</b>	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	6	11	0	0	0	17
Grand Total	0	0	0	0	0	0	0	2	0	2	0	0	1	0	1	11	20	0	0	0	31
Apprch %	0	0	0	0	0	0	0	100	0	0	0	0	100	0	0	35.5	64.5	0	0	0	
Total %	0	0	0	0	0	0	0	5.9	0	5.9	0	0	2.9	0	2.9	32.4	58.8	0	0	0	91.2

Start Time	Southbound				WILLOW RD Westbound				OBRIEN DR Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:45 AM																	
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0	5	
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	
09:15 AM	0	0	0	0	0	0	1	1	0	0	0	0	2	3	0	5	
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	5	
Total Volume	0	0	0	0	0	0	1	1	0	0	0	0	6	12	0	18	
% App. Total	0	0	0	0	0	0	100	0	0	0	0	0	33.3	66.7	0	0	
PHF	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.000	.750	.750	.000	.900	

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 34AM FINAL  
 Site Code : 00000034  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 34PM FINAL  
Site Code : 00000034  
Start Date : 3/21/2019  
Page No : 1

## Groups Printed- Vehicles

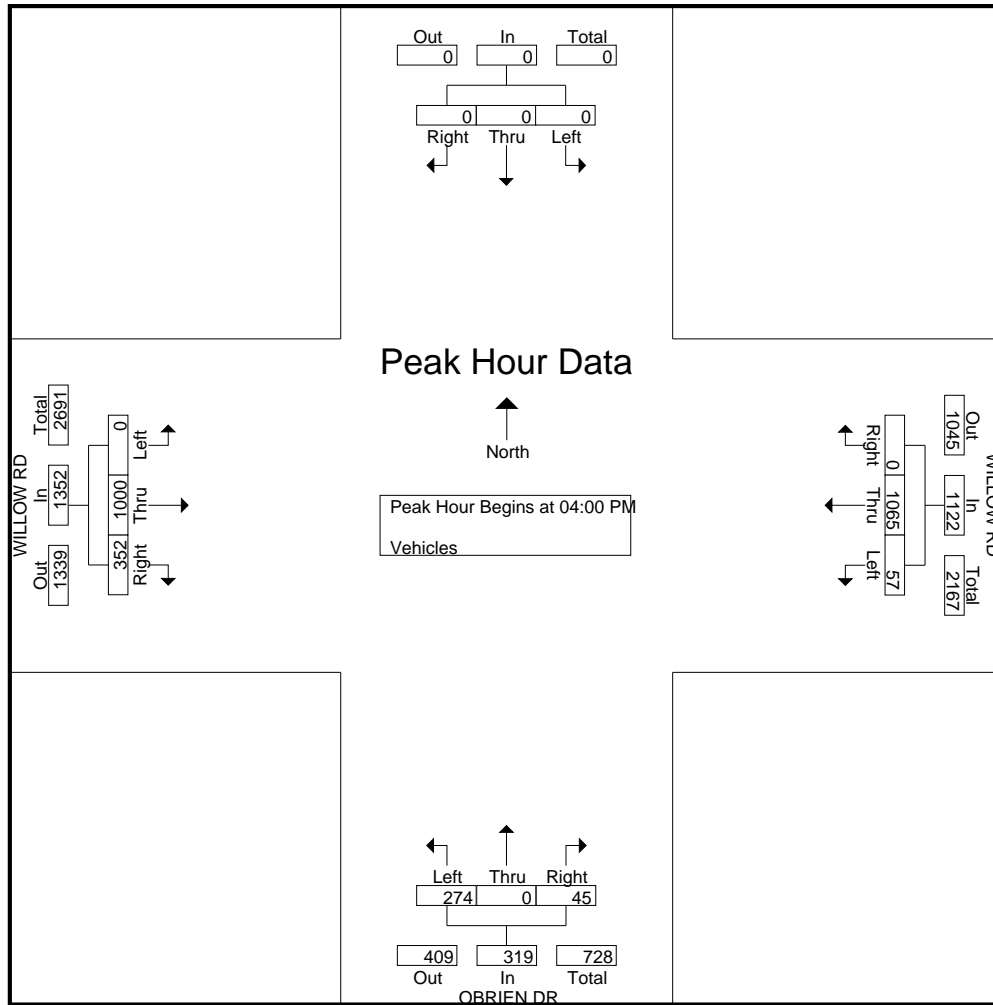
Start Time	Southbound					WILLOW RD Westbound					OBRIEN DR Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	253	15	0	268	10	0	93	1	104	124	253	0	0	377	749
04:15 PM	0	0	0	0	0	0	259	13	0	272	7	0	59	1	67	80	288	0	0	368	707
04:30 PM	0	0	0	0	0	0	281	18	0	299	10	0	65	3	78	83	252	0	0	335	712
04:45 PM	0	0	0	0	0	0	272	11	0	283	18	0	57	5	80	65	207	0	0	272	635
Total	0	0	0	0	0	0	1065	57	0	1122	45	0	274	10	329	352	1000	0	0	1352	2803
05:00 PM	0	0	0	0	0	0	274	20	0	294	8	0	76	1	85	102	220	0	0	322	701
05:15 PM	0	0	0	0	0	0	312	23	0	335	12	0	100	3	115	89	188	0	0	277	727
05:30 PM	0	0	0	0	0	0	292	20	0	312	11	0	64	2	77	95	226	0	0	321	710
05:45 PM	0	0	0	0	0	0	279	11	0	290	13	0	53	2	68	81	199	0	0	280	638
Total	0	0	0	0	0	0	1157	74	0	1231	44	0	293	8	345	367	833	0	0	1200	2776
06:00 PM	0	0	0	0	0	0	325	12	0	337	11	0	45	3	59	76	244	0	0	320	716
06:15 PM	0	0	0	0	0	0	268	23	0	291	9	0	37	2	48	71	240	0	0	311	650
06:30 PM	0	0	0	0	0	0	303	15	0	318	7	0	36	2	45	64	261	0	0	325	688
06:45 PM	0	0	0	0	0	0	270	9	0	279	8	0	21	1	30	69	251	1	0	321	630
Total	0	0	0	0	0	0	1166	59	0	1225	35	0	139	8	182	280	996	1	0	1277	2684
Grand Total	0	0	0	0	0	0	3388	190	0	3578	124	0	706	26	856	999	2829	1	0	3829	8263
Apprch %	0	0	0	0	0	0	94.7	5.3	0		14.5	0	82.5	3		26.1	73.9	0	0		
Total %	0	0	0	0	0	0	41	2.3	0	43.3	1.5	0	8.5	0.3	10.4	12.1	34.2	0	0	46.3	

Start Time	Southbound				WILLOW RD Westbound				OBRIEN DR Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	253	15	268	10	0	<b>93</b>	<b>103</b>	<b>124</b>	253	0	<b>377</b>	<b>748</b>
04:15 PM	0	0	0	0	0	259	13	272	7	0	59	66	80	<b>288</b>	0	368	706
04:30 PM	0	0	0	0	0	<b>281</b>	<b>18</b>	<b>299</b>	10	0	65	75	83	252	0	335	709
04:45 PM	0	0	0	0	0	272	11	283	<b>18</b>	0	57	75	65	207	0	272	630
Total Volume	0	0	0	0	0	1065	57	1122	45	0	274	319	352	1000	0	1352	2793
% App. Total	0	0	0	0	0	94.9	5.1		14.1	0	85.9		26	74	0		
PHF	.000	.000	.000	.000	.000	.948	.792	.938	.625	.000	.737	.774	.710	.868	.000	.897	.933

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 34PM FINAL  
 Site Code : 00000034  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 34PM FINAL  
 Site Code : 00000034  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	Southbound					WILLOW RD Westbound					OBRIEN DR Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	2
04:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	1	1	0	0	2	4
<b>Total</b>	0	0	0	0	0	0	6	0	0	6	0	0	2	0	2	1	2	0	0	3	11
05:00 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
05:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	3	0	3	1	1	0	0	2	6
05:30 PM	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	3
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
<b>Total</b>	0	0	0	0	0	0	4	1	0	5	0	0	6	0	6	1	2	0	0	3	14
06:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	0	0	0	0	3
06:15 PM	0	0	0	0	0	0	3	2	0	5	0	0	1	0	1	1	0	0	0	1	7
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
<b>Total</b>	0	0	0	0	0	0	5	2	0	7	0	0	4	0	4	1	0	0	0	1	12
Grand Total	0	0	0	0	0	0	15	3	0	18	0	0	12	0	12	3	4	0	0	7	37
Apprch %	0	0	0	0		0	83.3	16.7	0		0	0	100	0		42.9	57.1	0	0		
Total %	0	0	0	0	0	0	40.5	8.1	0	48.6	0	0	32.4	0	32.4	8.1	10.8	0	0	18.9	

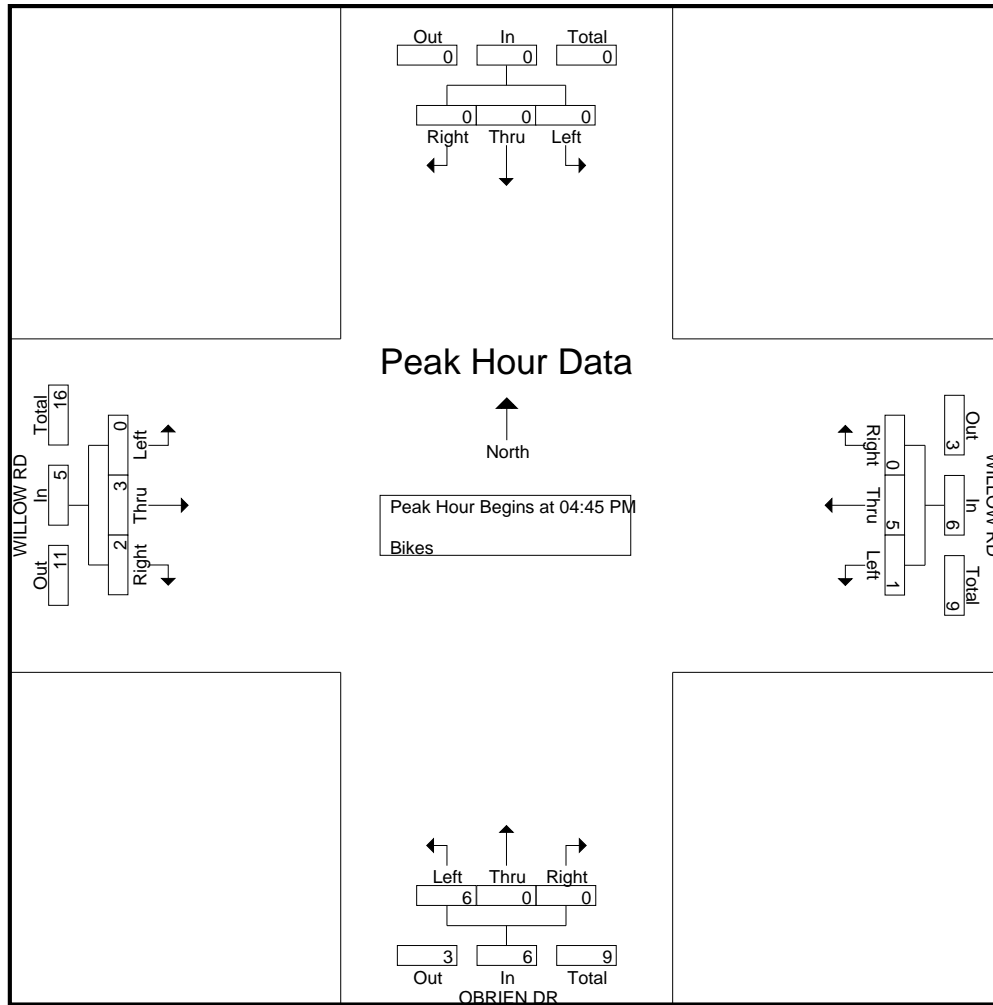
Start Time	Southbound				WILLOW RD Westbound				OBRIEN DR Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	1	0	1	0	0	1	1	1	1	0	2	4
05:00 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
05:15 PM	0	0	0	0	0	1	0	1	0	0	3	3	1	1	0	2	6
05:30 PM	0	0	0	0	0	0	1	1	0	0	2	2	0	0	0	0	3
Total Volume	0	0	0	0	0	5	1	6	0	0	6	6	2	3	0	5	17
% App. Total	0	0	0		0	83.3	16.7		0	0	100		40	60	0		
PHF	.000	.000	.000	.000	.000	.417	.250	.500	.000	.000	.500	.500	.500	.750	.000	.625	.708



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 34PM FINAL  
 Site Code : 00000034  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 33AM FINAL  
 Site Code : 00000033  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Vehicles

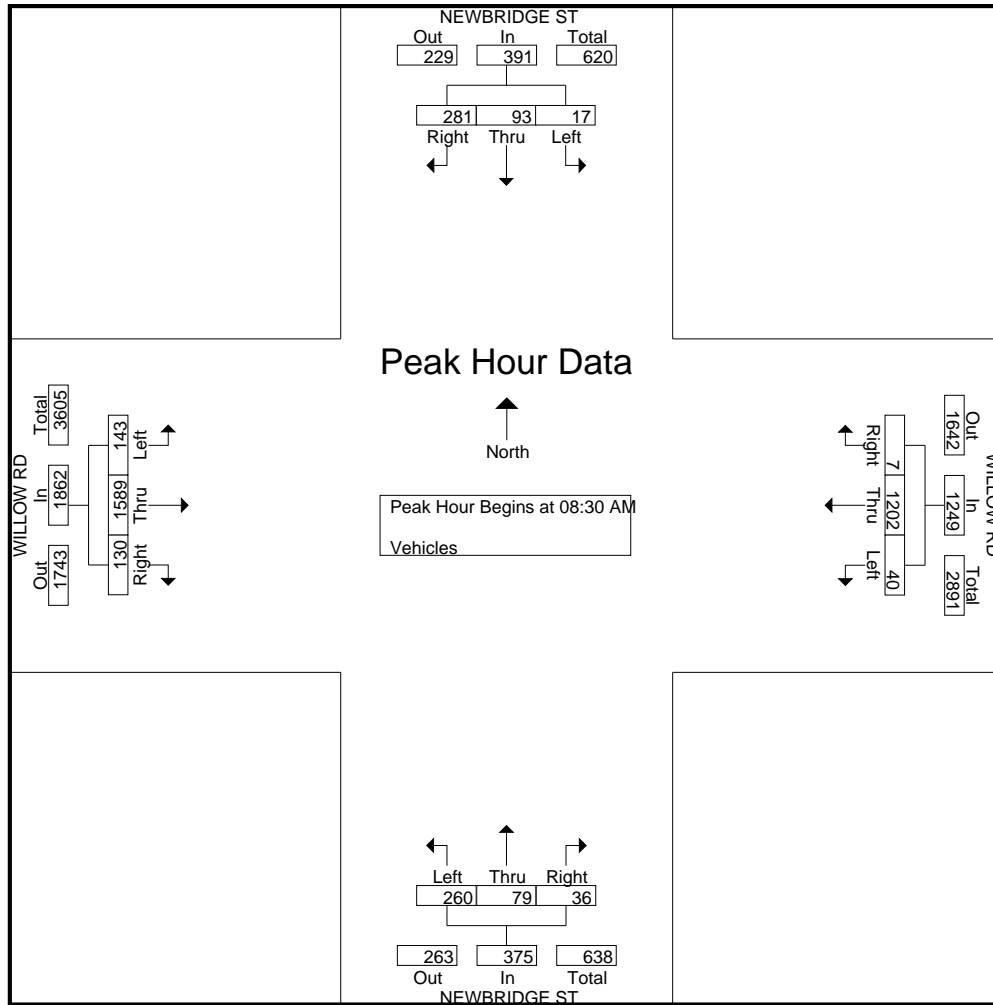
Start Time	NEWBRIDGE ST Southbound					WILLOW RD Westbound					NEWBRIDGE ST Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	77	32	5	0	114	2	381	7	6	396	10	32	78	0	120	23	167	20	3	213	843
07:15 AM	92	34	6	0	132	2	381	9	7	399	7	20	68	1	96	29	219	25	0	273	900
07:30 AM	115	31	5	0	151	2	338	9	7	356	5	22	105	2	134	27	224	34	5	290	931
07:45 AM	94	47	9	1	151	0	298	5	10	313	7	20	84	7	118	45	293	27	3	368	950
Total	378	144	25	1	548	6	1398	30	30	1464	29	94	335	10	468	124	903	106	11	1144	3624
08:00 AM	81	36	11	2	130	0	220	5	9	234	7	30	86	2	125	45	347	36	4	432	921
08:15 AM	96	44	10	1	151	7	200	5	16	228	3	40	72	0	115	36	346	41	1	424	918
08:30 AM	65	27	2	1	95	1	253	7	3	264	6	23	58	0	87	27	407	31	6	471	917
08:45 AM	93	31	6	1	131	1	282	8	6	297	7	25	97	1	130	34	384	28	5	451	1009
Total	335	138	29	5	507	9	955	25	34	1023	23	118	313	3	457	142	1484	136	16	1778	3765
09:00 AM	64	24	6	1	95	2	349	17	11	379	8	18	72	4	102	32	392	23	4	451	1027
09:15 AM	59	11	3	2	75	3	318	8	3	332	15	13	33	0	61	37	406	61	0	504	972
09:30 AM	77	9	2	2	90	5	301	12	6	324	9	13	37	1	60	39	304	49	3	395	869
09:45 AM	76	13	1	4	94	3	334	15	9	361	8	13	41	0	62	33	290	47	0	370	887
Total	276	57	12	9	354	13	1302	52	29	1396	40	57	183	5	285	141	1392	180	7	1720	3755
Grand Total	989	339	66	15	1409	28	3655	107	93	3883	92	269	831	18	1210	407	3779	422	34	4642	11144
Apprch %	70.2	24.1	4.7	1.1		0.7	94.1	2.8	2.4		7.6	22.2	68.7	1.5		8.8	81.4	9.1	0.7		
Total %	8.9	3	0.6	0.1	12.6	0.3	32.8	1	0.8	34.8	0.8	2.4	7.5	0.2	10.9	3.7	33.9	3.8	0.3	41.7	

Start Time	NEWBRIDGE ST Southbound				WILLOW RD Westbound				NEWBRIDGE ST Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:30 AM																	
08:30 AM	65	27	2	94	1	253	7	261	6	23	58	87	27	<b>407</b>	31	465	907
08:45 AM	<b>93</b>	<b>31</b>	<b>6</b>	<b>130</b>	1	282	8	291	7	<b>25</b>	<b>97</b>	<b>129</b>	34	384	28	446	996
09:00 AM	64	24	6	94	2	<b>349</b>	<b>17</b>	<b>368</b>	8	18	72	98	32	392	23	447	<b>1007</b>
09:15 AM	59	11	3	73	<b>3</b>	318	8	329	<b>15</b>	13	33	61	<b>37</b>	406	<b>61</b>	<b>504</b>	967
Total Volume	281	93	17	391	7	1202	40	1249	36	79	260	375	130	1589	143	1862	3877
% App. Total	71.9	23.8	4.3		0.6	96.2	3.2		9.6	21.1	69.3		7	85.3	7.7		
PHF	.755	.750	.708	.752	.583	.861	.588	.849	.600	.790	.670	.727	.878	.976	.586	.924	.963

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 33AM FINAL  
 Site Code : 00000033  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 33AM FINAL  
 Site Code : 00000033  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

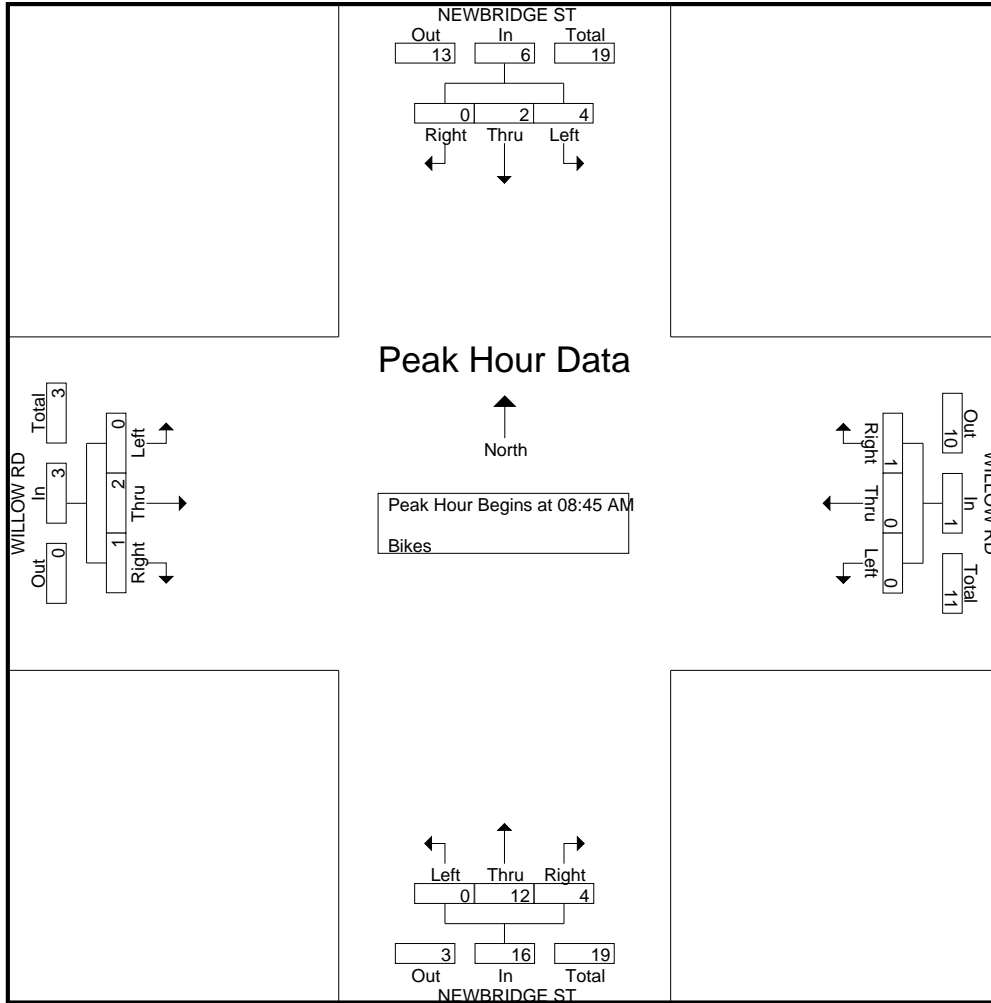
Start Time	NEWBRIDGE ST Southbound					WILLOW RD Westbound					NEWBRIDGE ST Northbound					WILLOW RD Eastbound					Int. Total	
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total		
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	0	3
07:30 AM	0	0	0	0	0	0	0	1	0	1	0	3	0	0	3	1	1	0	0	2	0	6
07:45 AM	0	0	1	0	1	0	0	2	0	2	1	2	0	0	3	0	1	0	0	1	0	7
<b>Total</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>17</b>	
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	0	3
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	2	0	2	1	0	0	0	1	0	9	0	0	9	0	2	0	0	2	0	14
<b>Total</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>20</b>	
09:00 AM	0	0	1	0	1	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	0	4
09:15 AM	0	1	1	0	2	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	4
09:30 AM	0	1	0	0	1	0	0	0	0	0	2	0	0	0	2	1	0	0	0	1	0	4
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	2
<b>Total</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>14</b>	
Grand Total	0	2	5	0	7	1	0	3	0	4	7	21	0	0	28	2	10	0	0	12	51	
Apprch %	0	28.6	71.4	0		25	0	75	0		25	75	0	0		16.7	83.3	0	0			
Total %	0	3.9	9.8	0	13.7	2	0	5.9	0	7.8	13.7	41.2	0	0	54.9	3.9	19.6	0	0	23.5		

Start Time	NEWBRIDGE ST Southbound				WILLOW RD Westbound				NEWBRIDGE ST Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:45 AM																	
08:45 AM	0	0	2	2	1	0	0	1	0	9	0	9	0	2	0	2	14
09:00 AM	0	0	1	1	0	0	0	0	1	2	0	3	0	0	0	0	4
09:15 AM	0	1	1	2	0	0	0	0	1	1	0	2	0	0	0	0	4
09:30 AM	0	1	0	1	0	0	0	0	2	0	0	2	1	0	0	1	4
Total Volume	0	2	4	6	1	0	0	1	4	12	0	16	1	2	0	3	26
% App. Total	0	33.3	66.7		100	0	0		25	75	0		33.3	66.7	0		
PHF	.000	.500	.500	.750	.250	.000	.000	.250	.500	.333	.000	.444	.250	.250	.000	.375	.464

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 33AM FINAL  
 Site Code : 00000033  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
**(408) 622-4787**  
*tdsbay@cs.com*

File Name : 33PM FINAL  
 Site Code : 00000033  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Vehicles

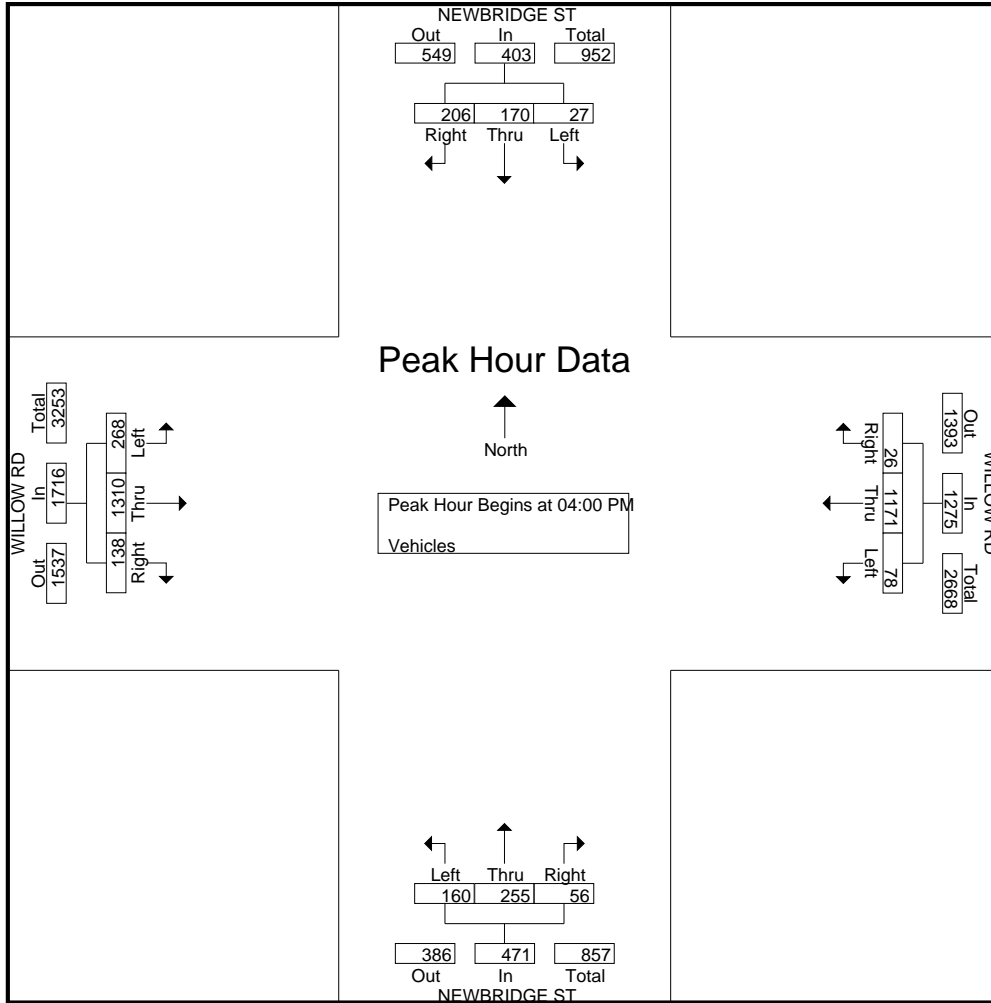
Start Time	NEWBRIDGE ST Southbound					WILLOW RD Westbound					NEWBRIDGE ST Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	53	43	8	3	107	10	298	18	9	335	12	74	45	1	132	43	389	55	3	490	1064
04:15 PM	53	52	4	2	111	6	282	23	19	330	20	60	39	3	122	36	343	63	7	449	1012
04:30 PM	51	39	9	5	104	5	276	19	5	305	12	52	38	1	103	35	348	73	9	465	977
04:45 PM	49	36	6	4	95	5	315	18	6	344	12	69	38	1	120	24	230	77	2	333	892
<b>Total</b>	206	170	27	14	417	26	1171	78	39	1314	56	255	160	6	477	138	1310	268	21	1737	3945
05:00 PM	55	49	5	11	120	3	323	16	23	365	27	58	36	1	122	31	291	59	5	386	993
05:15 PM	66	62	10	6	144	7	369	19	10	405	19	64	33	1	117	35	224	43	2	304	970
05:30 PM	46	60	5	7	118	8	317	15	10	350	18	60	47	3	128	52	271	83	11	417	1013
05:45 PM	43	55	8	3	109	5	327	23	9	364	16	53	40	2	111	45	223	82	9	359	943
<b>Total</b>	210	226	28	27	491	23	1336	73	52	1484	80	235	156	7	478	163	1009	267	27	1466	3919
06:00 PM	59	49	6	0	114	5	284	29	20	338	18	70	29	3	120	45	328	67	4	444	1016
06:15 PM	50	53	7	4	114	4	243	15	7	269	20	63	39	3	125	39	278	81	6	404	912
06:30 PM	38	29	7	0	74	1	193	16	15	225	11	54	46	0	111	69	293	56	5	423	833
06:45 PM	54	41	5	0	100	7	205	19	6	237	23	54	47	2	126	55	254	77	9	395	858
<b>Total</b>	201	172	25	4	402	17	925	79	48	1069	72	241	161	8	482	208	1153	281	24	1666	3619
Grand Total	617	568	80	45	1310	66	3432	230	139	3867	208	731	477	21	1437	509	3472	816	72	4869	11483
Apprch %	47.1	43.4	6.1	3.4		1.7	88.8	5.9	3.6		14.5	50.9	33.2	1.5		10.5	71.3	16.8	1.5		
Total %	5.4	4.9	0.7	0.4	11.4	0.6	29.9	2	1.2	33.7	1.8	6.4	4.2	0.2	12.5	4.4	30.2	7.1	0.6	42.4	

Start Time	NEWBRIDGE ST Southbound					WILLOW RD Westbound					NEWBRIDGE ST Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	<b>53</b>	43	8		104	<b>10</b>	298	18		326	12	<b>74</b>	45		131	<b>43</b>	<b>389</b>	55		487	<b>1048</b>
04:15 PM	53	<b>52</b>	4		109	6	282	<b>23</b>		311	<b>20</b>	60	39		119	36	343	63		442	981
04:30 PM	51	39	<b>9</b>		99	5	276	19		300	12	52	38		102	35	348	73		456	957
04:45 PM	49	36	6		91	5	<b>315</b>	18		<b>338</b>	12	69	38		119	24	230	<b>77</b>		331	879
Total Volume	206	170	27		403	26	1171	78		1275	56	255	160		471	138	1310	268		1716	3865
% App. Total	51.1	42.2	6.7			2	91.8	6.1			11.9	54.1	34			8	76.3	15.6			
PHF	.972	.817	.750		.924	.650	.929	.848		.943	.700	.861	.889		.899	.802	.842	.870		.881	.922

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 33PM FINAL  
 Site Code : 00000033  
 Start Date : 3/21/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 33PM FINAL  
 Site Code : 00000033  
 Start Date : 3/21/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	NEWBRIDGE ST Southbound					WILLOW RD Westbound					NEWBRIDGE ST Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	1	0	0	1	0	1	2	0	3	0	0	0	0	0	0
04:15 PM	0	2	0	0	2	0	2	0	0	2	1	0	0	0	1	0	0	0	0	0	0
04:30 PM	2	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>
05:00 PM	0	1	0	0	1	0	0	0	0	0	2	0	0	0	2	1	0	0	0	1	4
05:15 PM	0	1	0	0	1	2	1	0	0	3	0	1	0	0	1	0	2	0	0	2	7
05:30 PM	0	0	0	0	0	2	0	1	0	3	0	1	0	0	1	0	1	0	0	1	5
05:45 PM	0	0	1	0	1	1	0	1	0	2	0	0	1	0	1	0	0	0	0	0	4
<b>Total</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>20</b>
06:00 PM	0	1	0	0	1	1	0	1	0	2	1	1	0	0	2	0	1	0	0	1	6
06:15 PM	0	1	0	0	1	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	4
06:30 PM	0	0	0	0	0	0	0	4	0	4	0	3	0	0	3	0	1	0	0	1	8
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>9</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>18</b>
Grand Total	2	6	1	0	9	10	4	8	0	22	4	9	3	0	16	1	5	0	0	6	53
Apprch %	22.2	66.7	11.1	0		45.5	18.2	36.4	0		25	56.2	18.8	0		16.7	83.3	0	0		
Total %	3.8	11.3	1.9	0	17	18.9	7.5	15.1	0	41.5	7.5	17	5.7	0	30.2	1.9	9.4	0	0	11.3	

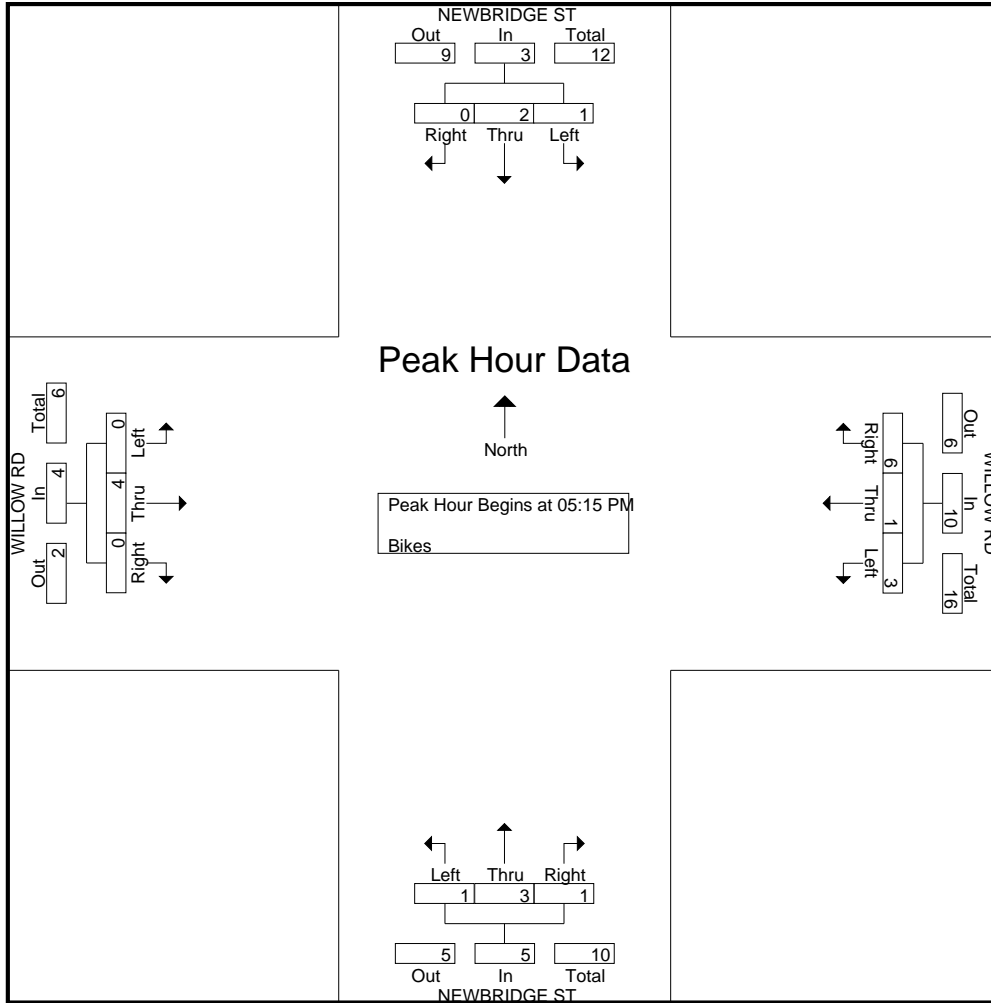
Start Time	NEWBRIDGE ST Southbound				WILLOW RD Westbound				NEWBRIDGE ST Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:15 PM																	
05:15 PM	0	1	0	1	2	1	0	3	0	1	0	1	0	2	0	2	7
05:30 PM	0	0	0	0	2	0	1	3	0	1	0	1	0	1	0	1	5
05:45 PM	0	0	1	1	1	0	1	2	0	0	1	1	0	0	0	0	4
06:00 PM	0	1	0	1	1	0	1	2	1	1	0	2	0	1	0	1	6
Total Volume	0	2	1	3	6	1	3	10	1	3	1	5	0	4	0	4	22
% App. Total	0	66.7	33.3		60	10	30		20	60	20		0	100	0		
PHF	.000	.500	.250	.750	.750	.250	.750	.833	.250	.750	.250	.625	.000	.500	.000	.500	.786



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 33PM FINAL  
 Site Code : 00000033  
 Start Date : 3/21/2019  
 Page No : 2

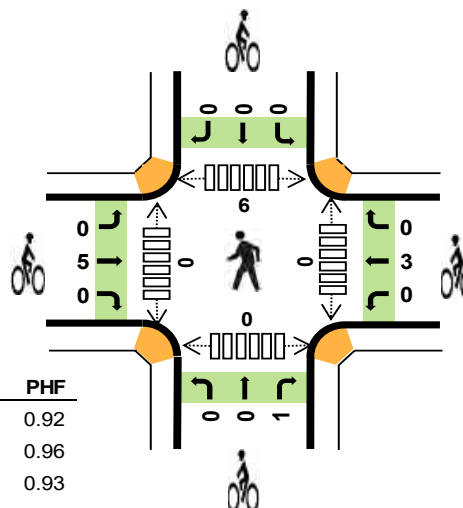
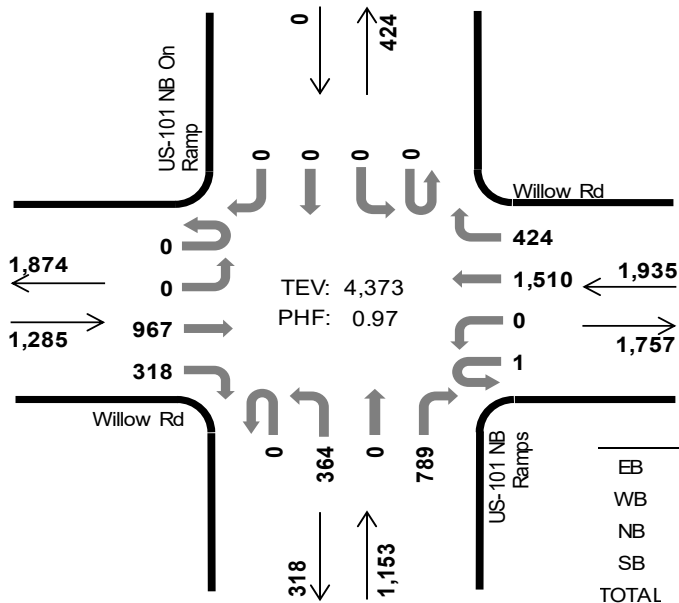


# US-101 NB Ramps Willow Rd



Peak Hour

Date: 03-13-2019  
 Count Period: 7:00 AM to 10:00 AM  
 Peak Hour: 8:15 AM to 9:15 AM



	HV %:	PHF
EB	3.7%	0.92
WB	7.9%	0.96
NB	4.7%	0.93
SB	-	-
TOTAL	5.8%	0.97

## Three-Hour Count Summaries

Interval Start	Willow Rd Eastbound				Willow Rd Westbound				US-101 NB Ramps Northbound				US-101 NB On Ramp Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:15 AM	0	0	246	81	1	0	359	116	0	101	0	153	0	0	0	0	1,057	0	
8:30 AM	0	0	242	77	0	0	378	97	0	85	0	207	0	0	0	0	1,086	0	
8:45 AM	0	0	262	87	0	0	370	108	0	91	0	205	0	0	0	0	1,123	0	
9:00 AM	0	0	217	73	0	0	403	103	0	87	0	224	0	0	0	0	1,107	4,373	
Peak Hour	All	0	0	967	318	1	0	1,510	424	0	364	0	789	0	0	0	0	4,373	0
	HV	0	0	42	5	0	0	104	48	0	9	0	45	0	0	0	0	253	0
	HV%	-	-	4%	2%	0%	-	7%	11%	-	2%	-	6%	-	-	-	-	6%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:15 AM	14	26	14	0	54	0	0	1	0	1	0	0	1	0	1
8:30 AM	13	26	17	0	56	2	2	0	0	4	0	0	3	0	3
8:45 AM	9	25	10	0	44	2	0	0	0	2	0	0	1	0	1
9:00 AM	11	75	13	0	99	1	1	0	0	2	0	0	1	0	1
Peak Hour	47	152	54	0	253	5	3	1	0	9	0	0	6	0	6

### Three-Hour Count Summaries

Interval Start	Willow Rd				Willow Rd				US-101 NB Ramps				US-101 NB On Ramp				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	137	44	0	0	445	111	0	89	0	93	0	0	0	0	919	0	
7:15 AM	0	0	134	81	0	0	399	136	0	131	0	155	0	0	0	0	1,036	0	
7:30 AM	0	0	186	70	0	0	370	125	0	126	0	138	0	0	0	1	1,016	0	
7:45 AM	2	0	225	61	0	0	389	126	0	102	0	176	0	0	0	0	1,081	4,052	
8:00 AM	0	0	229	85	0	0	280	102	0	123	0	160	0	0	0	0	979	4,112	
8:15 AM	0	0	246	81	1	0	359	116	0	101	0	153	0	0	0	0	1,057	4,133	
8:30 AM	0	0	242	77	0	0	378	97	0	85	0	207	0	0	0	0	1,086	4,203	
8:45 AM	0	0	262	87	0	0	370	108	0	91	0	205	0	0	0	0	1,123	4,245	
9:00 AM	0	0	217	73	0	0	403	103	0	87	0	224	0	0	0	0	1,107	4,373	
9:15 AM	0	0	246	63	0	0	375	77	0	84	0	207	0	0	0	0	1,052	4,368	
9:30 AM	0	1	207	61	0	0	337	75	0	79	0	159	0	0	0	1	920	4,202	
9:45 AM	0	0	209	93	0	0	382	83	0	78	0	170	0	0	0	0	1,015	4,094	
Count Total	2	1	2,540	876	1	0	4,487	1,259	0	1,176	0	2,047	0	0	0	2	12,391	0	
Peak Hour	All	0	0	967	318	1	0	1,510	424	0	364	0	789	0	0	0	0	4,373	0
	HV	0	0	42	5	0	0	104	48	0	9	0	45	0	0	0	0	253	0
	HV%	-	-	4%	2%	0%	-	7%	11%	-	2%	-	6%	-	-	-	-	6%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	9	28	11	0	48	0	0	0	0	0	0	1	0	0	1
7:15 AM	7	27	11	0	45	2	0	0	0	2	3	2	4	0	9
7:30 AM	9	16	15	1	41	0	3	0	0	3	1	0	1	0	2
7:45 AM	13	18	16	0	47	2	0	0	0	2	0	0	0	0	0
8:00 AM	12	30	20	0	62	2	0	0	0	2	0	0	1	0	1
8:15 AM	14	26	14	0	54	0	0	1	0	1	0	0	1	0	1
8:30 AM	13	26	17	0	56	2	2	0	0	4	0	0	3	0	3
8:45 AM	9	25	10	0	44	2	0	0	0	2	0	0	1	0	1
9:00 AM	11	75	13	0	99	1	1	0	0	2	0	0	1	0	1
9:15 AM	15	21	19	0	55	1	0	0	0	1	0	0	4	0	4
9:30 AM	14	20	26	0	60	1	2	1	0	4	1	2	3	0	6
9:45 AM	13	33	11	0	57	2	0	0	0	2	0	0	1	0	1
Count Total	139	345	183	1	668	15	8	2	0	25	5	5	20	0	30
Peak Hour	47	152	54	0	253	5	3	1	0	9	0	0	6	0	6

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Rd				Willow Rd				US-101 NB Ramps				US-101 NB On Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	9	0	0	0	25	3	0	3	0	8	0	0	0	0	48	0
7:15 AM	0	0	5	2	0	0	22	5	0	4	0	7	0	0	0	0	45	0
7:30 AM	0	0	9	0	0	0	13	3	0	3	0	12	0	0	0	1	41	0
7:45 AM	0	0	12	1	0	0	13	5	0	3	0	13	0	0	0	0	47	181
8:00 AM	0	0	11	1	0	0	25	5	0	6	0	14	0	0	0	0	62	195
8:15 AM	0	0	13	1	0	0	17	9	0	4	0	10	0	0	0	0	54	204
8:30 AM	0	0	13	0	0	0	22	4	0	2	0	15	0	0	0	0	56	219
8:45 AM	0	0	7	2	0	0	20	5	0	0	0	10	0	0	0	0	44	216
9:00 AM	0	0	9	2	0	0	45	30	0	3	0	10	0	0	0	0	99	253
9:15 AM	0	0	12	3	0	0	12	9	0	2	0	17	0	0	0	0	55	254
9:30 AM	0	1	11	2	0	0	13	7	0	3	0	23	0	0	0	0	60	258
9:45 AM	0	0	10	3	0	0	21	12	0	0	0	11	0	0	0	0	57	271
Count Total	0	1	121	17	0	0	248	97	0	33	0	150	0	0	0	1	668	0
Peak Hour	0	0	42	5	0	0	104	48	0	9	0	45	0	0	0	0	253	0

### Three-Hour Count Summaries - Bikes

Interval Start	Willow Rd			Willow Rd			US-101 NB Ramps			US-101 NB On Ramp			15-min Total	Rolling One Hour		
	Eastbound			Westbound			Northbound			Southbound						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
7:15 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2		
7:30 AM	0	0	0	0	3	0	0	0	0	0	0	0	0	3		
7:45 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2		
8:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2		
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	8
8:30 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	4	9
8:45 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	9
9:00 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	9
9:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	9
9:30 AM	0	1	0	0	0	2	0	0	0	0	1	0	0	0	4	9
9:45 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	9
Count Total	0	15	0	0	8	0	0	0	0	2	0	0	0	25	0	
Peak Hour	0	5	0	0	3	0	0	0	0	1	0	0	0	9	0	

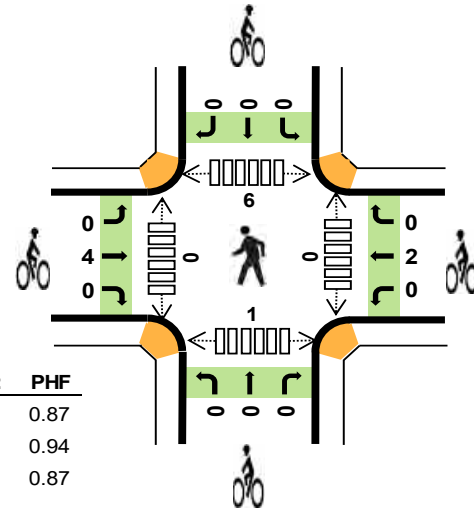
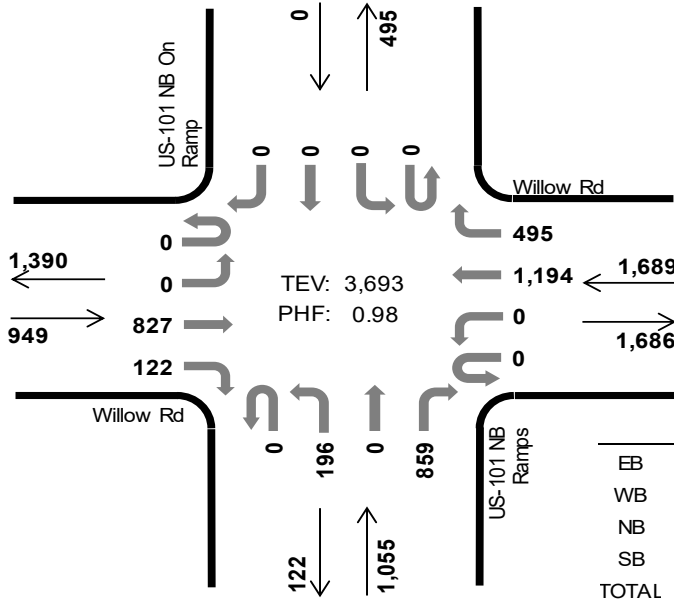
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# US-101 NB Ramps Willow Rd



Peak Hour

Date: 03-13-2019  
 Count Period: 4:00 PM to 7:00 PM  
 Peak Hour: 5:00 PM to 6:00 PM



	HV %:	PHF
EB	3.1%	0.87
WB	2.8%	0.94
NB	4.2%	0.87
SB	-	-
TOTAL	3.3%	0.98

## Three-Hour Count Summaries

Interval Start	Willow Rd Eastbound				Willow Rd Westbound				US-101 NB Ramps Northbound				US-101 NB On Ramp Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
5:00 PM	0	0	183	30	0	0	285	139	0	36	0	268	0	0	0	0	941	0	
5:15 PM	0	0	223	20	0	0	312	135	0	43	0	194	0	0	0	0	927	0	
5:30 PM	0	0	235	38	0	0	315	117	0	49	0	171	0	0	0	0	925	0	
5:45 PM	0	0	186	34	0	0	282	104	0	68	0	226	0	0	0	0	900	3,693	
Peak Hour	All	0	0	827	122	0	0	1,194	495	0	196	0	859	0	0	0	0	3,693	0
	HV	0	0	28	1	0	0	25	23	0	1	0	43	0	0	0	0	121	0
	HV%	-	-	3%	1%	-	-	2%	5%	-	1%	-	5%	-	-	-	-	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:00 PM	3	12	14	0	29	0	2	0	0	2	0	0	0	0	0
5:15 PM	10	13	8	0	31	1	0	0	0	1	0	0	3	0	3
5:30 PM	11	11	10	0	32	0	0	0	0	0	0	0	1	1	2
5:45 PM	5	12	12	0	29	3	0	0	0	3	0	0	2	0	2
Peak Hour	29	48	44	0	121	4	2	0	0	6	0	0	6	1	7

### Three-Hour Count Summaries

Interval Start	Willow Rd				Willow Rd				US-101 NB Ramps				US-101 NB On Ramp				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	232	41	0	0	226	127	0	54	0	258	0	0	0	0	938	0	
4:15 PM	0	0	277	63	0	0	254	111	0	41	0	151	0	0	0	0	897	0	
4:30 PM	0	0	176	42	0	0	209	134	0	47	0	223	0	0	0	0	831	0	
4:45 PM	0	0	94	10	0	0	282	102	0	33	0	231	0	0	0	0	752	3,418	
<b>5:00 PM</b>	<b>0</b>	<b>0</b>	<b>183</b>	<b>30</b>	<b>0</b>	<b>0</b>	<b>285</b>	<b>139</b>	<b>0</b>	<b>36</b>	<b>0</b>	<b>268</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>941</b>	3,421	
<b>5:15 PM</b>	<b>0</b>	<b>0</b>	<b>223</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>312</b>	<b>135</b>	<b>0</b>	<b>43</b>	<b>0</b>	<b>194</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>927</b>	3,451	
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>235</b>	<b>38</b>	<b>0</b>	<b>0</b>	<b>315</b>	<b>117</b>	<b>0</b>	<b>49</b>	<b>0</b>	<b>171</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>925</b>	3,545	
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>186</b>	<b>34</b>	<b>0</b>	<b>0</b>	<b>282</b>	<b>104</b>	<b>0</b>	<b>68</b>	<b>0</b>	<b>226</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>900</b>	<b>3,693</b>	
6:00 PM	0	0	181	20	0	0	253	104	0	66	0	252	0	0	0	0	876	3,628	
6:15 PM	0	0	214	26	0	0	274	90	0	66	0	277	0	0	0	0	947	3,648	
6:30 PM	0	0	157	50	0	0	290	107	0	73	0	216	0	0	0	0	893	3,616	
6:45 PM	0	0	168	41	0	0	253	68	0	72	0	230	0	0	0	0	832	3,548	
Count Total	0	0	2,326	415	0	0	3,235	1,338	0	648	0	2,697	0	0	0	0	10,659	0	
Peak Hour	All	0	0	827	122	0	0	1,194	495	0	196	0	859	0	0	0	0	3,693	0
	HV	0	0	28	1	0	0	25	23	0	1	0	43	0	0	0	0	121	0
	HV%	-	-	3%	1%	-	-	2%	5%	-	1%	-	5%	-	-	-	-	3%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	13	13	0	30	1	2	0	0	3	0	0	2	0	2
4:15 PM	9	13	11	0	33	0	0	0	0	0	0	0	1	0	1
4:30 PM	6	11	13	0	30	0	3	0	0	3	0	0	3	0	3
4:45 PM	2	9	8	0	19	0	4	0	0	4	0	0	2	0	2
<b>5:00 PM</b>	<b>3</b>	<b>12</b>	<b>14</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>5:15 PM</b>	<b>10</b>	<b>13</b>	<b>8</b>	<b>0</b>	<b>31</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>
<b>5:30 PM</b>	<b>11</b>	<b>11</b>	<b>10</b>	<b>0</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>5:45 PM</b>	<b>5</b>	<b>12</b>	<b>12</b>	<b>0</b>	<b>29</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>
6:00 PM	8	6	13	0	27	6	0	0	0	6	0	0	0	0	0
6:15 PM	12	9	8	0	29	0	2	0	0	2	0	0	2	0	2
6:30 PM	7	5	9	0	21	0	1	0	0	1	0	0	1	0	1
6:45 PM	8	8	12	0	28	0	2	0	0	2	0	0	0	0	0
Count Total	85	122	131	0	338	11	16	0	0	27	0	0	17	1	18
Peak Hour	29	48	44	0	121	4	2	0	0	6	0	0	6	1	7

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Rd				Willow Rd				US-101 NB Ramps				US-101 NB On Ramp				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	4	0	0	0	8	5	0	1	0	12	0	0	0	0	30	0
4:15 PM	0	0	8	1	0	0	7	6	0	0	0	11	0	0	0	0	33	0
4:30 PM	0	0	6	0	0	0	7	4	0	1	0	12	0	0	0	0	30	0
4:45 PM	0	0	1	1	0	0	6	3	0	0	0	8	0	0	0	0	19	112
<b>5:00 PM</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>29</b>	111
<b>5:15 PM</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>31</b>	109
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>32</b>	111
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>29</b>	121
6:00 PM	0	0	8	0	0	0	5	1	0	0	0	13	0	0	0	0	27	119
6:15 PM	0	0	12	0	0	0	5	4	0	1	0	7	0	0	0	0	29	117
6:30 PM	0	0	6	1	0	0	3	2	0	1	0	8	0	0	0	0	21	106
6:45 PM	0	0	8	0	0	0	5	3	0	0	0	12	0	0	0	0	28	105
Count Total	0	0	81	4	0	0	71	51	0	5	0	126	0	0	0	0	338	0
Peak Hour	0	0	28	1	0	0	25	23	0	1	0	43	0	0	0	0	121	0

### Three-Hour Count Summaries - Bikes

Interval Start	Willow Rd			Willow Rd			US-101 NB Ramps			US-101 NB On Ramp			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	1	0	0	2	0	0	0	0	0	0	0	3	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	3	0	0	0	0	0	0	0	3	0
4:45 PM	0	0	0	0	4	0	0	0	0	0	0	0	4	10
<b>5:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	9
<b>5:15 PM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	10
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	7
<b>5:45 PM</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	6
6:00 PM	0	6	0	0	0	0	0	0	0	0	0	0	6	10
6:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	2	11
6:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	12
6:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	2	11
Count Total	0	11	0	0	16	0	0	0	0	0	0	0	27	0
Peak Hour	0	4	0	0	2	0	0	0	0	0	0	0	6	0

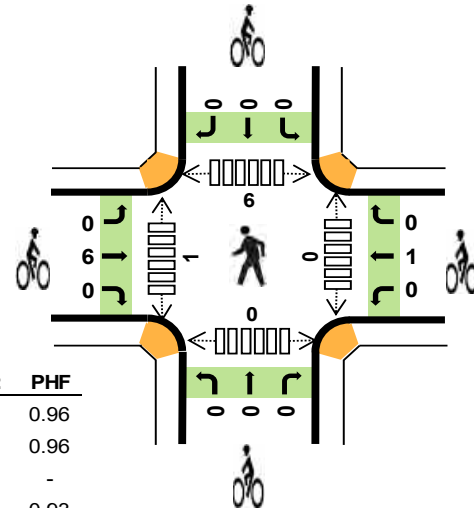
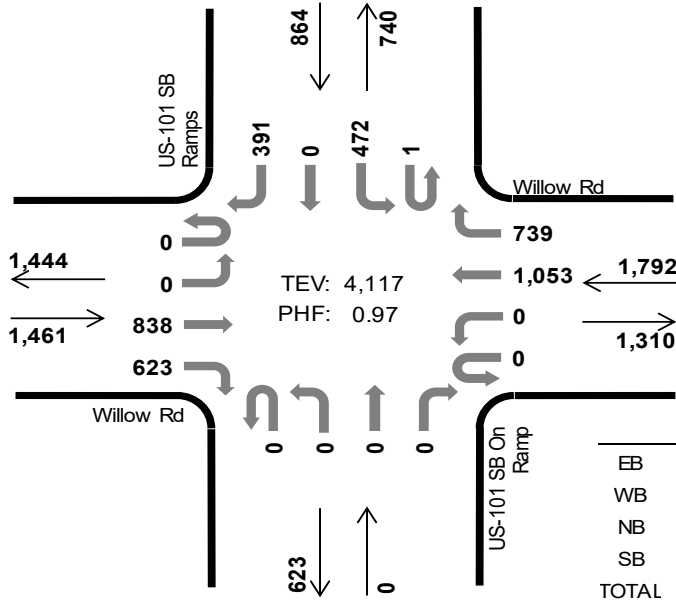
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# US-101 SB On Ramp Willow Rd



Peak Hour

Date: 03-13-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	2.4%	0.96
WB	5.2%	0.96
NB	-	-
SB	4.1%	0.93
TOTAL	4.0%	0.97

## Three-Hour Count Summaries

Interval Start	Willow Rd Eastbound				Willow Rd Westbound				US-101 SB On Ramp Northbound				US-101 SB Ramps Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:00 AM	0	0	215	159	0	0	267	137	0	0	0	0	0	97	0	123	998	0	
8:15 AM	0	0	207	174	0	0	278	189	0	0	0	0	0	118	0	91	1,057	0	
8:30 AM	0	0	201	172	0	0	237	220	0	0	0	0	1	116	0	86	1,033	0	
8:45 AM	0	0	215	118	0	0	271	193	0	0	0	0	0	141	0	91	1,029	4,117	
Peak Hour	All	0	0	838	623	0	0	1,053	739	0	0	0	0	1	472	0	391	4,117	0
	HV	0	0	22	13	0	0	34	60	0	0	0	0	0	26	0	9	164	0
	HV%	-	-	3%	2%	-	-	3%	8%	-	-	-	-	0%	6%	-	2%	4%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	6	32	0	9	47	2	1	0	0	3	0	1	1	0	2
8:15 AM	10	21	0	11	42	0	0	0	0	0	0	0	0	0	0
8:30 AM	9	24	0	10	43	2	0	0	0	2	0	0	2	0	2
8:45 AM	10	17	0	5	32	2	0	0	0	2	0	0	3	0	3
Peak Hour	35	94	0	35	164	6	1	0	0	7	0	1	6	0	7



### Three-Hour Count Summaries

Interval Start	Willow Rd				Willow Rd				US-101 SB On Ramp				US-101 SB Ramps				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	100	77	0	0	291	240	0	0	0	0	0	68	0	61	837	0	
7:15 AM	0	0	140	84	0	0	319	198	0	0	0	0	0	72	0	81	894	0	
7:30 AM	0	0	156	113	0	0	317	172	0	0	0	0	0	99	0	79	936	0	
7:45 AM	0	0	178	144	0	0	297	185	0	0	0	0	0	102	0	93	999	3,666	
8:00 AM	0	0	215	159	0	0	267	137	0	0	0	0	0	97	0	123	998	3,827	
8:15 AM	0	0	207	174	0	0	278	189	0	0	0	0	0	118	0	91	1,057	3,990	
8:30 AM	0	0	201	172	0	0	237	220	0	0	0	0	1	116	0	86	1,033	4,087	
8:45 AM	0	0	215	118	0	0	271	193	0	0	0	0	0	141	0	91	1,029	4,117	
9:00 AM	0	0	182	139	0	0	275	222	0	0	0	0	0	105	0	67	990	4,109	
9:15 AM	0	0	191	170	0	0	239	226	0	0	0	0	0	120	0	85	1,031	4,083	
9:30 AM	0	0	162	158	1	0	205	204	0	0	0	0	0	106	0	66	902	3,952	
9:45 AM	0	0	176	123	0	0	192	249	0	0	0	0	0	122	0	93	955	3,878	
Count Total	0	0	2,123	1,631	1	0	3,188	2,435	0	0	0	0	1	1,266	0	1,016	11,661	0	
Peak Hour	All	0	0	838	623	0	0	1,053	739	0	0	0	0	1	472	0	391	4,117	0
	HV	0	0	22	13	0	0	34	60	0	0	0	0	0	26	0	9	164	0
	HV%	-	-	3%	2%	-	-	3%	8%	-	-	-	-	0%	6%	-	2%	4%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	10	27	0	2	39	0	0	0	0	0	0	0	0	0	0
7:15 AM	5	27	0	6	38	2	0	0	0	2	0	1	1	0	2
7:30 AM	9	16	0	6	31	3	1	0	0	4	0	0	3	0	3
7:45 AM	6	16	0	12	34	2	0	0	0	2	1	0	1	0	2
8:00 AM	6	32	0	9	47	2	1	0	0	3	0	1	1	0	2
8:15 AM	10	21	0	11	42	0	0	0	0	0	0	0	0	0	0
8:30 AM	9	24	0	10	43	2	0	0	0	2	0	0	2	0	2
8:45 AM	10	17	0	5	32	2	0	0	0	2	0	0	3	0	3
9:00 AM	9	51	0	7	67	1	0	0	0	1	0	0	0	0	0
9:15 AM	10	15	0	11	36	0	0	0	0	0	0	0	5	0	5
9:30 AM	12	16	0	7	35	1	1	0	0	2	0	1	2	0	3
9:45 AM	9	20	0	8	37	2	0	0	0	2	0	1	1	0	2
Count Total	105	282	0	94	481	17	3	0	0	20	1	4	19	0	24
Peak Hour	35	94	0	35	164	6	1	0	0	7	0	1	6	0	7

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Rd				Willow Rd				US-101 SB On Ramp				US-101 SB Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	6	4	0	0	13	14	0	0	0	0	0	2	0	0	39	0
7:15 AM	0	0	4	1	0	0	10	17	0	0	0	0	0	4	0	2	38	0
7:30 AM	0	0	6	3	0	0	9	7	0	0	0	0	0	3	0	3	31	0
7:45 AM	0	0	4	2	0	0	8	8	0	0	0	0	0	9	0	3	34	142
8:00 AM	0	0	4	2	0	0	11	21	0	0	0	0	0	8	0	1	47	150
8:15 AM	0	0	6	4	0	0	8	13	0	0	0	0	0	8	0	3	42	154
8:30 AM	0	0	6	3	0	0	7	17	0	0	0	0	0	7	0	3	43	166
8:45 AM	0	0	6	4	0	0	8	9	0	0	0	0	0	3	0	2	32	164
9:00 AM	0	0	7	2	0	0	21	30	0	0	0	0	0	4	0	3	67	184
9:15 AM	0	0	8	2	0	0	6	9	0	0	0	0	0	7	0	4	36	178
9:30 AM	0	0	6	6	1	0	4	11	0	0	0	0	0	6	0	1	35	170
9:45 AM	0	0	8	1	0	0	4	16	0	0	0	0	0	5	0	3	37	175
Count Total	0	0	71	34	1	0	109	172	0	0	0	0	0	66	0	28	481	0
Peak Hour	0	0	22	13	0	0	34	60	0	0	0	0	0	26	0	9	164	0

### Three-Hour Count Summaries - Bikes

Interval Start	Willow Rd			Willow Rd			US-101 SB On Ramp			US-101 SB Ramps			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	2	0	0	0	0	0	0	0	0	0	0	2	0
7:30 AM	0	3	0	0	1	0	0	0	0	0	0	0	4	0
7:45 AM	0	2	0	0	0	0	0	0	0	0	0	0	2	8
8:00 AM	0	2	0	0	1	0	0	0	0	0	0	0	3	11
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	9
8:30 AM	0	2	0	0	0	0	0	0	0	0	0	0	2	7
8:45 AM	0	2	0	0	0	0	0	0	0	0	0	0	2	7
9:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	5
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5
9:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	2	5
9:45 AM	0	2	0	0	0	0	0	0	0	0	0	0	2	5
Count Total	0	17	0	0	3	0	0	0	0	0	0	0	20	0
Peak Hour	0	6	0	0	1	0	0	0	0	0	0	0	7	0

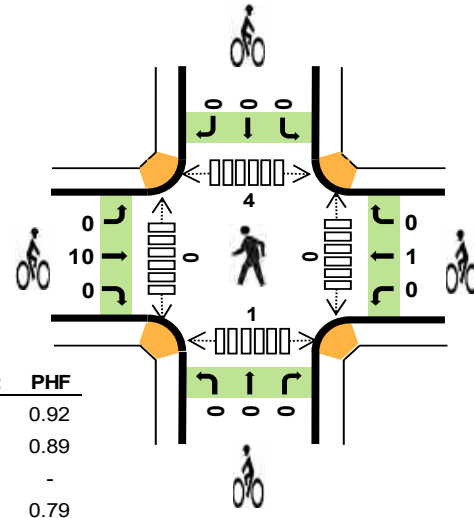
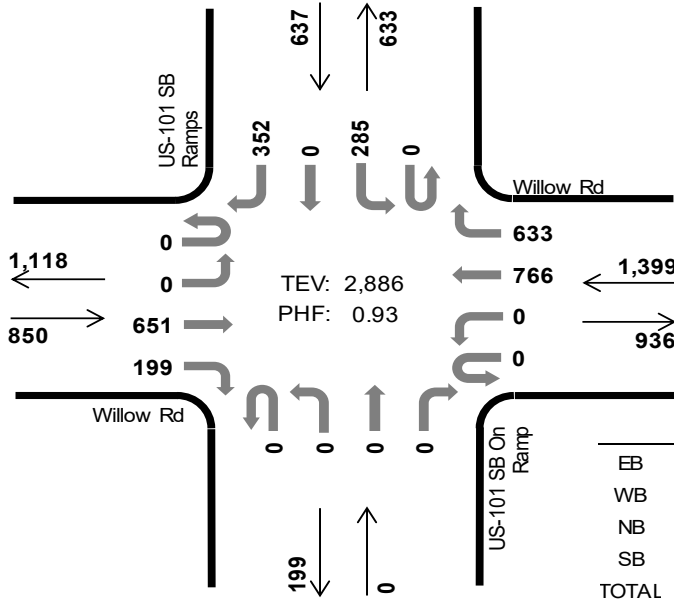
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# US-101 SB On Ramp Willow Rd



Peak Hour

Date: 03-13-2019  
 Count Period: 4:00 PM to 7:00 PM  
 Peak Hour: 5:30 PM to 6:30 PM



	HV %:	PHF
EB	3.1%	0.92
WB	1.5%	0.89
NB	-	-
SB	3.0%	0.79
TOTAL	2.3%	0.93

## Three-Hour Count Summaries

Interval Start	Willow Rd Eastbound				Willow Rd Westbound				US-101 SB On Ramp Northbound				US-101 SB Ramps Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
5:30 PM	0	0	179	43	0	0	207	188	0	0	0	0	0	86	0	73	776	0	
5:45 PM	0	0	185	46	0	0	193	145	0	0	0	0	0	67	0	87	723	0	
6:00 PM	0	0	149	41	0	0	185	142	0	0	0	0	0	38	0	85	640	0	
6:15 PM	0	0	138	69	0	0	181	158	0	0	0	0	0	94	0	107	747	2,886	
Peak Hour	All	0	0	651	199	0	0	766	633	0	0	0	0	0	285	0	352	2,886	0
	HV	0	0	25	1	0	0	14	7	0	0	0	0	0	12	0	7	66	0
	HV%	-	-	4%	1%	-	-	2%	1%	-	-	-	-	-	4%	-	2%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:30 PM	7	6	0	5	18	0	0	0	0	0	0	0	0	1	1
5:45 PM	4	5	0	5	14	3	0	0	0	3	0	0	2	0	2
6:00 PM	7	5	0	3	15	7	0	0	0	7	0	0	0	0	0
6:15 PM	8	5	0	6	19	0	1	0	0	1	0	0	2	0	2
Peak Hour	26	21	0	19	66	10	1	0	0	11	0	0	4	1	5

### Three-Hour Count Summaries

Interval Start	Willow Rd				Willow Rd				US-101 SB On Ramp				US-101 SB Ramps				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	228	89	0	0	123	143	0	0	0	0	0	36	0	53	672	0	
4:15 PM	0	0	259	88	0	0	156	162	0	0	0	0	0	97	0	59	821	0	
4:30 PM	0	0	196	76	0	0	112	138	0	0	0	0	0	40	0	45	607	0	
4:45 PM	0	0	71	33	0	0	155	164	0	0	0	0	0	33	0	44	500	2,600	
5:00 PM	0	0	171	46	0	0	149	172	0	0	0	0	0	37	0	55	630	2,558	
5:15 PM	0	0	164	49	0	0	150	189	0	0	0	0	0	66	0	53	671	2,408	
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>179</b>	<b>43</b>	<b>0</b>	<b>0</b>	<b>207</b>	<b>188</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>86</b>	<b>0</b>	<b>73</b>	<b>776</b>	2,577	
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>185</b>	<b>46</b>	<b>0</b>	<b>0</b>	<b>193</b>	<b>145</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>67</b>	<b>0</b>	<b>87</b>	<b>723</b>	2,800	
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>149</b>	<b>41</b>	<b>0</b>	<b>0</b>	<b>185</b>	<b>142</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>38</b>	<b>0</b>	<b>85</b>	<b>640</b>	2,810	
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>138</b>	<b>69</b>	<b>0</b>	<b>0</b>	<b>181</b>	<b>158</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>94</b>	<b>0</b>	<b>107</b>	<b>747</b>	<b>2,886</b>	
6:30 PM	0	0	137	65	0	0	211	151	0	0	0	0	0	64	0	87	715	2,825	
6:45 PM	0	0	132	70	0	0	172	145	0	0	0	0	0	82	0	65	666	2,768	
Count Total	0	0	2,009	715	0	0	1,994	1,897	0	0	0	0	0	740	0	813	8,168	0	
Peak Hour	All	0	0	651	199	0	0	766	633	0	0	0	0	0	285	0	352	2,886	0
	HV	0	0	25	1	0	0	14	7	0	0	0	0	0	12	0	7	66	0
	HV%	-	-	4%	1%	-	-	2%	1%	-	-	-	-	-	4%	-	2%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	7	8	0	1	16	0	1	0	0	1	0	0	2	1	3
4:15 PM	6	8	0	5	19	0	0	0	0	0	0	0	1	0	1
4:30 PM	4	7	0	3	14	0	3	0	0	3	0	0	3	0	3
4:45 PM	1	7	0	0	8	0	2	0	0	2	0	0	4	0	4
5:00 PM	3	8	0	1	12	0	1	0	1	2	0	0	1	0	1
5:15 PM	7	7	0	4	18	1	0	0	0	1	0	0	5	0	5
<b>5:30 PM</b>	<b>7</b>	<b>6</b>	<b>0</b>	<b>5</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>5:45 PM</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>14</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>
<b>6:00 PM</b>	<b>7</b>	<b>5</b>	<b>0</b>	<b>3</b>	<b>15</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>6:15 PM</b>	<b>8</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>19</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>
6:30 PM	4	4	0	3	11	1	0	0	0	1	0	0	1	0	1
6:45 PM	3	5	0	6	14	0	1	0	1	2	0	0	2	0	2
Count Total	61	75	0	42	178	12	9	0	2	23	0	0	23	2	25
Peak Hour	26	21	0	19	66	10	1	0	0	11	0	0	4	1	5

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Willow Rd				Willow Rd				US-101 SB On Ramp				US-101 SB Ramps				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	2	5	0	0	4	4	0	0	0	0	0	1	0	0	16	0
4:15 PM	0	0	5	1	0	0	4	4	0	0	0	0	0	5	0	0	19	0
4:30 PM	0	0	3	1	0	0	3	4	0	0	0	0	0	3	0	0	14	0
4:45 PM	0	0	1	0	0	0	4	3	0	0	0	0	0	0	0	0	8	57
5:00 PM	0	0	3	0	0	0	5	3	0	0	0	0	0	1	0	0	12	53
5:15 PM	0	0	6	1	0	0	2	5	0	0	0	0	0	4	0	0	18	52
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>18</b>	56
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>14</b>	62
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>15</b>	65
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>19</b>	<b>66</b>
6:30 PM	0	0	4	0	0	0	3	1	0	0	0	0	0	3	0	0	11	59
6:45 PM	0	0	2	1	0	0	2	3	0	0	0	0	0	6	0	0	14	59
Count Total	0	0	51	10	0	0	41	34	0	0	0	0	0	35	0	7	178	0
Peak Hour	0	0	25	1	0	0	14	7	0	0	0	0	0	12	0	7	66	0

### Three-Hour Count Summaries - Bikes

Interval Start	Willow Rd			Willow Rd			US-101 SB On Ramp			US-101 SB Ramps			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	3	0	0	0	0	0	0	0	3	0
4:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	2	6
5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	2	7
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	8
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	5
<b>5:45 PM</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	6
<b>6:00 PM</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	11
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>11</b>
6:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	12
6:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	11
Count Total	0	12	0	0	9	0	0	0	0	0	0	2	23	0
Peak Hour	0	10	0	0	1	0	0	0	0	0	0	0	11	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# Traffic Data Service

San Jose, CA  
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 Site Code : 00000032  
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Groups Printed- Vehicles

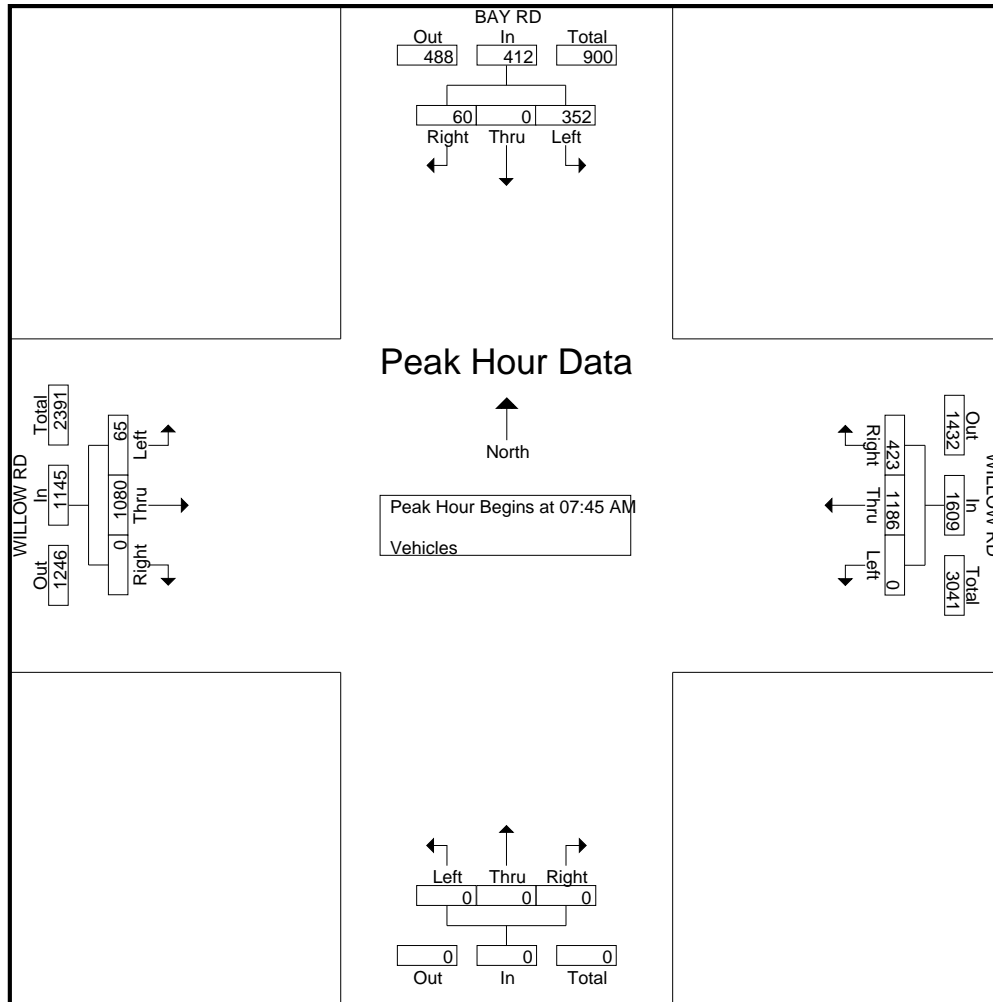
Start Time	BAY RD Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	7	0	34	1	42	89	281	0	0	370	0	0	0	0	0	0	164	7	0	171	583
07:15 AM	2	0	39	1	42	94	258	0	0	352	0	0	0	0	0	0	171	7	0	178	572
07:30 AM	11	0	74	3	88	94	249	0	0	343	0	0	0	0	0	0	190	9	0	199	630
07:45 AM	5	0	58	2	65	135	295	0	0	430	0	0	0	0	0	0	246	15	0	261	756
Total	25	0	205	7	237	412	1083	0	0	1495	0	0	0	0	0	0	771	38	0	809	2541
08:00 AM	25	0	86	1	112	90	286	0	0	376	0	0	0	0	0	0	294	10	0	304	792
08:15 AM	22	0	79	3	104	100	307	0	0	407	0	0	0	0	0	0	293	25	0	318	829
08:30 AM	8	0	129	0	137	98	298	0	0	396	0	0	0	0	0	0	247	15	0	262	795
08:45 AM	10	0	73	2	85	99	300	0	0	399	0	0	0	0	0	0	267	5	0	272	756
Total	65	0	367	6	438	387	1191	0	0	1578	0	0	0	0	0	0	1101	55	0	1156	3172
09:00 AM	10	0	87	2	99	63	260	0	0	323	0	0	0	0	0	0	294	4	0	298	720
09:15 AM	7	0	75	0	82	45	242	0	0	287	0	0	0	0	0	0	225	7	0	232	601
09:30 AM	4	0	50	0	54	40	275	0	0	315	0	0	0	0	0	0	219	8	0	227	596
09:45 AM	6	0	47	0	53	40	245	0	0	285	0	0	0	0	0	0	191	4	0	195	533
Total	27	0	259	2	288	188	1022	0	0	1210	0	0	0	0	0	0	929	23	0	952	2450
Grand Total	117	0	831	15	963	987	3296	0	0	4283	0	0	0	0	0	0	2801	116	0	2917	8163
Apprch %	12.1	0	86.3	1.6		23	77	0	0		0	0	0	0	0	0	96	4	0		
Total %	1.4	0	10.2	0.2	11.8	12.1	40.4	0	0	52.5	0	0	0	0	0	0	34.3	1.4	0	35.7	

Start Time	BAY RD Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	5	0	58	63	135	295	0	430	0	0	0	0	0	246	15	261	754
08:00 AM	25	0	86	111	90	286	0	376	0	0	0	0	0	294	10	304	791
08:15 AM	22	0	79	101	100	307	0	407	0	0	0	0	0	293	25	318	826
08:30 AM	8	0	129	137	98	298	0	396	0	0	0	0	0	247	15	262	795
Total Volume	60	0	352	412	423	1186	0	1609	0	0	0	0	0	1080	65	1145	3166
% App. Total	14.6	0	85.4		26.3	73.7	0		0	0	0		0	94.3	5.7		
PHF	.600	.000	.682	.752	.783	.966	.000	.935	.000	.000	.000	.000	.000	.918	.650	.900	.958

# Traffic Data Service

San Jose, CA  
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# Traffic Data Service

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File Name : 32AM FINAL  
 Site Code : 00000032  
 Start Date : 4/23/2019  
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Groups Printed- Bikes

Start Time	BAY RD Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
<b>Total</b>	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	4
09:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	3
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
<b>Total</b>	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	2	0	6	7
Grand Total	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	0	4	4	0	8	12
Apprch %	100	0	0	0		0	100	0	0		0	0	0	0		0	50	50	0		
Total %	8.3	0	0	0	8.3	0	25	0	0	25	0	0	0	0	0	0	33.3	33.3	0	66.7	

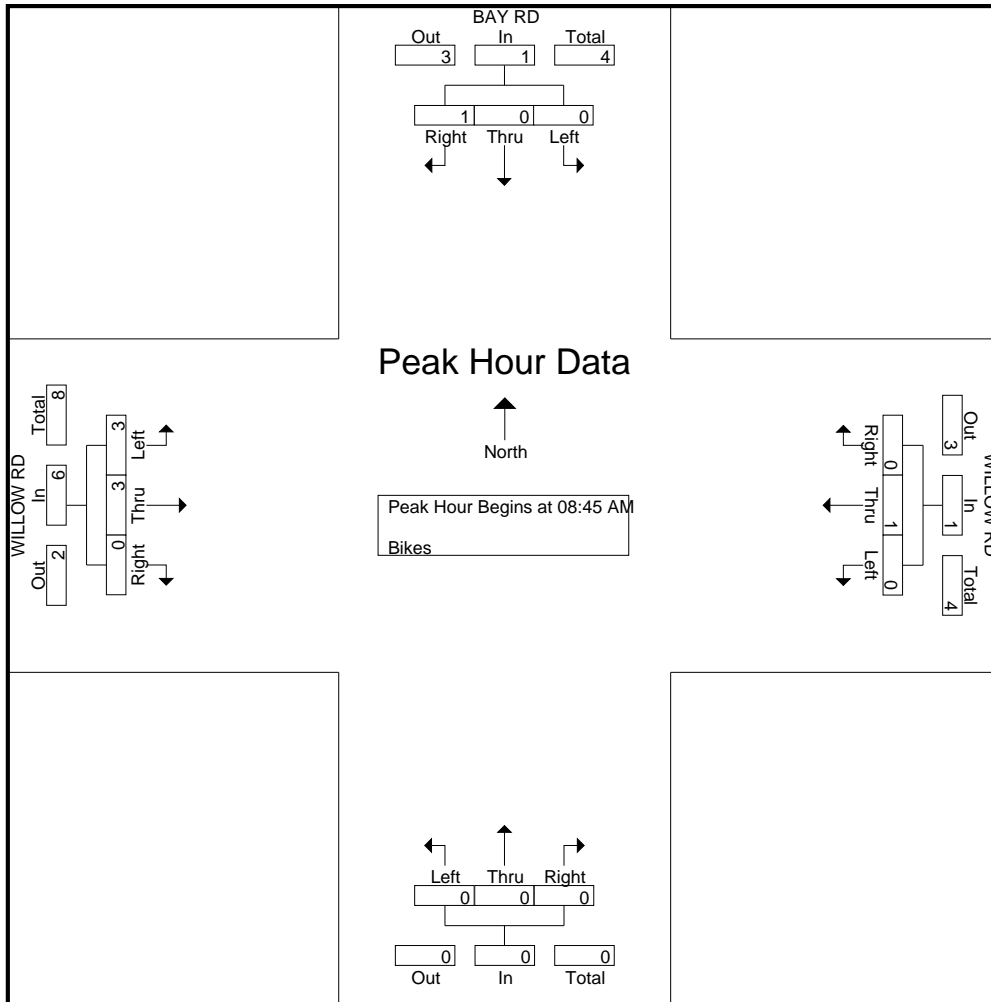
Start Time	BAY RD Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:45 AM																	
08:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
09:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	2	3
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
Total Volume	1	0	0	1	0	1	0	1	0	0	0	0	0	3	3	6	8
% App. Total	100	0	0		0	100	0		0	0	0		0	50	50		
PHF	.250	.000	.000	.250	.000	.250	.000	.250	.000	.000	.000	.000	.000	.750	.750	.750	.667



# Traffic Data Service

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# Traffic Data Service

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File Name : 32PM FINAL  
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Groups Printed- Vehicles

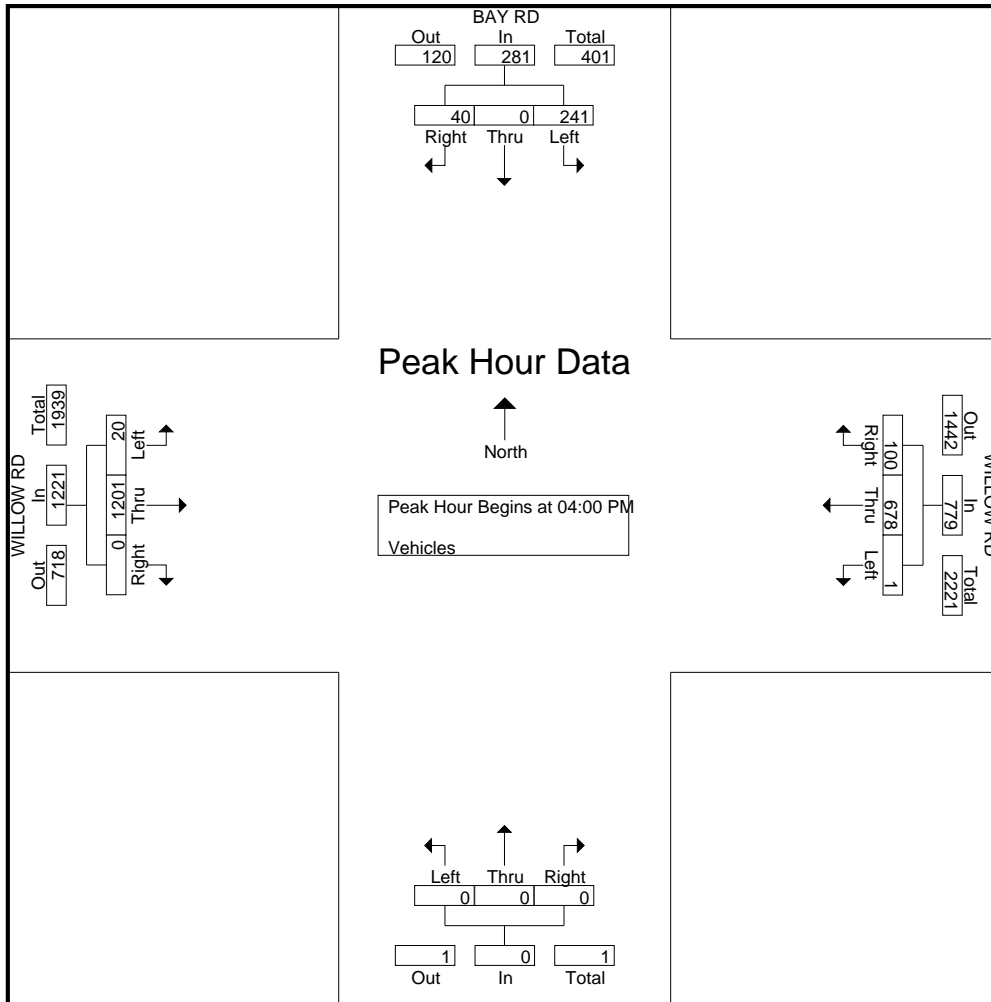
Start Time	BAY RD Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	7	0	48	0	55	25	162	0	0	187	0	0	0	0	0	0	331	3	0	334	576
04:15 PM	13	0	74	3	90	27	178	0	0	205	0	0	0	0	0	0	286	8	0	294	589
04:30 PM	10	0	55	0	65	29	164	1	0	194	0	0	0	0	0	0	299	4	0	303	562
04:45 PM	10	0	64	0	74	19	174	0	0	193	0	0	0	0	0	0	285	5	0	290	557
Total	40	0	241	3	284	100	678	1	0	779	0	0	0	0	0	0	1201	20	0	1221	2284
05:00 PM	9	0	75	2	86	29	176	0	0	205	0	0	0	0	0	0	217	4	0	221	512
05:15 PM	4	0	37	7	48	35	210	0	0	245	0	0	0	0	0	0	245	7	0	252	545
05:30 PM	8	0	46	1	55	29	226	1	0	256	0	0	0	0	0	0	227	2	0	229	540
05:45 PM	10	0	47	1	58	54	211	1	0	266	0	0	0	0	0	0	230	7	0	237	561
Total	31	0	205	11	247	147	823	2	0	972	0	0	0	0	0	0	919	20	0	939	2158
06:00 PM	11	0	35	2	48	38	254	0	0	292	0	0	0	0	0	0	237	6	0	243	583
06:15 PM	13	0	40	0	53	37	197	0	0	234	0	0	0	0	0	0	225	2	0	227	514
06:30 PM	2	0	37	1	40	33	229	0	0	262	0	0	0	0	0	0	223	5	0	228	530
06:45 PM	8	0	36	0	44	42	186	0	0	228	0	0	0	0	0	0	208	2	0	210	482
Total	34	0	148	3	185	150	866	0	0	1016	0	0	0	0	0	0	893	15	0	908	2109
Grand Total	105	0	594	17	716	397	2367	3	0	2767	0	0	0	0	0	0	3013	55	0	3068	6551
Apprch %	14.7	0	83	2.4		14.3	85.5	0.1	0		0	0	0	0		0	98.2	1.8	0		
Total %	1.6	0	9.1	0.3	10.9	6.1	36.1	0	0	42.2	0	0	0	0		0	46	0.8	0	46.8	

Start Time	BAY RD Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	7	0	48	55	25	162	0	187	0	0	0	0	0	331	3	334	576
04:15 PM	13	0	74	87	27	178	0	205	0	0	0	0	0	286	8	294	586
04:30 PM	10	0	55	65	29	164	1	194	0	0	0	0	0	299	4	303	562
04:45 PM	10	0	64	74	19	174	0	193	0	0	0	0	0	285	5	290	557
Total Volume	40	0	241	281	100	678	1	779	0	0	0	0	0	1201	20	1221	2281
% App. Total	14.2	0	85.8		12.8	87	0.1		0	0	0		0	98.4	1.6		
PHF	.769	.000	.814	.807	.862	.952	.250	.950	.000	.000	.000	.000	.000	.907	.625	.914	.973

# Traffic Data Service

San Jose, CA  
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File Name : 32PM FINAL  
 Site Code : 00000032  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 32PM FINAL  
 Site Code : 00000032  
 Start Date : 4/23/2019  
 Page No : 1

Groups Printed- Bikes

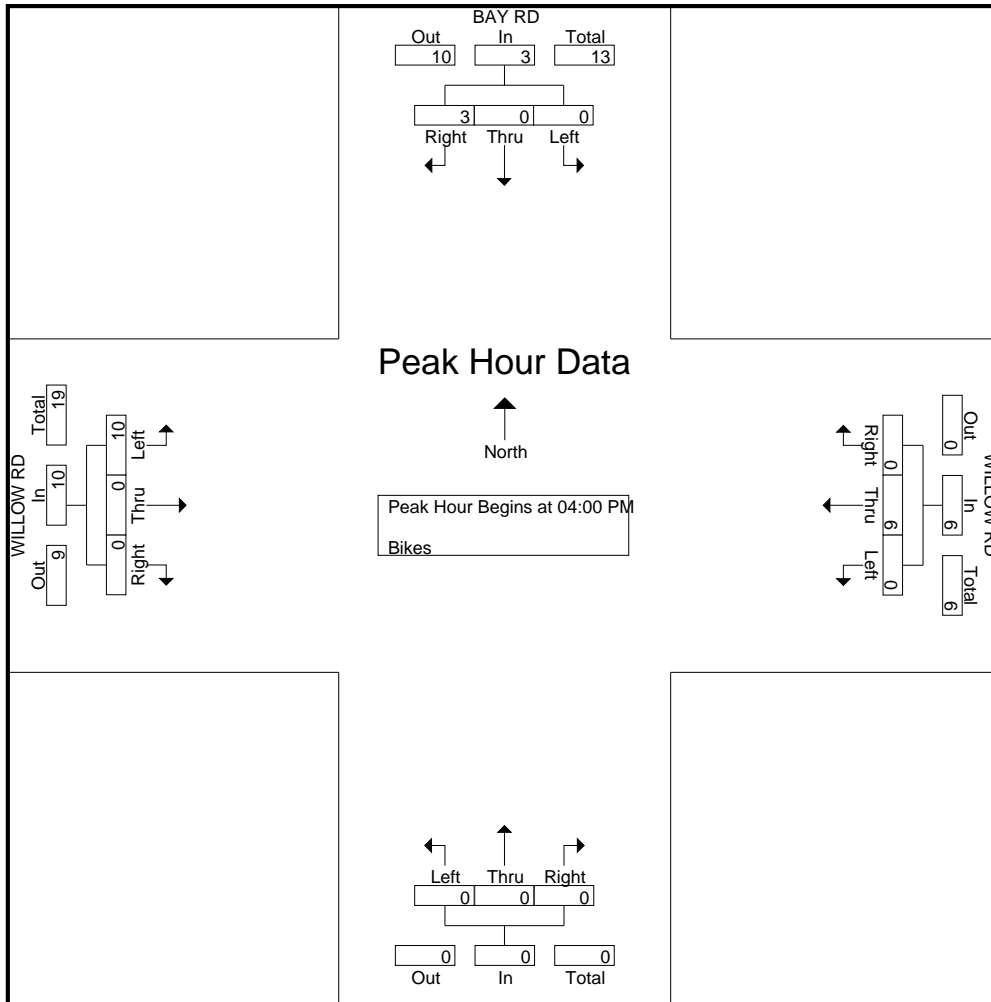
Start Time	BAY RD Southbound					WILLOW RD Westbound					Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	1	0	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	6	0	6	9
04:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	3
04:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	3
04:45 PM	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	4
Total	3	0	0	0	3	0	6	0	0	6	0	0	0	0	0	0	0	10	0	10	19
05:00 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	1	2	0	3	5
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	4
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	0	0	2	1	3	0	0	4	0	0	0	0	0	0	1	2	0	3	9
06:00 PM	2	0	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
06:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
06:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
06:45 PM	3	0	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	5
Total	6	0	0	0	6	0	6	0	0	6	0	0	0	0	0	0	0	2	0	2	14
Grand Total	11	0	0	0	11	1	15	0	0	16	0	0	0	0	0	0	1	14	0	15	42
Apprch %	100	0	0	0		6.2	93.8	0	0		0	0	0	0		0	6.7	93.3	0		
Total %	26.2	0	0	0	26.2	2.4	35.7	0	0	38.1	0	0	0	0	0	0	2.4	33.3	0	35.7	

Start Time	BAY RD Southbound				WILLOW RD Westbound				Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	1	0	0	1	0	2	0	2	0	0	0	0	0	0	6	6	9
04:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	1	3
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	2	3
04:45 PM	2	0	0	2	0	1	0	1	0	0	0	0	0	0	1	1	4
Total Volume	3	0	0	3	0	6	0	6	0	0	0	0	0	0	10	10	19
% App. Total	100	0	0		0	100	0		0	0	0		0	0	100		
PHF	.375	.000	.000	.375	.000	.750	.000	.750	.000	.000	.000	.000	.000	.000	.417	.417	.528

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 32PM FINAL  
 Site Code : 00000032  
 Start Date : 4/23/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 19AM FINAL  
 Site Code : 00000019  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Vehicles

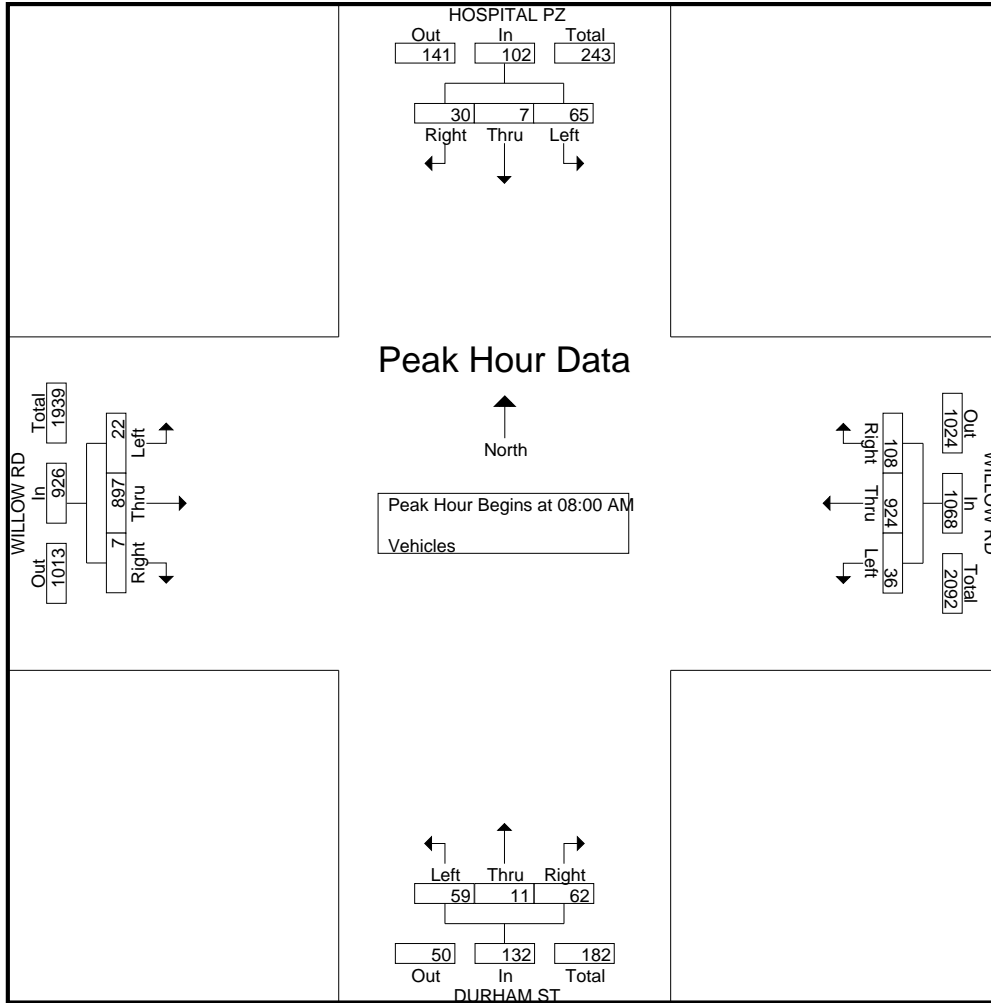
Start Time	HOSPITAL PZ Southbound					WILLOW RD Westbound					DURHAM ST Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	4	3	13	0	20	46	217	5	2	270	8	1	5	2	16	2	111	2	5	120	426
07:15 AM	4	0	9	2	15	38	241	6	0	285	13	4	5	1	23	0	127	6	2	135	458
07:30 AM	2	2	12	1	17	27	239	10	2	278	16	3	9	2	30	1	142	3	0	146	471
07:45 AM	4	0	8	0	12	26	243	6	3	278	9	7	12	4	32	2	178	4	3	187	509
Total	14	5	42	3	64	137	940	27	7	1111	46	15	31	9	101	5	558	15	10	588	1864
08:00 AM	7	1	18	2	28	31	225	7	0	263	11	5	26	0	42	1	206	4	4	215	548
08:15 AM	8	2	19	1	30	32	230	10	3	275	19	2	10	6	37	4	223	5	6	238	580
08:30 AM	8	2	17	0	27	19	225	12	4	260	20	2	13	2	37	0	235	6	9	250	574
08:45 AM	7	2	11	3	23	26	244	7	1	278	12	2	10	9	33	2	233	7	3	245	579
Total	30	7	65	6	108	108	924	36	8	1076	62	11	59	17	149	7	897	22	22	948	2281
09:00 AM	8	0	13	0	21	18	249	9	2	278	6	1	4	6	17	1	199	7	3	210	526
09:15 AM	2	1	12	0	15	13	226	10	1	250	14	3	10	7	34	2	171	3	3	179	478
09:30 AM	6	3	9	0	18	26	215	10	1	252	4	2	7	0	13	3	188	4	1	196	479
09:45 AM	7	1	11	0	19	22	205	6	1	234	13	5	9	2	29	2	171	7	7	187	469
Total	23	5	45	0	73	79	895	35	5	1014	37	11	30	15	93	8	729	21	14	772	1952
Grand Total	67	17	152	9	245	324	2759	98	20	3201	145	37	120	41	343	20	2184	58	46	2308	6097
Apprch %	27.3	6.9	62	3.7		10.1	86.2	3.1	0.6		42.3	10.8	35	12		0.9	94.6	2.5	2		
Total %	1.1	0.3	2.5	0.1	4	5.3	45.3	1.6	0.3	52.5	2.4	0.6	2	0.7	5.6	0.3	35.8	1	0.8	37.9	

Start Time	HOSPITAL PZ Southbound				WILLOW RD Westbound				DURHAM ST Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	7	1	18	26	31	225	7	263	11	5	26	42	1	206	4	211	542
08:15 AM	8	2	19	29	32	230	10	272	19	2	10	31	4	223	5	232	564
08:30 AM	8	2	17	27	19	225	12	256	20	2	13	35	0	235	6	241	559
08:45 AM	7	2	11	20	26	244	7	277	12	2	10	24	2	233	7	242	563
Total Volume	30	7	65	102	108	924	36	1068	62	11	59	132	7	897	22	926	2228
% App. Total	29.4	6.9	63.7		10.1	86.5	3.4		47	8.3	44.7		0.8	96.9	2.4		
PHF	.938	.875	.855	.879	.844	.947	.750	.964	.775	.550	.567	.786	.438	.954	.786	.957	.988

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 19AM FINAL  
 Site Code : 00000019  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 19AM FINAL  
 Site Code : 00000019  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	HOSPITAL PZ Southbound					WILLOW RD Westbound					DURHAM ST Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	2	1	0	4	5
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	4	1	0	6	7
08:00 AM	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:15 AM	0	3	0	0	3	1	0	0	0	1	1	1	0	0	2	0	1	0	0	1	7
08:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	6	0	0	6	1	0	0	0	1	1	1	0	0	2	0	2	0	0	2	11
09:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
09:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
09:30 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
09:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	2	0	0	2	3
Total	0	0	0	0	0	0	4	0	0	4	1	0	0	0	1	0	6	0	0	6	11
Grand Total	0	6	0	0	6	1	5	0	0	6	2	1	0	0	3	1	12	1	0	14	29
Apprch %	0	100	0	0		16.7	83.3	0	0		66.7	33.3	0	0		7.1	85.7	7.1	0		
Total %	0	20.7	0	0	20.7	3.4	17.2	0	0	20.7	6.9	3.4	0	0	10.3	3.4	41.4	3.4	0	48.3	

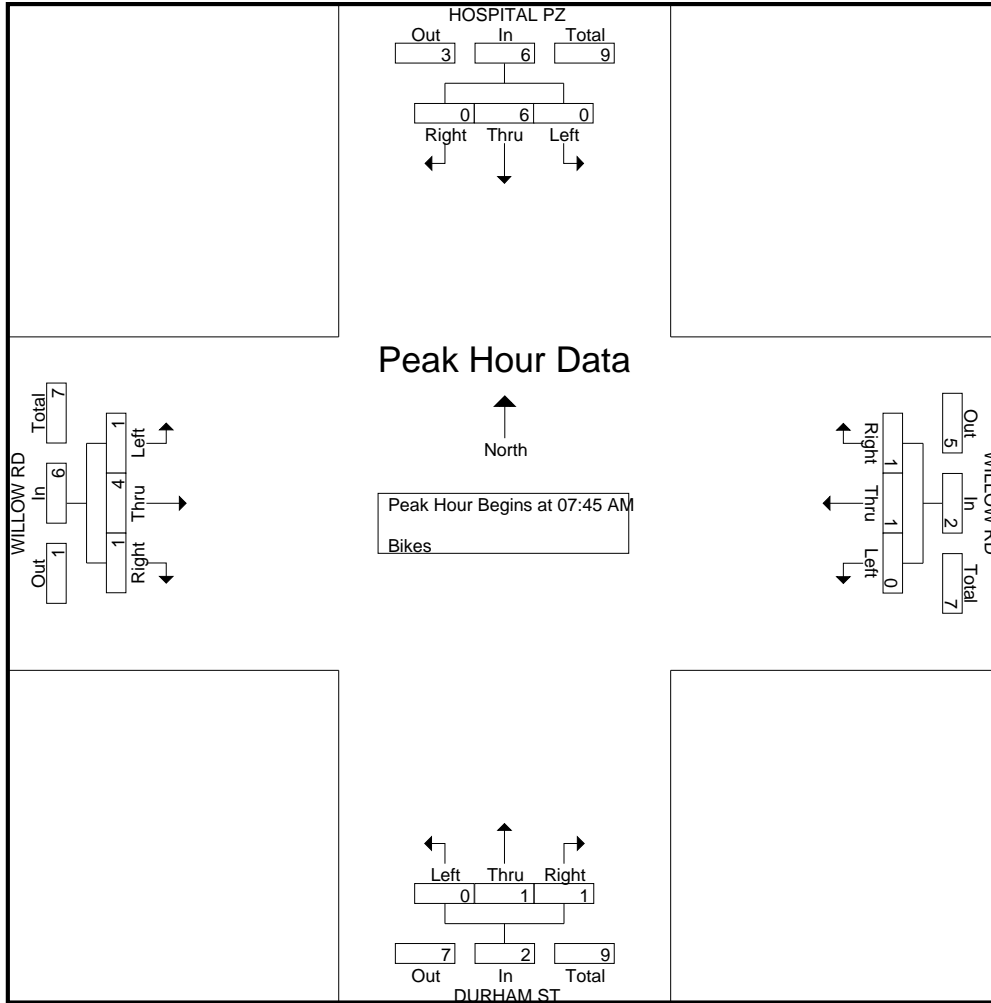
Start Time	HOSPITAL PZ Southbound				WILLOW RD Westbound				DURHAM ST Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	2	1	4	5
08:00 AM	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:15 AM	0	3	0	3	1	0	0	1	1	1	0	2	0	1	0	1	7
08:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	2
Total Volume	0	6	0	6	1	1	0	2	1	1	0	2	1	4	1	6	16
% App. Total	0	100	0		50	50	0		50	50	0		16.7	66.7	16.7		
PHF	.000	.500	.000	.500	.250	.250	.000	.500	.250	.250	.000	.250	.250	.500	.250	.375	.571



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
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File Name : 19AM FINAL  
Site Code : 00000019  
Start Date : 4/16/2019  
Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 19PM FINAL  
 Site Code : 00000019  
 Start Date : 4/16/2019  
 Page No : 1

## Groups Printed- Vehicles

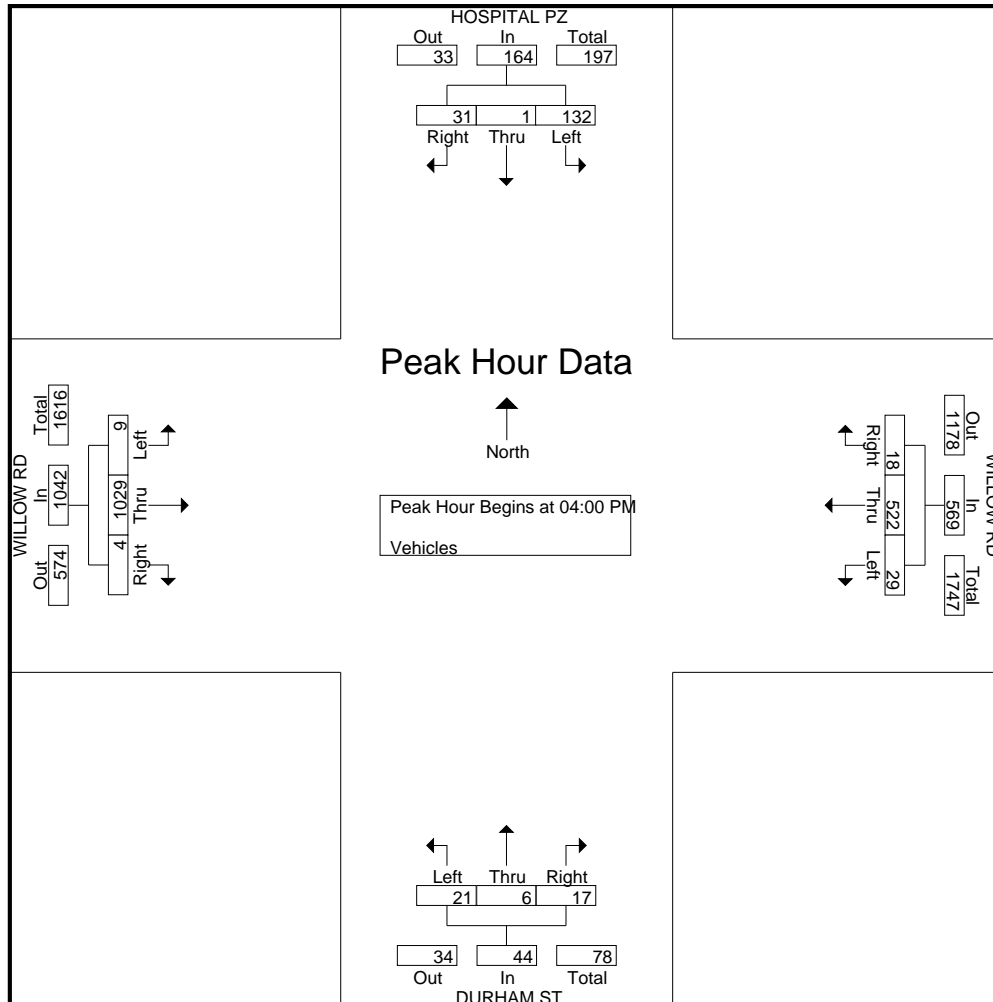
Start Time	HOSPITAL PZ Southbound					WILLOW RD Westbound					DURHAM ST Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	10	1	55	1	67	6	121	5	3	135	6	2	4	6	18	2	246	2	4	254	474
04:15 PM	1	0	20	2	23	5	152	5	3	165	6	2	4	2	14	1	299	2	1	303	505
04:30 PM	12	0	40	0	52	4	132	9	3	148	2	1	7	1	11	0	251	2	1	254	465
04:45 PM	8	0	17	0	25	3	117	10	1	131	3	1	6	10	20	1	233	3	3	240	416
Total	31	1	132	3	167	18	522	29	10	579	17	6	21	19	63	4	1029	9	9	1051	1860
05:00 PM	3	2	11	0	16	5	149	6	0	160	10	0	10	0	20	2	234	2	0	238	434
05:15 PM	5	1	13	1	20	3	143	12	5	163	4	4	13	3	24	1	194	0	3	198	405
05:30 PM	6	0	10	1	17	5	170	10	7	192	5	3	7	2	17	2	219	1	1	223	449
05:45 PM	7	0	14	1	22	5	192	6	2	205	1	2	11	1	15	6	161	3	0	170	412
Total	21	3	48	3	75	18	654	34	14	720	20	9	41	6	76	11	808	6	4	829	1700
06:00 PM	7	0	8	4	19	3	172	4	0	179	3	2	6	3	14	2	169	1	3	175	387
06:15 PM	2	0	7	3	12	8	176	4	3	191	2	3	3	2	10	3	185	3	0	191	404
06:30 PM	4	2	7	3	16	3	181	3	1	188	9	0	3	0	12	1	227	4	0	232	448
06:45 PM	0	2	8	1	11	5	185	3	2	195	3	1	6	2	12	2	208	2	1	213	431
Total	13	4	30	11	58	19	714	14	6	753	17	6	18	7	48	8	789	10	4	811	1670
Grand Total	65	8	210	17	300	55	1890	77	30	2052	54	21	80	32	187	23	2626	25	17	2691	5230
Apprch %	21.7	2.7	70	5.7		2.7	92.1	3.8	1.5		28.9	11.2	42.8	17.1		0.9	97.6	0.9	0.6		
Total %	1.2	0.2	4	0.3	5.7	1.1	36.1	1.5	0.6	39.2	1	0.4	1.5	0.6	3.6	0.4	50.2	0.5	0.3	51.5	

Start Time	HOSPITAL PZ Southbound				WILLOW RD Westbound				DURHAM ST Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	10	1	55	66	6	121	5	132	6	2	4	12	2	246	2	250	460
04:15 PM	1	0	20	21	5	152	5	162	6	2	4	12	1	299	2	302	497
04:30 PM	12	0	40	52	4	132	9	145	2	1	7	10	0	251	2	253	460
04:45 PM	8	0	17	25	3	117	10	130	3	1	6	10	1	233	3	237	402
Total Volume	31	1	132	164	18	522	29	569	17	6	21	44	4	1029	9	1042	1819
% App. Total	18.9	0.6	80.5		3.2	91.7	5.1		38.6	13.6	47.7		0.4	98.8	0.9		
PHF	.646	.250	.600	.621	.750	.859	.725	.878	.708	.750	.750	.917	.500	.860	.750	.863	.915

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 19PM FINAL  
 Site Code : 00000019  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 19PM FINAL  
 Site Code : 00000019  
 Start Date : 4/16/2019  
 Page No : 1

Groups Printed- Bikes

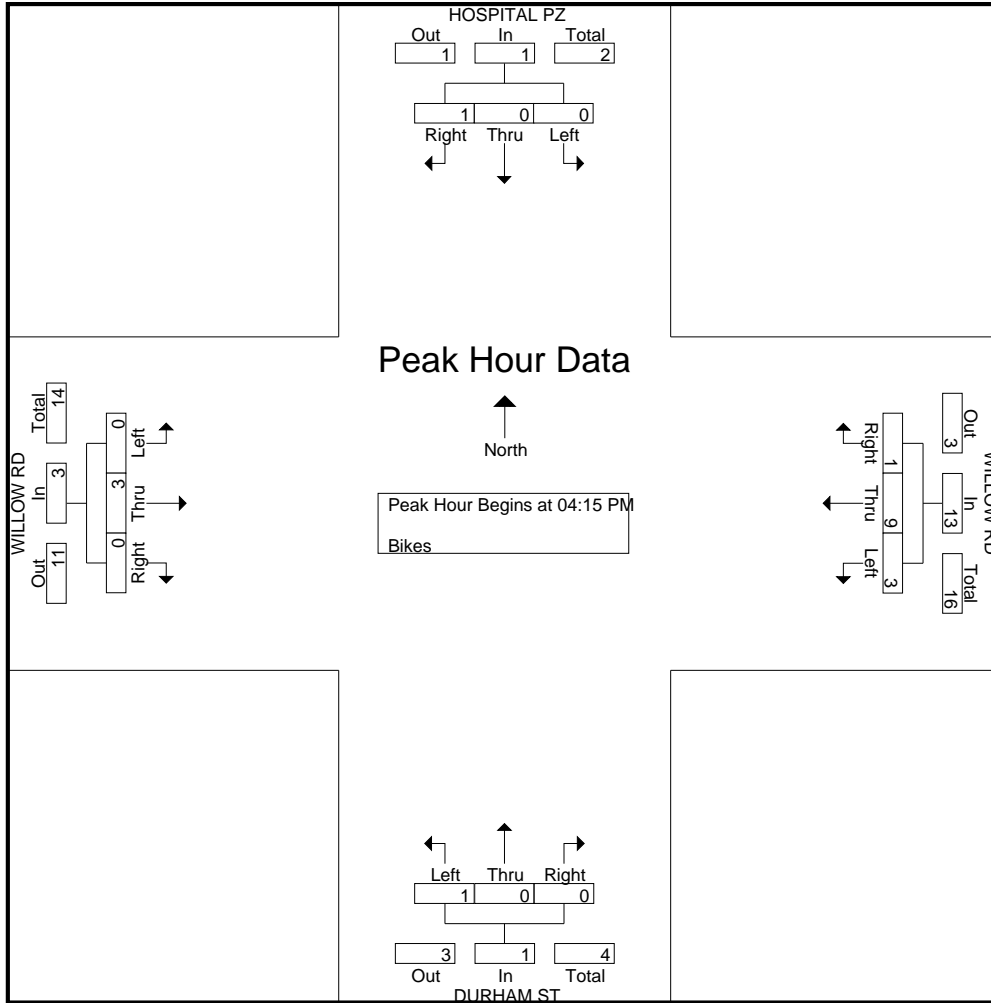
Start Time	HOSPITAL PZ Southbound					WILLOW RD Westbound					DURHAM ST Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	3
04:45 PM	0	0	0	0	0	0	4	0	0	4	0	0	1	0	1	0	2	0	0	2	7
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>14</b>
05:00 PM	0	0	0	0	0	1	5	0	0	6	0	0	0	0	0	0	0	0	0	0	6
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
05:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
05:45 PM	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	6
<b>Total</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>16</b>
06:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	1	0	0	3	4
06:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
06:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
06:45 PM	0	0	0	0	0	0	4	0	0	4	1	0	0	0	1	0	0	0	0	0	5
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>12</b>
Grand Total	2	2	0	0	4	3	20	3	0	26	1	0	1	0	2	2	7	1	0	10	42
Apprch %	50	50	0	0		11.5	76.9	11.5	0		50	0	50	0		20	70	10	0		
Total %	4.8	4.8	0	0	9.5	7.1	47.6	7.1	0	61.9	2.4	0	2.4	0	4.8	4.8	16.7	2.4	0	23.8	

Start Time	HOSPITAL PZ Southbound				WILLOW RD Westbound				DURHAM ST Northbound				WILLOW RD Eastbound				Int. Total	
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total		
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 04:15 PM																		
04:15 PM	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	2
04:30 PM	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	3	
04:45 PM	0	0	0	0	0	4	0	4	0	0	1	1	0	2	0	2	7	
05:00 PM	0	0	0	0	1	5	0	6	0	0	0	0	0	0	0	0	6	
Total Volume	1	0	0	1	1	9	3	13	0	0	1	1	0	3	0	3	18	
% App. Total	100	0	0		7.7	69.2	23.1		0	0	100		0	100	0			
PHF	.250	.000	.000	.250	.250	.450	.375	.542	.000	.000	.250	.250	.000	.375	.000	.375	.643	

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 19PM FINAL  
 Site Code : 00000019  
 Start Date : 4/16/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 18AM FINAL  
 Site Code : 00000018  
 Start Date : 3/19/2019  
 Page No : 1

Groups Printed- Vehicles

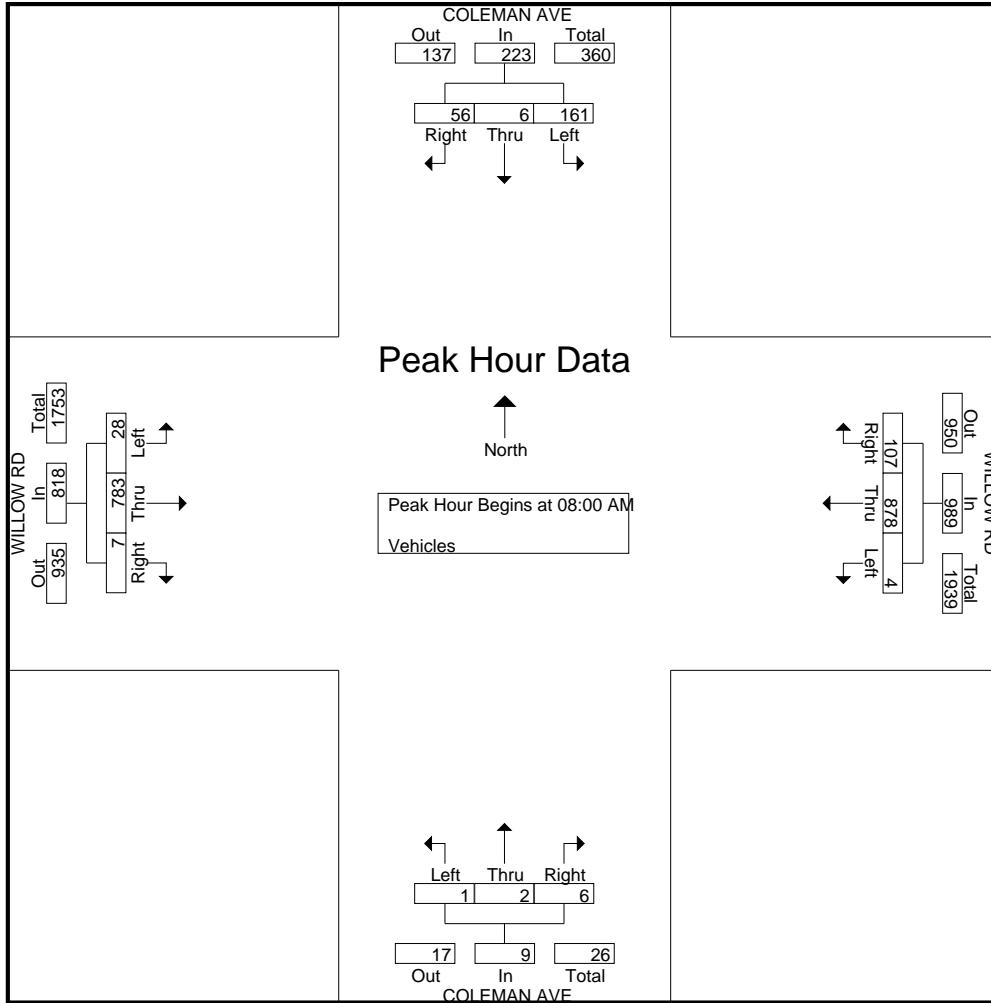
Start Time	COLEMAN AVE Southbound					WILLOW RD Westbound					COLEMAN AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	4	1	14	1	20	9	215	0	0	224	0	0	0	1	1	0	94	0	1	95	340
07:15 AM	4	0	17	0	21	18	224	1	1	244	0	0	1	0	1	2	91	1	1	95	361
07:30 AM	6	0	34	2	42	17	218	1	2	238	2	0	0	3	5	2	132	1	0	135	420
07:45 AM	10	1	23	2	36	16	247	1	11	275	3	1	0	3	7	3	156	2	2	163	481
Total	24	2	88	5	119	60	904	3	14	981	5	1	1	7	14	7	473	4	4	488	1602
08:00 AM	10	0	32	3	45	35	222	3	12	272	1	0	0	4	5	1	200	5	9	215	537
08:15 AM	15	1	36	0	52	21	228	1	9	259	2	0	0	1	3	1	214	6	2	223	537
08:30 AM	21	1	55	0	77	27	213	0	16	256	2	1	0	1	4	1	188	10	1	200	537
08:45 AM	10	4	38	1	53	24	215	0	3	242	1	1	1	3	6	4	181	7	4	196	497
Total	56	6	161	4	227	107	878	4	40	1029	6	2	1	9	18	7	783	28	16	834	2108
09:00 AM	11	2	29	1	43	17	196	2	7	222	3	1	2	3	9	2	181	4	3	190	464
09:15 AM	11	2	39	1	53	17	197	1	6	221	3	2	0	1	6	0	177	1	0	178	458
09:30 AM	9	0	31	2	42	12	202	2	4	220	1	0	1	0	2	4	145	0	0	149	413
09:45 AM	5	1	25	1	32	11	214	0	6	231	2	0	0	1	3	1	147	4	2	154	420
Total	36	5	124	5	170	57	809	5	23	894	9	3	3	5	20	7	650	9	5	671	1755
Grand Total	116	13	373	14	516	224	2591	12	77	2904	20	6	5	21	52	21	1906	41	25	1993	5465
Apprch %	22.5	2.5	72.3	2.7		7.7	89.2	0.4	2.7		38.5	11.5	9.6	40.4		1.1	95.6	2.1	1.3		
Total %	2.1	0.2	6.8	0.3	9.4	4.1	47.4	0.2	1.4	53.1	0.4	0.1	0.1	0.4	1	0.4	34.9	0.8	0.5	36.5	

Start Time	COLEMAN AVE Southbound				WILLOW RD Westbound				COLEMAN AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	10	0	32	42	<b>35</b>	222	<b>3</b>	<b>260</b>	1	0	0	1	1	200	5	206	509
08:15 AM	15	1	36	52	21	<b>228</b>	1	250	2	0	0	2	1	<b>214</b>	6	<b>221</b>	<b>525</b>
08:30 AM	<b>21</b>	1	<b>55</b>	<b>77</b>	27	213	0	240	2	<b>1</b>	0	<b>3</b>	1	188	<b>10</b>	199	519
08:45 AM	10	<b>4</b>	38	52	24	215	0	239	1	1	1	3	<b>4</b>	181	7	192	486
Total Volume	56	6	161	223	107	878	4	989	6	2	1	9	7	783	28	818	2039
% App. Total	25.1	2.7	72.2		10.8	88.8	0.4		66.7	22.2	11.1		0.9	95.7	3.4		
PHF	.667	.375	.732	.724	.764	.963	.333	.951	.750	.500	.250	.750	.438	.915	.700	.925	.971

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 18AM FINAL  
 Site Code : 00000018  
 Start Date : 3/19/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 18AM FINAL  
 Site Code : 00000018  
 Start Date : 3/19/2019  
 Page No : 1

Groups Printed- Bikes

Start Time	COLEMAN AVE Southbound					WILLOW RD Westbound					COLEMAN AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	3	0	0	0	3	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	6
07:15 AM	2	0	0	0	2	0	4	0	0	4	0	1	0	0	1	0	4	0	0	4	11
07:30 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
07:45 AM	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0	2	0	0	0	2	5
Total	7	1	0	0	8	0	6	0	0	6	0	2	0	0	2	3	5	0	0	8	24
08:00 AM	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
08:15 AM	3	3	0	0	6	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	9
08:30 AM	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	4
08:45 AM	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	5
Total	5	8	0	0	13	0	2	0	0	2	0	0	1	0	1	0	6	0	0	6	22
09:00 AM	5	0	0	0	5	1	1	0	0	2	1	0	0	0	1	0	4	0	0	4	12
09:15 AM	3	0	0	0	3	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	5
09:30 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
09:45 AM	0	2	1	0	3	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	4
Total	8	2	1	0	11	1	6	0	0	7	1	0	1	0	2	0	8	0	0	8	28
Grand Total	20	11	1	0	32	1	14	0	0	15	1	2	2	0	5	3	19	0	0	22	74
Apprch %	62.5	34.4	3.1	0		6.7	93.3	0	0		20	40	40	0		13.6	86.4	0	0		
Total %	27	14.9	1.4	0	43.2	1.4	18.9	0	0	20.3	1.4	2.7	2.7	0	6.8	4.1	25.7	0	0	29.7	

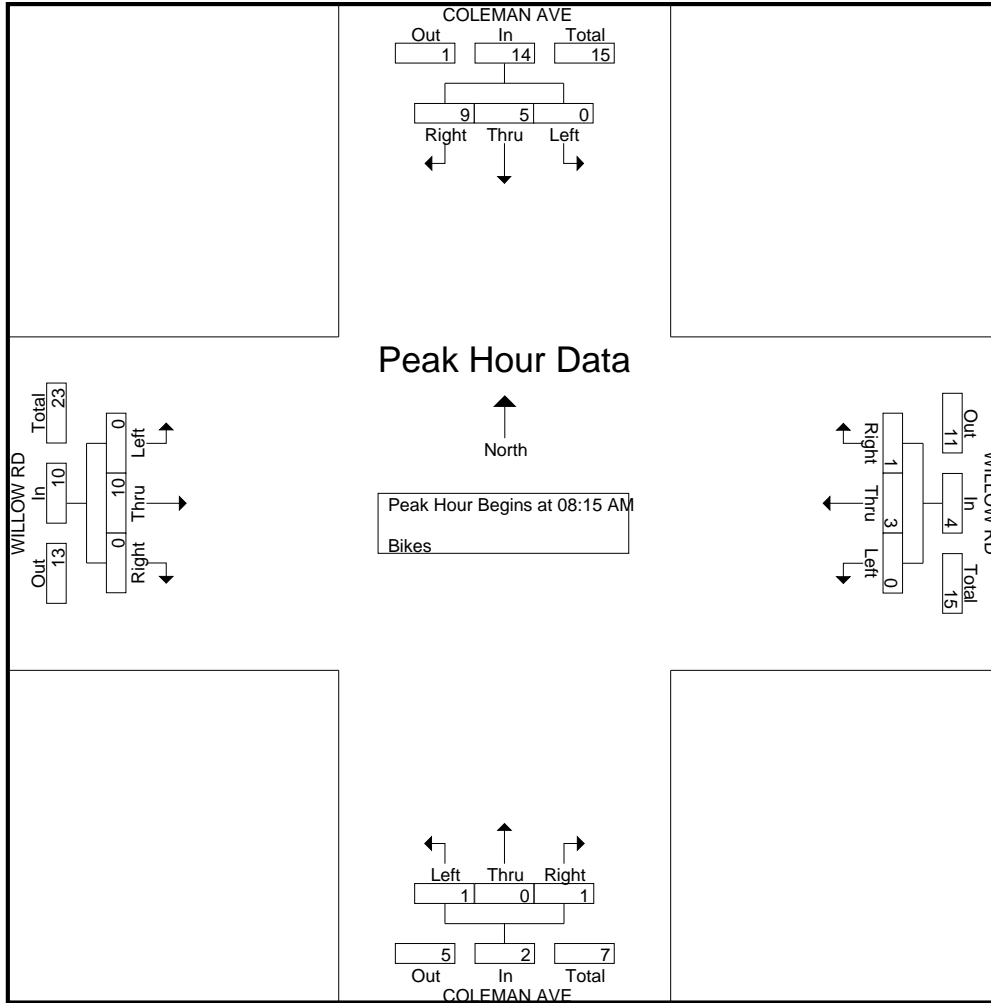
Start Time	COLEMAN AVE Southbound				WILLOW RD Westbound				COLEMAN AVE Northbound				WILLOW RD Eastbound				Int. Total			
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total				
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 08:15 AM																				
08:15 AM	3	3	0	6	0	0	1	1	0	0	0	0	0	0	0	2	0	0	2	9
08:30 AM	0	2	0	2	0	0	0	0	0	0	0	1	1	0	1	0	1	0	1	4
08:45 AM	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	3	0	0	3	5
09:00 AM	5	0	0	5	1	1	0	2	1	0	0	1	1	0	4	0	4	0	4	12
Total Volume	9	5	0	14	1	3	0	4	1	0	1	2	0	10	0	10	0	0	10	30
% App. Total	64.3	35.7	0		25	75	0		50	0	50		0	100	0					
PHF	.450	.417	.000	.583	.250	.750	.000	.500	.250	.000	.250	.500	.000	.625	.000	.625	.000	.625	.625	



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 18AM FINAL  
 Site Code : 00000018  
 Start Date : 3/19/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 18PM FINAL  
Site Code : 00000018  
Start Date : 3/19/2019  
Page No : 1

## Groups Printed- Vehicles

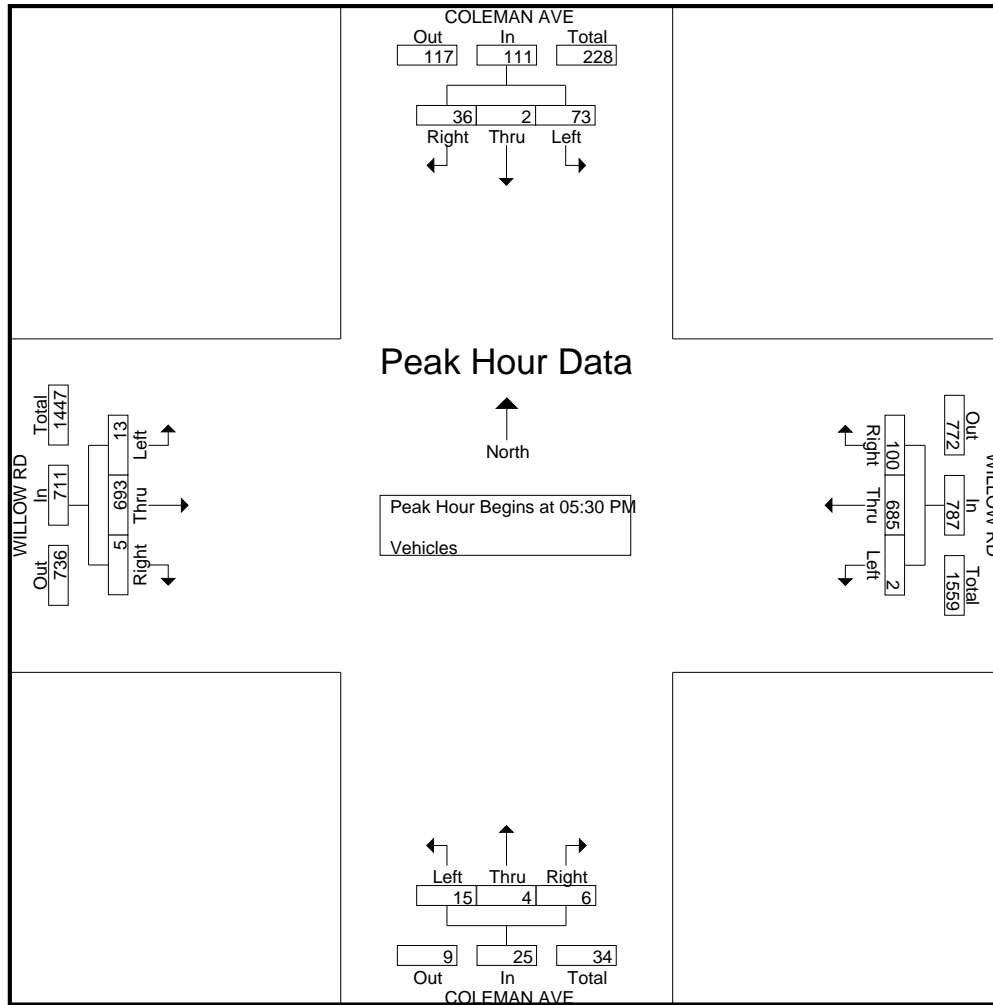
Start Time	COLEMAN AVE Southbound					WILLOW RD Westbound					COLEMAN AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	4	0	22	2	28	13	107	0	1	121	1	0	0	1	2	0	222	6	1	229	380
04:15 PM	8	0	19	0	27	19	113	0	8	140	0	1	1	4	6	1	219	2	8	230	403
04:30 PM	8	3	12	2	25	17	128	4	11	160	0	3	3	6	12	7	223	4	1	235	432
04:45 PM	10	1	14	1	26	17	143	2	7	169	0	4	4	5	13	1	121	3	7	132	340
Total	30	4	67	5	106	66	491	6	27	590	1	8	8	16	33	9	785	15	17	826	1555
05:00 PM	8	2	5	1	16	22	156	1	4	183	0	3	1	1	5	3	94	8	3	108	312
05:15 PM	7	1	13	1	22	18	155	5	5	183	0	1	4	4	9	4	121	8	4	137	351
05:30 PM	14	2	17	2	35	22	162	1	6	191	2	1	8	2	13	0	170	2	4	176	415
05:45 PM	10	0	16	5	31	22	168	0	3	193	3	1	2	3	9	2	197	5	13	217	450
Total	39	5	51	9	104	84	641	7	18	750	5	6	15	10	36	9	582	23	24	638	1528
06:00 PM	8	0	23	4	35	18	174	1	8	201	1	1	5	7	14	3	155	2	10	170	420
06:15 PM	4	0	17	4	25	38	181	0	9	228	0	1	0	6	7	0	171	4	9	184	444
06:30 PM	4	0	18	3	25	21	168	0	10	199	1	0	0	5	6	0	182	3	6	191	421
06:45 PM	7	0	15	1	23	21	148	0	7	176	0	0	2	3	5	0	220	6	4	230	434
Total	23	0	73	12	108	98	671	1	34	804	2	2	7	21	32	3	728	15	29	775	1719
Grand Total	92	9	191	26	318	248	1803	14	79	2144	8	16	30	47	101	21	2095	53	70	2239	4802
Apprch %	28.9	2.8	60.1	8.2		11.6	84.1	0.7	3.7		7.9	15.8	29.7	46.5		0.9	93.6	2.4	3.1		
Total %	1.9	0.2	4	0.5	6.6	5.2	37.5	0.3	1.6	44.6	0.2	0.3	0.6	1	2.1	0.4	43.6	1.1	1.5	46.6	

Start Time	COLEMAN AVE Southbound				WILLOW RD Westbound				COLEMAN AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:30 PM																	
05:30 PM	14	2	17	33	22	162	1	185	2	1	8	11	0	170	2	172	401
05:45 PM	10	0	16	26	22	168	0	190	3	1	2	6	2	197	5	204	426
06:00 PM	8	0	23	31	18	174	1	193	1	1	5	7	3	155	2	160	391
06:15 PM	4	0	17	21	38	181	0	219	0	1	0	1	0	171	4	175	416
Total Volume	36	2	73	111	100	685	2	787	6	4	15	25	5	693	13	711	1634
% App. Total	32.4	1.8	65.8		12.7	87	0.3		24	16	60		0.7	97.5	1.8		
PHF	.643	.250	.793	.841	.658	.946	.500	.898	.500	1.00	.469	.568	.417	.879	.650	.871	.959

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 18PM FINAL  
 Site Code : 00000018  
 Start Date : 3/19/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 18PM FINAL  
 Site Code : 00000018  
 Start Date : 3/19/2019  
 Page No : 1

Groups Printed- Bikes

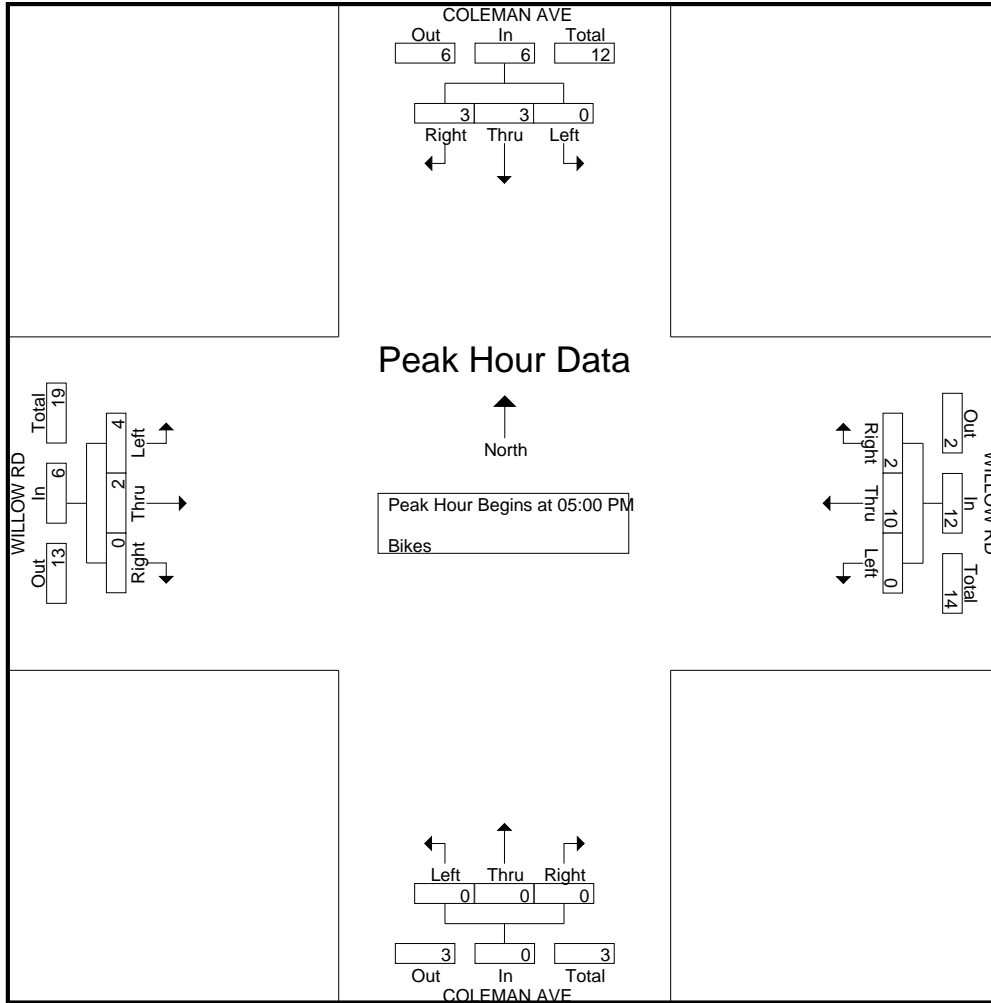
Start Time	COLEMAN AVE Southbound					WILLOW RD Westbound					COLEMAN AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	1	0	2	5
04:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
<b>Total</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>13</b>
05:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	3
05:15 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	1	0	1	5
05:30 PM	1	3	0	0	4	1	1	0	0	2	0	0	0	0	0	0	0	2	0	2	8
05:45 PM	2	0	0	0	2	1	3	0	0	4	0	0	0	0	0	0	2	0	0	2	8
<b>Total</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>2</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>6</b>	<b>24</b>
06:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	2
06:15 PM	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	2	1	0	3	5
06:30 PM	1	0	0	0	1	0	0	0	0	0	2	0	0	0	2	0	1	1	0	2	5
06:45 PM	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	5
<b>Total</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>17</b>
Grand Total	6	5	1	0	12	2	20	0	0	22	4	0	0	0	4	0	7	9	0	16	54
Apprch %	50	41.7	8.3	0		9.1	90.9	0	0		100	0	0	0		0	43.8	56.2	0		
Total %	11.1	9.3	1.9	0	22.2	3.7	37	0	0	40.7	7.4	0	0	0	7.4	0	13	16.7	0	29.6	

Start Time	COLEMAN AVE Southbound				WILLOW RD Westbound				COLEMAN AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	1	3
05:15 PM	0	0	0	0	0	4	0	4	0	0	0	0	0	0	1	1	5
05:30 PM	1	3	0	4	1	1	0	2	0	0	0	0	0	0	2	2	8
05:45 PM	2	0	0	2	1	3	0	4	0	0	0	0	0	2	0	2	8
Total Volume	3	3	0	6	2	10	0	12	0	0	0	0	0	2	4	6	24
% App. Total	50	50	0		16.7	83.3	0		0	0	0		0	33.3	66.7		
PHF	.375	.250	.000	.375	.500	.625	.000	.750	.000	.000	.000	.000	.000	.250	.500	.750	.750

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 18PM FINAL  
 Site Code : 00000018  
 Start Date : 3/19/2019  
 Page No : 2



# Traffic Data Service

San Jose, CA  
(408) 622-4787  
tdsbay@cs.com

File Name : 17AM FINAL  
Site Code : 00000017  
Start Date : 3/19/2019  
Page No : 1

## Groups Printed- Vehicles

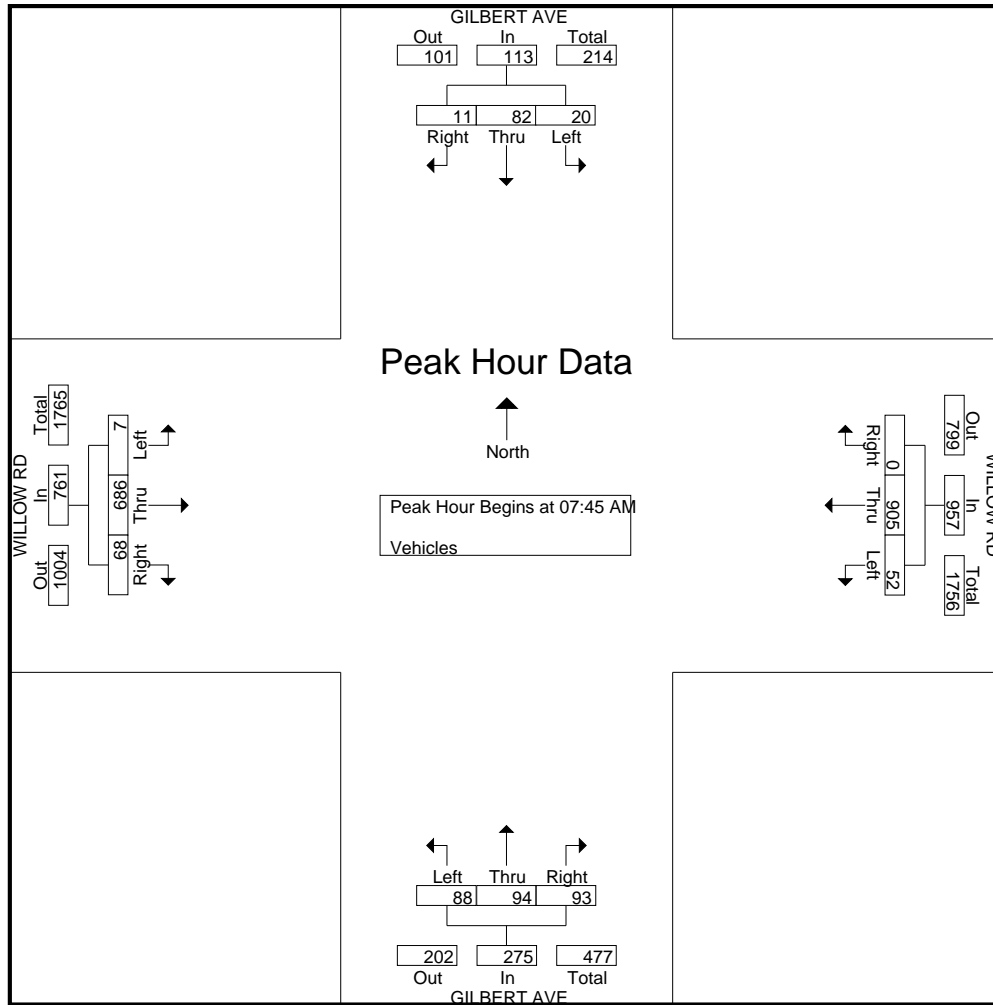
Start Time	GILBERT AVE Southbound					WILLOW RD Westbound					GILBERT AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	1	0	3	1	5	1	214	1	2	218	8	1	5	0	14	1	87	1	0	89	326
07:15 AM	2	1	4	0	7	0	225	5	0	230	12	3	14	0	29	5	90	1	0	96	362
07:30 AM	1	4	3	2	10	1	216	7	2	226	17	18	22	1	58	5	121	1	4	131	425
07:45 AM	4	8	6	1	19	0	246	11	1	258	11	10	23	1	45	11	159	1	7	178	500
Total	8	13	16	4	41	2	901	24	5	932	48	32	64	2	146	22	457	4	11	494	1613
08:00 AM	1	19	5	3	28	0	219	7	2	228	27	26	21	0	74	16	179	1	4	200	530
08:15 AM	2	30	4	1	37	0	231	18	1	250	22	26	21	0	69	27	188	3	1	219	575
08:30 AM	4	25	5	0	34	0	209	16	3	228	33	32	23	0	88	14	160	2	0	176	526
08:45 AM	2	14	5	0	21	0	217	15	0	232	13	12	16	0	41	13	171	0	0	184	478
Total	9	88	19	4	120	0	876	56	6	938	95	96	81	0	272	70	698	6	5	779	2109
09:00 AM	3	12	5	0	20	1	190	12	2	205	21	14	16	2	53	8	167	0	1	176	454
09:15 AM	1	7	5	2	15	0	197	14	1	212	16	9	11	1	37	8	154	2	3	167	431
09:30 AM	2	3	6	1	12	1	207	3	0	211	7	4	15	10	36	7	131	0	0	138	397
09:45 AM	2	1	7	0	10	0	209	10	0	219	15	4	11	1	31	4	127	3	2	136	396
Total	8	23	23	3	57	2	803	39	3	847	59	31	53	14	157	27	579	5	6	617	1678
Grand Total	25	124	58	11	218	4	2580	119	14	2717	202	159	198	16	575	119	1734	15	22	1890	5400
Apprch %	11.5	56.9	26.6	5		0.1	95	4.4	0.5		35.1	27.7	34.4	2.8		6.3	91.7	0.8	1.2		
Total %	0.5	2.3	1.1	0.2	4	0.1	47.8	2.2	0.3	50.3	3.7	2.9	3.7	0.3	10.6	2.2	32.1	0.3	0.4	35	

Start Time	GILBERT AVE Southbound				WILLOW RD Westbound				GILBERT AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	4	8	6	18	0	246	11	257	11	10	23	44	11	159	1	171	490
08:00 AM	1	19	5	25	0	219	7	226	27	26	21	74	16	179	1	196	521
08:15 AM	2	30	4	36	0	231	18	249	22	26	21	69	27	188	3	218	572
08:30 AM	4	25	5	34	0	209	16	225	33	32	23	88	14	160	2	176	523
Total Volume	11	82	20	113	0	905	52	957	93	94	88	275	68	686	7	761	2106
% App. Total	9.7	72.6	17.7		0	94.6	5.4		33.8	34.2	32		8.9	90.1	0.9		
PHF	.688	.683	.833	.785	.000	.920	.722	.931	.705	.734	.957	.781	.630	.912	.583	.873	.920

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 17AM FINAL  
 Site Code : 00000017  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 17AM FINAL  
 Site Code : 00000017  
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 Page No : 1

Groups Printed- Bikes

Start Time	GILBERT AVE Southbound					WILLOW RD Westbound					GILBERT AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	1	0	0	1	5
07:15 AM	0	1	0	0	1	0	4	1	0	5	0	0	1	0	1	0	3	0	0	3	10
07:30 AM	0	1	0	0	1	1	2	0	0	3	0	0	4	0	4	0	2	0	0	2	10
07:45 AM	0	0	0	0	0	0	3	0	0	3	0	1	2	0	3	0	4	0	0	4	10
<b>Total</b>	0	2	0	0	2	1	13	1	0	15	0	1	7	0	8	0	10	0	0	10	35
08:00 AM	0	0	0	0	0	0	3	0	0	3	0	3	2	0	5	0	2	0	0	2	10
08:15 AM	0	8	0	0	8	0	5	0	0	5	0	1	1	0	2	0	2	0	0	2	17
08:30 AM	0	3	0	0	3	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	6
08:45 AM	0	0	0	0	0	0	3	0	0	3	0	1	0	0	1	1	5	0	0	6	10
<b>Total</b>	0	11	0	0	11	0	12	0	0	12	0	6	3	0	9	1	10	0	0	11	43
09:00 AM	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	10
09:15 AM	0	0	0	0	0	0	4	0	0	4	0	1	0	0	1	0	1	0	0	1	6
09:30 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	4
09:45 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
<b>Total</b>	0	0	0	0	0	0	17	0	0	17	0	1	0	0	1	0	5	0	0	5	23
<b>Grand Total</b>	0	13	0	0	13	1	42	1	0	44	0	8	10	0	18	1	25	0	0	26	101
Apprch %	0	100	0	0		2.3	95.5	2.3	0		0	44.4	55.6	0		3.8	96.2	0	0		
Total %	0	12.9	0	0	12.9	1	41.6	1	0	43.6	0	7.9	9.9	0	17.8	1	24.8	0	0	25.7	

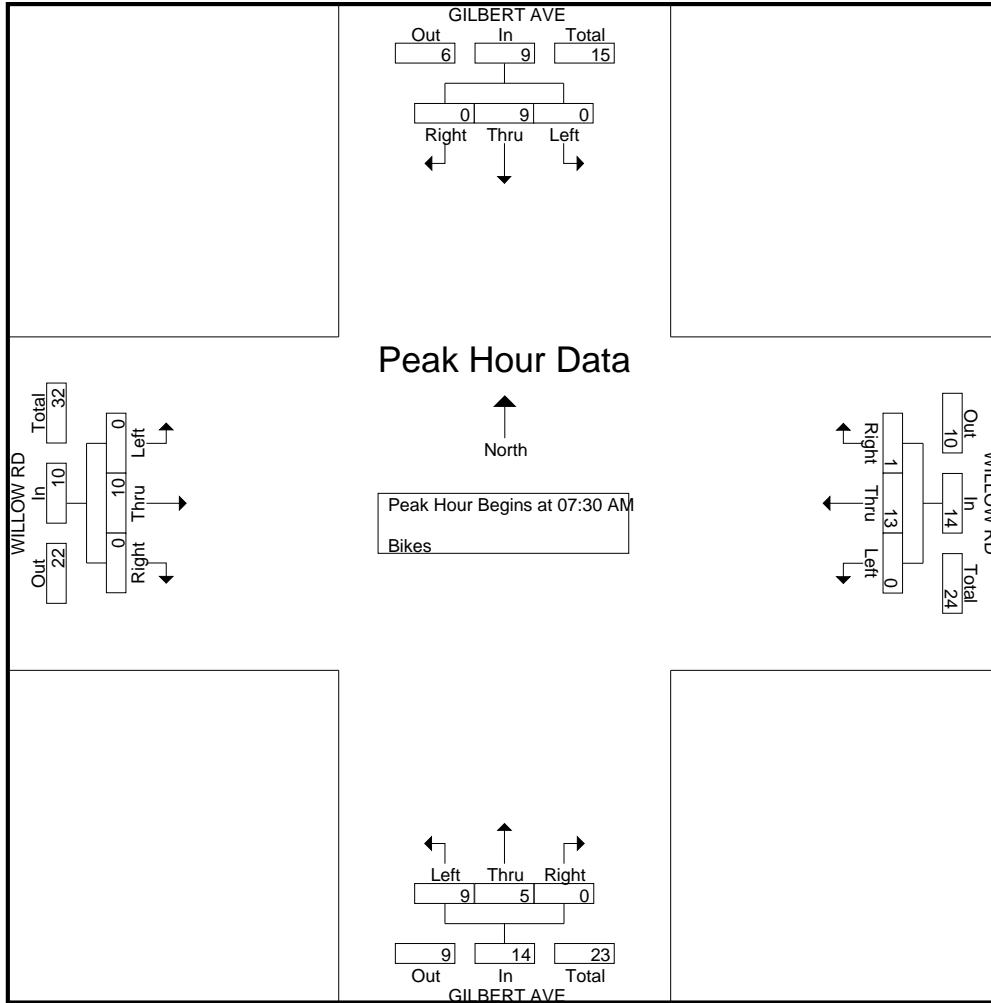
Start Time	GILBERT AVE Southbound				WILLOW RD Westbound				GILBERT AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	1	0	1	1	2	0	3	0	0	4	4	0	2	0	2	10
07:45 AM	0	0	0	0	0	3	0	3	0	1	2	3	0	4	0	4	10
08:00 AM	0	0	0	0	0	3	0	3	0	3	2	5	0	2	0	2	10
08:15 AM	0	8	0	8	0	5	0	5	0	1	1	2	0	2	0	2	17
<b>Total Volume</b>	0	9	0	9	1	13	0	14	0	5	9	14	0	10	0	10	47
<b>% App. Total</b>	0	100	0		7.1	92.9	0		0	35.7	64.3		0	100	0		
<b>PHF</b>	.000	.281	.000	.281	.250	.650	.000	.700	.000	.417	.563	.700	.000	.625	.000	.625	.691



# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 17AM FINAL  
 Site Code : 00000017  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 17PM FINAL  
 Site Code : 00000017  
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 Page No : 1

## Groups Printed- Vehicles

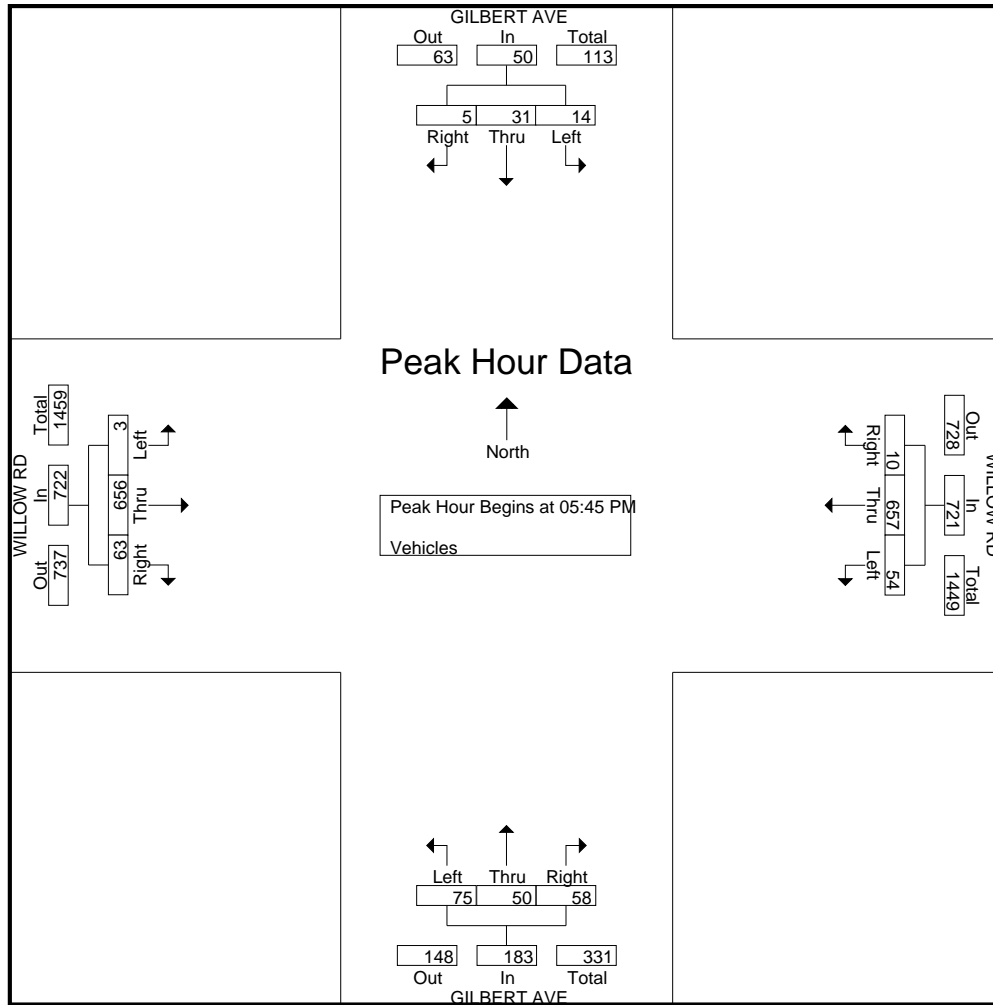
Start Time	GILBERT AVE Southbound					WILLOW RD Westbound					GILBERT AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	1	13	5	1	20	2	107	11	2	122	20	11	30	0	61	14	194	1	0	209	412
04:15 PM	0	16	5	0	21	3	108	12	1	124	18	26	18	3	65	9	205	0	0	214	424
04:30 PM	0	15	3	2	20	2	134	12	1	149	15	10	13	0	38	8	208	0	0	216	423
04:45 PM	0	14	2	0	16	2	146	13	0	161	11	14	24	1	50	14	106	0	1	121	348
Total	1	58	15	3	77	9	495	48	4	556	64	61	85	4	214	45	713	1	1	760	1607
05:00 PM	3	13	4	1	21	1	155	14	1	171	8	13	17	0	38	13	92	0	1	106	336
05:15 PM	0	12	1	1	14	0	150	16	2	168	12	17	26	1	56	9	122	0	1	132	370
05:30 PM	1	10	3	1	15	1	169	12	0	182	6	16	13	1	36	14	168	1	1	184	417
05:45 PM	0	10	2	1	13	0	167	12	1	180	13	17	11	0	41	17	186	0	1	204	438
Total	4	45	10	4	63	2	641	54	4	701	39	63	67	2	171	53	568	1	4	626	1561
06:00 PM	1	9	5	1	16	3	169	12	0	184	10	14	25	2	51	17	150	0	0	167	418
06:15 PM	0	8	3	3	14	6	162	16	4	188	16	11	16	3	46	16	155	1	1	173	421
06:30 PM	4	4	4	2	14	1	159	14	0	174	19	8	23	0	50	13	165	2	1	181	419
06:45 PM	3	6	6	0	15	4	132	16	2	154	12	9	5	0	26	11	207	1	1	220	415
Total	8	27	18	6	59	14	622	58	6	700	57	42	69	5	173	57	677	4	3	741	1673
Grand Total	13	130	43	13	199	25	1758	160	14	1957	160	166	221	11	558	155	1958	6	8	2127	4841
Apprch %	6.5	65.3	21.6	6.5		1.3	89.8	8.2	0.7		28.7	29.7	39.6	2		7.3	92.1	0.3	0.4		
Total %	0.3	2.7	0.9	0.3	4.1	0.5	36.3	3.3	0.3	40.4	3.3	3.4	4.6	0.2	11.5	3.2	40.4	0.1	0.2	43.9	

Start Time	GILBERT AVE Southbound				WILLOW RD Westbound				GILBERT AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:45 PM																	
05:45 PM	0	<b>10</b>	2	12	0	167	12	179	13	<b>17</b>	11	41	<b>17</b>	<b>186</b>	0	<b>203</b>	<b>435</b>
06:00 PM	1	9	<b>5</b>	<b>15</b>	3	<b>169</b>	12	<b>184</b>	10	14	<b>25</b>	49	17	150	0	167	415
06:15 PM	0	8	3	11	<b>6</b>	162	<b>16</b>	184	16	11	16	43	16	155	1	172	410
06:30 PM	<b>4</b>	4	4	12	1	159	14	174	<b>19</b>	8	23	<b>50</b>	13	165	<b>2</b>	180	416
Total Volume	5	31	14	50	10	657	54	721	58	50	75	183	63	656	3	722	1676
% App. Total	10	62	28		1.4	91.1	7.5		31.7	27.3	41		8.7	90.9	0.4		
PHF	.313	.775	.700	.833	.417	.972	.844	.980	.763	.735	.750	.915	.926	.882	.375	.889	.963

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 17PM FINAL  
 Site Code : 00000017  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
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File Name : 17PM FINAL  
 Site Code : 00000017  
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Groups Printed- Bikes

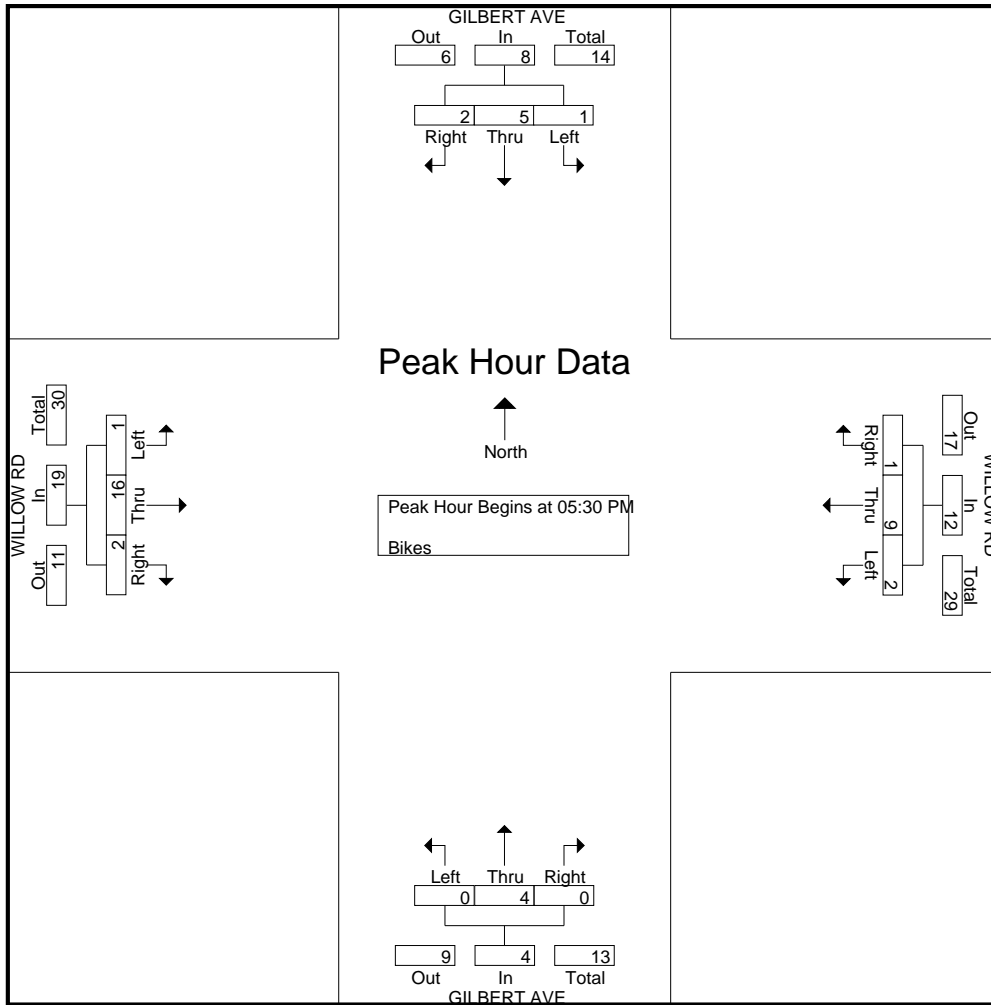
Start Time	GILBERT AVE Southbound					WILLOW RD Westbound					GILBERT AVE Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	0	0	0	1	4
04:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	2	3	0	0	5	7
04:30 PM	0	0	0	0	0	0	2	1	0	3	0	2	0	0	2	0	2	0	0	2	7
04:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	3
<b>Total</b>	0	0	0	0	0	0	10	1	0	11	0	2	0	0	2	3	5	0	0	8	21
05:00 PM	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	3
05:15 PM	1	0	0	0	1	1	3	0	0	4	0	0	0	0	0	0	3	0	0	3	8
05:30 PM	1	3	0	0	4	1	1	1	0	3	0	1	0	0	1	1	5	0	0	6	14
05:45 PM	1	1	0	0	2	0	4	1	0	5	0	0	0	0	0	1	5	1	0	7	14
<b>Total</b>	3	5	0	0	8	2	9	2	0	13	0	1	0	0	1	2	14	1	0	17	39
06:00 PM	0	0	1	0	1	0	2	0	0	2	0	2	0	0	2	0	1	0	0	1	6
06:15 PM	0	1	0	0	1	0	2	0	0	2	0	1	0	0	1	0	5	0	0	5	9
06:30 PM	0	3	0	0	3	0	2	0	0	2	0	1	0	0	1	0	3	0	0	3	9
06:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	2	0	0	3	4
<b>Total</b>	0	4	1	0	5	0	7	0	0	7	0	4	0	0	4	1	11	0	0	12	28
Grand Total	3	9	1	0	13	2	26	3	0	31	0	7	0	0	7	6	30	1	0	37	88
Apprch %	23.1	69.2	7.7	0		6.5	83.9	9.7	0		0	100	0	0		16.2	81.1	2.7	0		
Total %	3.4	10.2	1.1	0	14.8	2.3	29.5	3.4	0	35.2	0	8	0	0	8	6.8	34.1	1.1	0	42	

Start Time	GILBERT AVE Southbound				WILLOW RD Westbound				GILBERT AVE Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:30 PM																	
05:30 PM	1	3	0	4	1	1	1	3	0	1	0	1	1	5	0	6	14
05:45 PM	1	1	0	2	0	4	1	5	0	0	0	0	1	5	1	7	14
06:00 PM	0	0	1	1	0	2	0	2	0	2	0	2	0	1	0	1	6
06:15 PM	0	1	0	1	0	2	0	2	0	1	0	1	0	5	0	5	9
Total Volume	2	5	1	8	1	9	2	12	0	4	0	4	2	16	1	19	43
% App. Total	25	62.5	12.5		8.3	75	16.7		0	100	0		10.5	84.2	5.3		
PHF	.500	.417	.250	.500	.250	.563	.500	.600	.000	.500	.000	.500	.500	.800	.250	.679	.768

# Traffic Data Service

San Jose, CA  
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File Name : 17PM FINAL  
 Site Code : 00000017  
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# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 16AM FINAL  
 Site Code : 00000016  
 Start Date : 3/19/2019  
 Page No : 1

Groups Printed- Vehicles

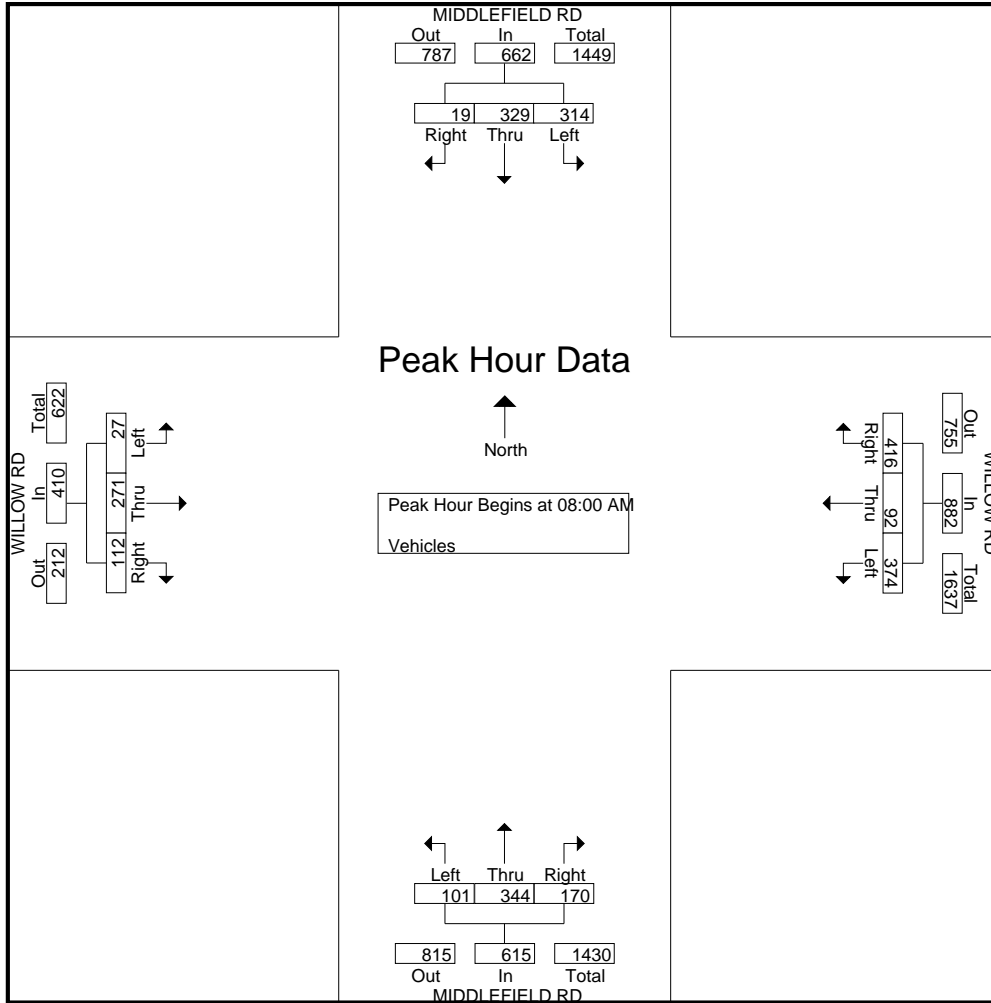
Start Time	MIDDLEFIELD RD Southbound					WILLOW RD Westbound					MIDDLEFIELD RD Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	1	35	35	1	72	99	16	89	0	204	27	34	7	2	70	9	25	0	0	34	380
07:15 AM	1	36	32	2	71	122	13	109	1	245	23	67	2	2	94	15	27	1	0	43	453
07:30 AM	1	65	49	2	117	130	18	74	0	222	33	73	11	10	127	11	42	7	1	61	527
07:45 AM	1	64	57	1	123	129	36	110	11	286	43	85	16	14	158	20	59	8	0	87	654
<b>Total</b>	<b>4</b>	<b>200</b>	<b>173</b>	<b>6</b>	<b>383</b>	<b>480</b>	<b>83</b>	<b>382</b>	<b>12</b>	<b>957</b>	<b>126</b>	<b>259</b>	<b>36</b>	<b>28</b>	<b>449</b>	<b>55</b>	<b>153</b>	<b>16</b>	<b>1</b>	<b>225</b>	<b>2014</b>
08:00 AM	6	74	92	1	173	118	20	91	2	231	30	78	18	8	134	23	70	10	0	103	641
08:15 AM	11	74	79	2	166	113	25	77	0	215	54	101	24	2	181	28	69	5	2	104	666
08:30 AM	1	74	57	0	132	98	25	111	1	235	41	77	25	7	150	36	74	10	7	127	644
08:45 AM	1	107	86	1	195	87	22	95	2	206	45	88	34	3	170	25	58	2	1	86	657
<b>Total</b>	<b>19</b>	<b>329</b>	<b>314</b>	<b>4</b>	<b>666</b>	<b>416</b>	<b>92</b>	<b>374</b>	<b>5</b>	<b>887</b>	<b>170</b>	<b>344</b>	<b>101</b>	<b>20</b>	<b>635</b>	<b>112</b>	<b>271</b>	<b>27</b>	<b>10</b>	<b>420</b>	<b>2608</b>
09:00 AM	1	81	60	2	144	63	14	82	2	161	27	77	19	2	125	25	60	4	6	95	525
09:15 AM	3	51	59	2	115	69	22	86	1	178	37	59	23	4	123	30	46	4	1	81	497
09:30 AM	3	73	51	1	128	71	30	94	1	196	29	50	19	4	102	18	37	4	1	60	486
09:45 AM	3	53	48	1	105	68	29	67	17	181	29	63	17	5	114	23	37	4	1	65	465
<b>Total</b>	<b>10</b>	<b>258</b>	<b>218</b>	<b>6</b>	<b>492</b>	<b>271</b>	<b>95</b>	<b>329</b>	<b>21</b>	<b>716</b>	<b>122</b>	<b>249</b>	<b>78</b>	<b>15</b>	<b>464</b>	<b>96</b>	<b>180</b>	<b>16</b>	<b>9</b>	<b>301</b>	<b>1973</b>
Grand Total	33	787	705	16	1541	1167	270	1085	38	2560	418	852	215	63	1548	263	604	59	20	946	6595
Apprch %	2.1	51.1	45.7	1		45.6	10.5	42.4	1.5		27	55	13.9	4.1		27.8	63.8	6.2	2.1		
Total %	0.5	11.9	10.7	0.2	23.4	17.7	4.1	16.5	0.6	38.8	6.3	12.9	3.3	1	23.5	4	9.2	0.9	0.3	14.3	

Start Time	MIDDLEFIELD RD Southbound				WILLOW RD Westbound				MIDDLEFIELD RD Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	6	74	<b>92</b>	172	<b>118</b>	20	91	229	30	78	18	126	23	70	<b>10</b>	103	630
08:15 AM	<b>11</b>	74	79	164	113	<b>25</b>	77	215	<b>54</b>	<b>101</b>	24	<b>179</b>	28	69	5	102	<b>660</b>
08:30 AM	1	74	57	132	98	25	<b>111</b>	<b>234</b>	41	77	25	143	<b>36</b>	<b>74</b>	10	<b>120</b>	629
08:45 AM	1	<b>107</b>	86	<b>194</b>	87	22	95	204	45	88	<b>34</b>	167	25	58	2	85	650
Total Volume	19	329	314	662	416	92	374	882	170	344	101	615	112	271	27	410	2569
% App. Total	2.9	49.7	47.4		47.2	10.4	42.4		27.6	55.9	16.4		27.3	66.1	6.6		
PHF	.432	.769	.853	.853	.881	.920	.842	.942	.787	.851	.743	.859	.778	.916	.675	.854	.973

# Traffic Data Service

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Groups Printed- Bikes

Start Time	MIDDLEFIELD RD Southbound					WILLOW RD Westbound					MIDDLEFIELD RD Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	3	0	0	0	3	0	3	0	0	3	0	0	1	0	1	1	2	0	0	3	10
07:15 AM	1	0	0	0	1	0	4	0	0	4	1	0	0	0	1	0	2	1	0	3	9
07:30 AM	2	0	0	0	2	1	7	1	0	9	0	0	1	0	1	1	0	1	0	2	14
07:45 AM	0	3	0	0	3	0	21	0	0	21	1	1	1	0	3	0	2	1	0	3	30
Total	6	3	0	0	9	1	35	1	0	37	2	1	3	0	6	2	6	3	0	11	63
08:00 AM	4	0	0	0	4	1	8	1	0	10	0	1	1	0	2	0	0	3	0	3	19
08:15 AM	2	1	0	0	3	0	6	0	0	6	1	0	1	0	2	0	5	1	0	6	17
08:30 AM	7	1	0	0	8	0	3	0	0	3	0	0	1	0	1	1	7	5	0	13	25
08:45 AM	5	0	0	0	5	0	2	1	0	3	0	1	0	0	1	0	6	1	0	7	16
Total	18	2	0	0	20	1	19	2	0	22	1	2	3	0	6	1	18	10	0	29	77
09:00 AM	4	3	0	0	7	0	7	0	0	7	0	0	1	0	1	0	5	4	0	9	24
09:15 AM	0	0	0	0	0	0	6	0	0	6	0	1	0	0	1	0	2	6	0	8	15
09:30 AM	6	1	0	0	7	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	11
09:45 AM	4	2	0	0	6	0	5	0	0	5	0	2	1	0	3	0	0	0	0	0	14
Total	14	6	0	0	20	0	21	0	0	21	0	3	2	0	5	0	8	10	0	18	64
Grand Total	38	11	0	0	49	2	75	3	0	80	3	6	8	0	17	3	32	23	0	58	204
Apprch %	77.6	22.4	0	0		2.5	93.8	3.8	0		17.6	35.3	47.1	0		5.2	55.2	39.7	0		
Total %	18.6	5.4	0	0	24	1	36.8	1.5	0	39.2	1.5	2.9	3.9	0	8.3	1.5	15.7	11.3	0	28.4	

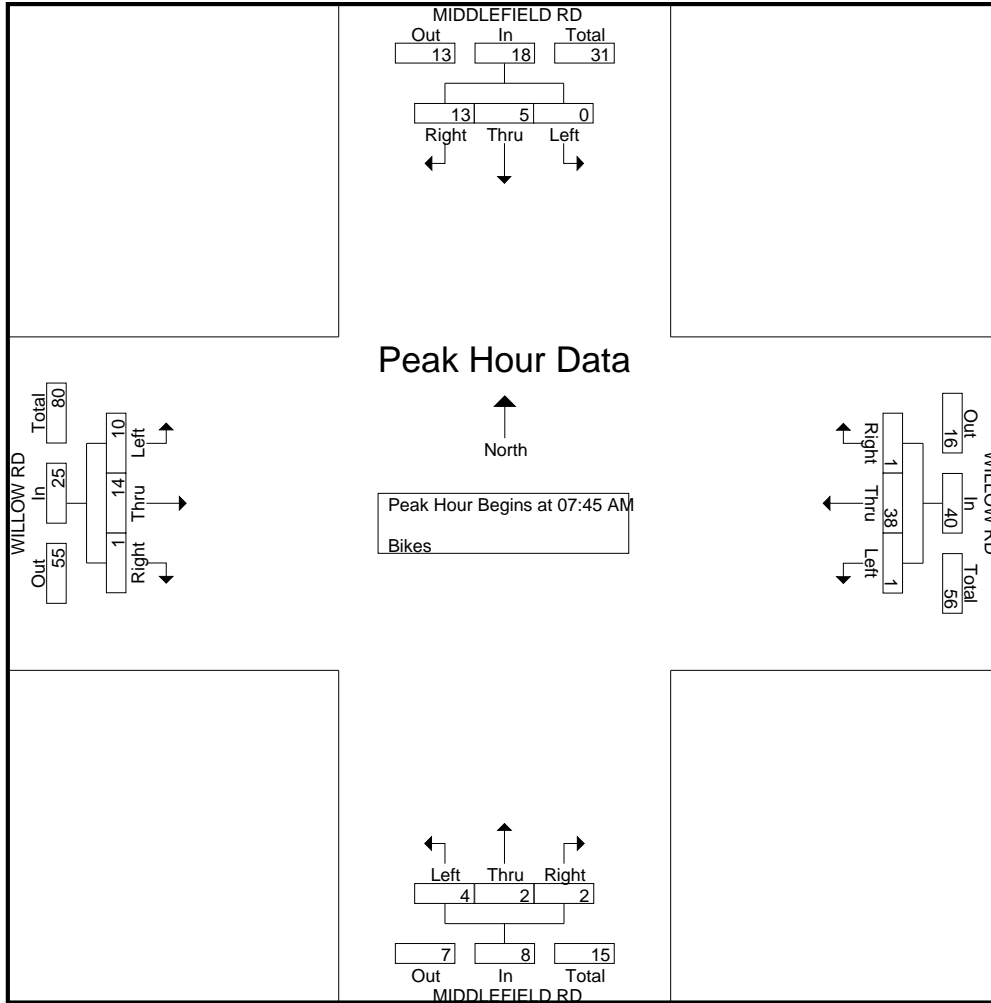
Start Time	MIDDLEFIELD RD Southbound				WILLOW RD Westbound				MIDDLEFIELD RD Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	3	0	3	0	21	0	21	1	1	1	3	0	2	1	3	30
08:00 AM	4	0	0	4	1	8	1	10	0	1	1	2	0	0	3	3	19
08:15 AM	2	1	0	3	0	6	0	6	1	0	1	2	0	5	1	6	17
08:30 AM	7	1	0	8	0	3	0	3	0	0	1	1	1	7	5	13	25
Total Volume	13	5	0	18	1	38	1	40	2	2	4	8	1	14	10	25	91
% App. Total	72.2	27.8	0		2.5	95	2.5		25	25	50		4	56	40		
PHF	.464	.417	.000	.563	.250	.452	.250	.476	.500	.500	1.00	.667	.250	.500	.500	.481	.758



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File Name : 16PM FINAL  
 Site Code : 00000016  
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Groups Printed- Vehicles

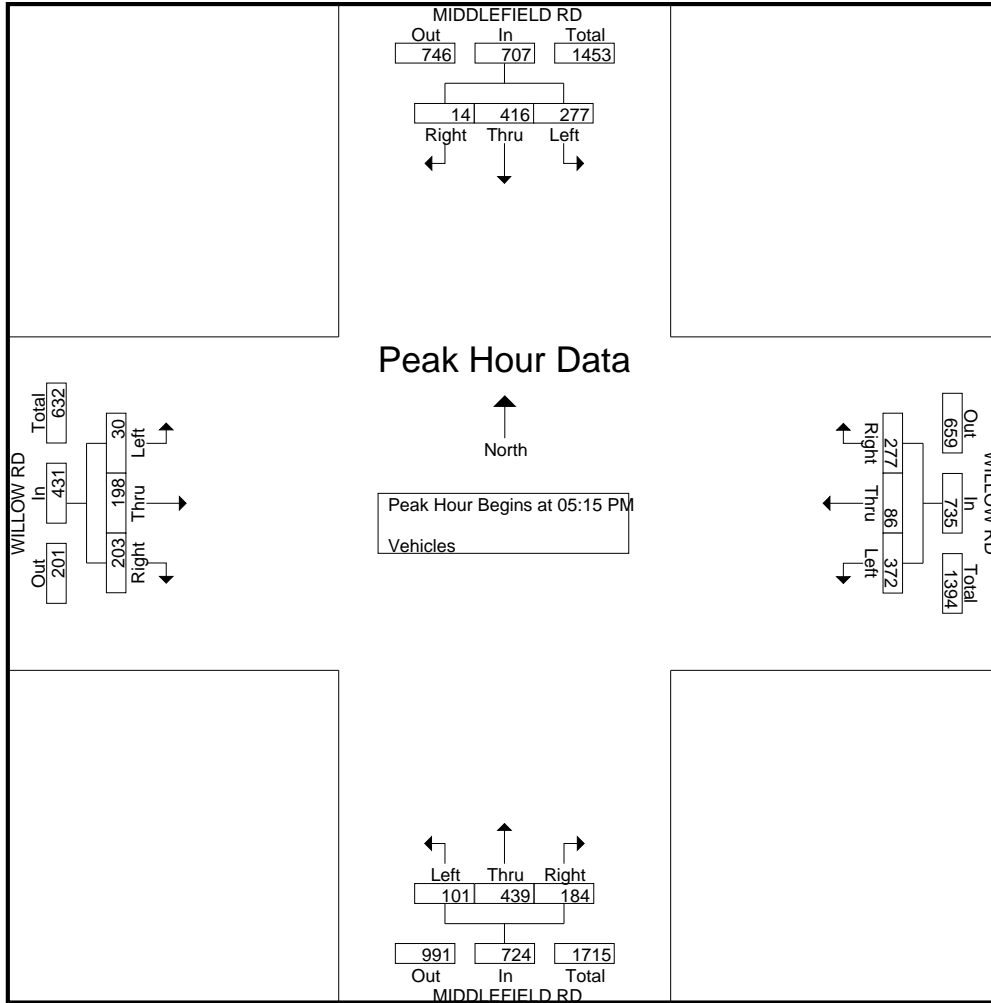
Start Time	MIDDLEFIELD RD Southbound					WILLOW RD Westbound					MIDDLEFIELD RD Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	7	91	105	4	207	84	16	51	10	161	64	105	13	2	184	42	48	6	3	99	651
04:15 PM	4	79	92	0	175	55	19	48	0	122	68	90	22	4	184	36	58	6	2	102	583
04:30 PM	3	94	64	3	164	60	16	79	3	158	64	90	21	8	183	45	74	4	7	130	635
04:45 PM	5	129	64	2	200	79	24	74	3	180	32	123	26	6	187	36	39	2	5	82	649
Total	19	393	325	9	746	278	75	252	16	621	228	408	82	20	738	159	219	18	17	413	2518
05:00 PM	4	117	42	0	163	71	12	72	2	157	26	110	47	7	190	65	42	11	2	120	630
05:15 PM	3	122	53	3	181	73	25	83	4	185	38	97	27	3	165	52	35	12	1	100	631
05:30 PM	6	100	71	1	178	68	21	80	3	172	46	129	20	6	201	53	54	7	4	118	669
05:45 PM	3	98	73	4	178	61	14	110	1	186	61	101	29	7	198	55	58	7	3	123	685
Total	16	437	239	8	700	273	72	345	10	700	171	437	123	23	754	225	189	37	10	461	2615
06:00 PM	2	96	80	4	182	75	26	99	1	201	39	112	25	8	184	43	51	4	2	100	667
06:15 PM	3	73	55	2	133	76	17	90	5	188	52	87	21	6	166	49	65	4	1	119	606
06:30 PM	2	79	73	3	157	77	20	80	3	180	57	74	15	0	146	34	50	6	1	91	574
06:45 PM	0	69	69	0	138	58	17	57	4	136	81	70	22	3	176	32	57	7	1	97	547
Total	7	317	277	9	610	286	80	326	13	705	229	343	83	17	672	158	223	21	5	407	2394
Grand Total	42	1147	841	26	2056	837	227	923	39	2026	628	1188	288	60	2164	542	631	76	32	1281	7527
Apprch %	2	55.8	40.9	1.3		41.3	11.2	45.6	1.9		29	54.9	13.3	2.8		42.3	49.3	5.9	2.5		
Total %	0.6	15.2	11.2	0.3	27.3	11.1	3	12.3	0.5	26.9	8.3	15.8	3.8	0.8	28.7	7.2	8.4	1	0.4	17	

Start Time	MIDDLEFIELD RD Southbound				WILLOW RD Westbound				MIDDLEFIELD RD Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:15 PM																	
05:15 PM	3	<b>122</b>	53	<b>178</b>	73	25	83	181	38	97	27	162	52	35	<b>12</b>	99	620
05:30 PM	<b>6</b>	100	71	177	68	21	80	169	46	<b>129</b>	20	<b>195</b>	53	54	7	114	655
05:45 PM	3	98	73	174	61	14	<b>110</b>	185	<b>61</b>	101	<b>29</b>	191	<b>55</b>	<b>58</b>	7	<b>120</b>	<b>670</b>
06:00 PM	2	96	<b>80</b>	178	<b>75</b>	<b>26</b>	99	<b>200</b>	39	112	25	176	43	51	4	98	652
Total Volume	14	416	277	707	277	86	372	735	184	439	101	724	203	198	30	431	2597
% App. Total	2	58.8	39.2		37.7	11.7	50.6		25.4	60.6	14		47.1	45.9	7		
PHF	.583	.852	.866	.993	.923	.827	.845	.919	.754	.851	.871	.928	.923	.853	.625	.898	.969

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Groups Printed- Bikes

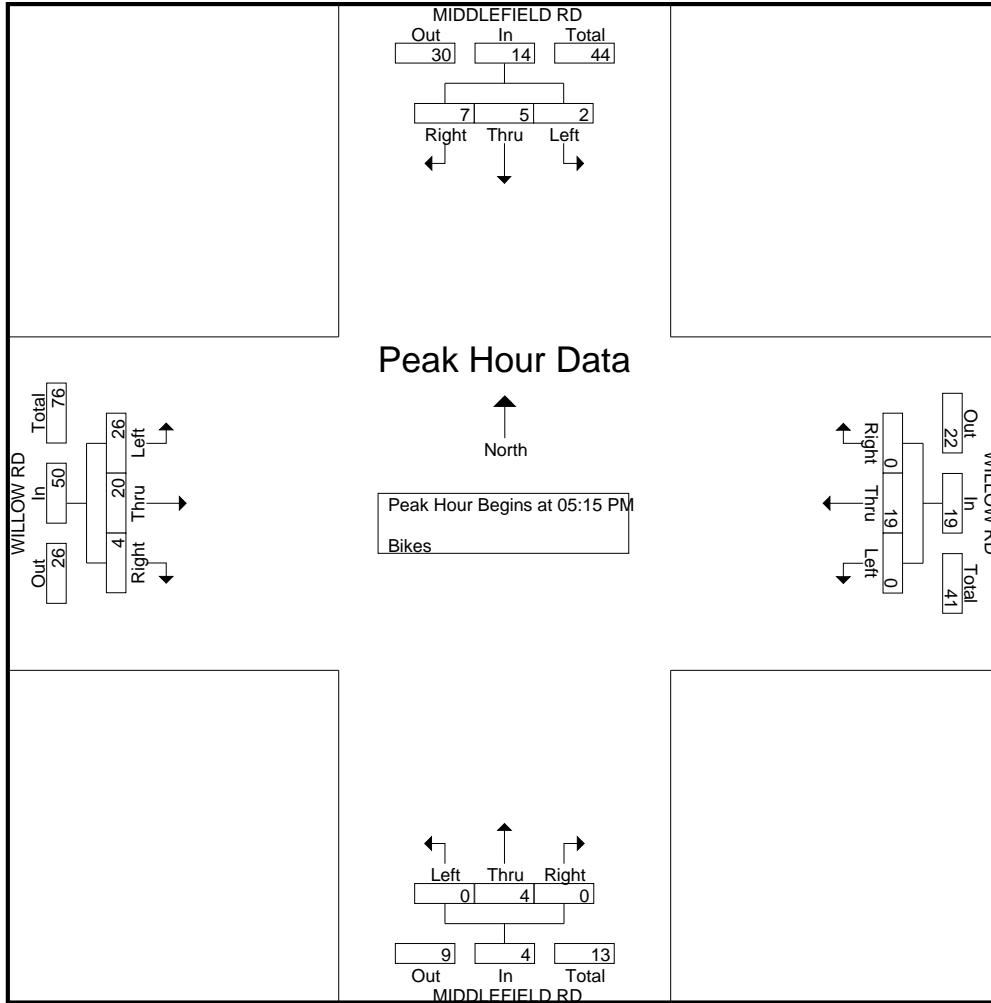
Start Time	MIDDLEFIELD RD Southbound					WILLOW RD Westbound					MIDDLEFIELD RD Northbound					WILLOW RD Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	2	0	0	0	2	0	0	1	0	1	0	0	0	0	0	2	3	4	0	9	12
04:15 PM	2	0	0	0	2	0	3	0	0	3	0	1	0	0	1	0	5	1	0	6	12
04:30 PM	2	1	0	0	3	0	1	0	0	1	0	3	0	0	3	0	2	2	0	4	11
04:45 PM	1	2	0	0	3	0	3	0	0	3	0	1	0	0	1	0	2	2	0	4	11
Total	7	3	0	0	10	0	7	1	0	8	0	5	0	0	5	2	12	9	0	23	46
05:00 PM	3	0	0	0	3	1	4	0	0	5	0	0	1	0	1	0	2	3	0	5	14
05:15 PM	1	0	1	0	2	0	6	0	0	6	0	1	0	0	1	0	3	11	0	14	23
05:30 PM	3	4	0	0	7	0	4	0	0	4	0	2	0	0	2	0	11	4	0	15	28
05:45 PM	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	0	6	4	0	10	18
Total	8	4	1	0	13	1	21	0	0	22	0	3	1	0	4	0	22	22	0	44	83
06:00 PM	2	1	1	0	4	0	2	0	0	2	0	1	0	0	1	4	0	7	0	11	18
06:15 PM	1	0	0	0	1	0	4	0	0	4	1	1	0	0	2	0	6	6	0	12	19
06:30 PM	2	3	1	0	6	0	3	0	0	3	0	2	0	0	2	1	4	5	0	10	21
06:45 PM	3	1	0	0	4	0	0	0	0	0	1	1	0	0	2	1	5	1	0	7	13
Total	8	5	2	0	15	0	9	0	0	9	2	5	0	0	7	6	15	19	0	40	71
Grand Total	23	12	3	0	38	1	37	1	0	39	2	13	1	0	16	8	49	50	0	107	200
Apprch %	60.5	31.6	7.9	0		2.6	94.9	2.6	0		12.5	81.2	6.2	0		7.5	45.8	46.7	0		
Total %	11.5	6	1.5	0	19	0.5	18.5	0.5	0	19.5	1	6.5	0.5	0	8	4	24.5	25	0	53.5	

Start Time	MIDDLEFIELD RD Southbound				WILLOW RD Westbound				MIDDLEFIELD RD Northbound				WILLOW RD Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:15 PM																	
05:15 PM	1	0	1	2	0	6	0	6	0	1	0	1	0	3	11	14	23
05:30 PM	3	4	0	7	0	4	0	4	0	2	0	2	0	11	4	15	28
05:45 PM	1	0	0	1	0	7	0	7	0	0	0	0	0	6	4	10	18
06:00 PM	2	1	1	4	0	2	0	2	0	1	0	1	4	0	7	11	18
Total Volume	7	5	2	14	0	19	0	19	0	4	0	4	4	20	26	50	87
% App. Total	50	35.7	14.3		0	100	0		0	100	0		8	40	52		
PHF	.583	.313	.500	.500	.000	.679	.000	.679	.000	.500	.000	.500	.250	.455	.591	.833	.777

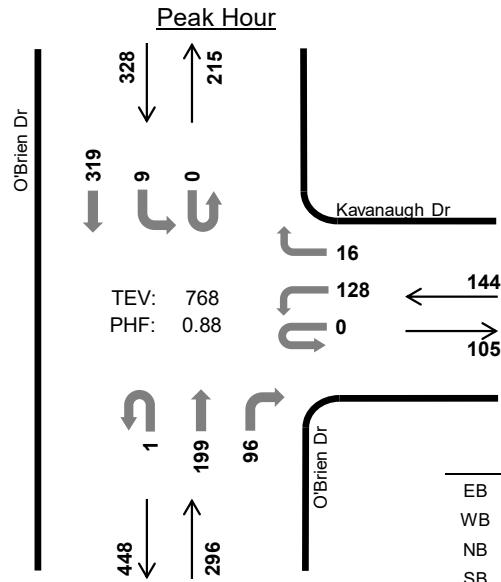
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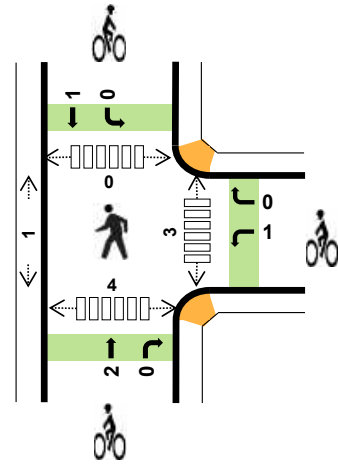
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### O'Brien Dr Kavanaugh Dr



Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	-	-
WB	0.0%	0.88
NB	3.4%	0.82
SB	4.0%	0.65
TOTAL	3.0%	0.88

#### Three-Hour Count Summaries

Interval Start	n/a				Kavanaugh Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:30 AM	0	0	0	0	0	38	0	3	0	0	38	27	0	0	58	0	164	0	
7:45 AM	0	0	0	0	0	27	0	5	0	0	44	16	0	0	126	0	218	0	
8:00 AM	0	0	0	0	0	36	0	3	0	0	61	29	0	5	79	0	213	0	
8:15 AM	0	0	0	0	0	27	0	5	1	0	56	24	0	4	56	0	173	768	
Peak Hour	All	0	0	0	0	0	128	0	16	1	0	199	96	0	9	319	0	768	0
	HV	0	0	0	0	0	0	0	0	0	0	10	0	0	0	13	0	23	0
	HV%	-	-	-	-	-	0%	-	0%	0%	-	5%	0%	-	0%	4%	-	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:30 AM	0	0	2	1	3	0	0	1	0	1	1	0	0	3	4
7:45 AM	0	0	3	4	7	0	0	1	0	1	0	1	0	1	2
8:00 AM	0	0	3	4	7	0	1	0	0	1	1	0	0	0	1
8:15 AM	0	0	2	4	6	0	0	0	1	1	1	0	0	0	1
Peak Hour	0	0	10	13	23	0	1	2	1	4	3	1	0	4	8

Three-Hour Count Summaries																			
Interval Start	n/a				Kavanaugh Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	21	0	3	0	0	36	15	0	1	26	0	102	0	
7:15 AM	0	0	0	0	0	35	0	2	0	0	33	9	0	0	25	0	104	0	
7:30 AM	0	0	0	0	0	38	0	3	0	0	38	27	0	0	58	0	164	0	
7:45 AM	0	0	0	0	0	27	0	5	0	0	44	16	0	0	126	0	218	588	
8:00 AM	0	0	0	0	0	36	0	3	0	0	61	29	0	5	79	0	213	699	
8:15 AM	0	0	0	0	0	27	0	5	1	0	56	24	0	4	56	0	173	768	
8:30 AM	0	0	0	0	0	21	0	1	0	0	60	20	0	7	29	0	138	742	
8:45 AM	0	0	0	0	0	20	0	3	0	0	71	14	0	5	42	0	155	679	
9:00 AM	0	0	0	0	0	22	0	1	0	0	88	15	0	0	36	0	162	628	
9:15 AM	0	0	0	0	0	10	0	0	0	0	47	11	0	3	41	0	112	567	
9:30 AM	0	0	0	0	0	10	0	2	0	0	50	7	0	5	36	0	110	539	
9:45 AM	0	0	0	0	0	6	0	3	0	0	31	12	0	3	31	0	86	470	
Count Total	0	0	0	0	0	273	0	31	1	0	615	199	0	33	585	0	1,737	0	
Peak Hour	All	0	0	0	0	0	128	0	16	1	0	199	96	0	9	319	0	768	0
	HV	0	0	0	0	0	0	0	0	0	0	10	0	0	0	13	0	23	0
	HV%	-	-	-	-	-	0%	-	0%	0%	-	5%	0%	-	0%	4%	-	3%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	3	6	9	0	1	0	0	1	0	0	0	0	0
7:15 AM	0	1	1	1	3	0	0	1	0	1	0	0	0	1	1
7:30 AM	0	0	2	1	3	0	0	1	0	1	1	0	0	3	4
7:45 AM	0	0	3	4	7	0	0	1	0	1	0	1	0	1	2
8:00 AM	0	0	3	4	7	0	1	0	0	1	1	0	0	0	1
8:15 AM	0	0	2	4	6	0	0	0	1	1	1	0	0	0	1
8:30 AM	0	0	5	1	6	0	1	2	0	3	1	0	0	1	2
8:45 AM	0	0	1	3	4	0	2	1	0	3	0	0	0	1	1
9:00 AM	0	0	4	7	11	0	1	0	1	2	1	0	0	1	2
9:15 AM	0	0	3	15	18	0	0	4	1	5	1	0	0	0	1
9:30 AM	0	0	0	6	6	0	0	2	0	2	0	0	0	0	0
9:45 AM	0	0	5	4	9	0	1	2	0	3	0	0	0	0	0
Count Total	0	1	32	56	89	0	7	14	3	24	6	1	0	8	15
Peak Hr	0	0	10	13	23	0	1	2	1	4	3	1	0	4	8

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Kavanaugh Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	6	0	9	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	22
8:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	4	0	7	20
8:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	0	6	23
8:30 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	6	26
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	4	23
9:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	11	27
9:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	2	13	0	18	39
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	6	39
9:45 AM	0	0	0	0	0	0	0	0	0	0	4	1	0	0	4	0	9	44
Count Total	0	0	0	0	0	1	0	0	0	0	0	30	2	0	4	52	89	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	10	0	0	0	13	0	23	0

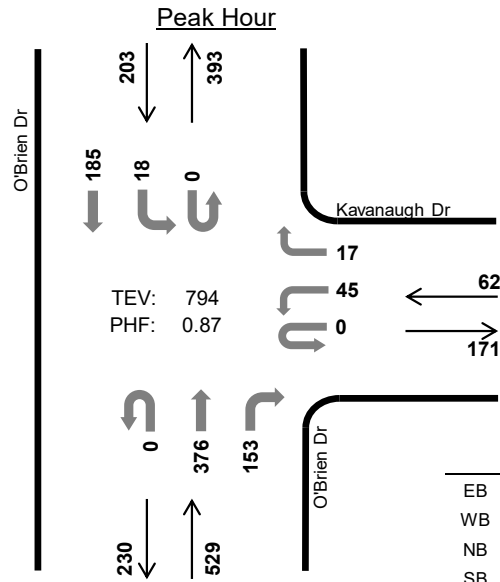
  

Three-Hour Count Summaries - Bikes																	
Interval Start	n/a			Kavanaugh Dr			O'Brien Dr			O'Brien Dr			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	1	0			
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	1	0			
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0			
7:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	4			
8:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	1	4			
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	4			
8:30 AM	0	0	0	1	0	0	0	1	1	0	0	0	3	6			
8:45 AM	0	0	0	1	0	1	0	0	1	0	0	0	3	8			
9:00 AM	0	0	0	0	0	1	0	0	0	0	1	0	2	9			
9:15 AM	0	0	0	0	0	0	0	2	2	1	0	0	5	13			
9:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2	12			
9:45 AM	0	0	0	1	0	0	0	2	0	0	0	0	3	12			
Count Total	0	0	0	5	0	2	0	9	5	1	2	0	24	0			
Peak Hour	0	0	0	1	0	0	0	2	0	0	1	0	4	0			

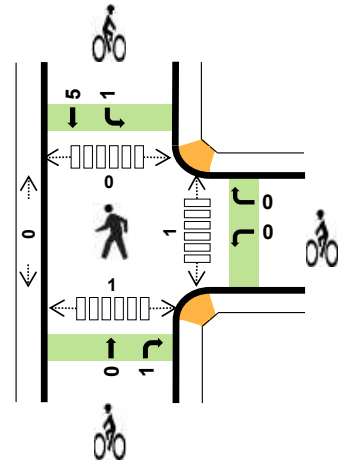
Note: U-Turn volumes for bikes are included in Left-Turn, if any.



### O'Brien Dr Kavanaugh Dr



Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	-	-
WB	4.8%	0.91
NB	5.5%	0.80
SB	3.0%	0.94
TOTAL	4.8%	0.87

#### Three-Hour Count Summaries

Interval Start	n/a				Kavanaugh Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:30 PM	0	0	0	0	0	17	0	0	0	0	94	25	0	6	47	0	189	0	
4:45 PM	0	0	0	0	0	9	0	3	0	0	64	48	0	3	47	0	174	0	
5:00 PM	0	0	0	0	0	14	0	3	0	0	98	34	0	4	50	0	203	0	
5:15 PM	0	0	0	0	0	5	0	11	0	0	120	46	0	5	41	0	228	794	
Peak Hour	All	0	0	0	0	0	45	0	17	0	0	376	153	0	18	185	0	794	0
	HV	0	0	0	0	0	2	0	1	0	0	28	1	0	0	6	0	38	0
	HV%	-	-	-	-	-	4%	-	6%	-	-	7%	1%	-	0%	3%	-	5%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total	
4:30 PM	0	2	8	1	11	0	0	0	2	2	1	0	0	0	1	2
4:45 PM	0	0	6	3	9	0	0	1	0	1	0	0	0	0	0	0
5:00 PM	0	1	11	2	14	0	0	0	1	1	0	0	0	0	0	0
5:15 PM	0	0	4	0	4	0	0	0	3	3	0	0	0	0	0	0
Peak Hour	0	3	29	6	38	0	0	1	6	7	1	0	0	1	2	2

Three-Hour Count Summaries																			
Interval Start	n/a				Kavanaugh Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	13	0	0	0	0	42	37	0	3	58	0	153	0	
4:15 PM	0	0	0	0	0	14	0	1	0	0	79	35	0	0	38	0	167	0	
<b>4:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>94</b>	<b>25</b>	<b>0</b>	<b>6</b>	<b>47</b>	<b>0</b>	<b>189</b>	<b>0</b>	
4:45 PM	0	0	0	0	0	9	0	3	0	0	64	48	0	3	47	0	174	683	
5:00 PM	0	0	0	0	0	14	0	3	0	0	98	34	0	4	50	0	203	733	
<b>5:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>120</b>	<b>46</b>	<b>0</b>	<b>5</b>	<b>41</b>	<b>0</b>	<b>228</b>	<b>794</b>	
5:30 PM	0	0	0	0	0	18	0	7	0	0	62	26	0	5	41	0	159	764	
5:45 PM	0	0	0	0	0	21	0	6	0	0	70	29	0	4	31	0	161	751	
6:00 PM	0	0	0	0	0	23	0	6	0	0	85	41	0	4	20	0	179	727	
6:15 PM	0	0	0	0	0	12	0	6	0	0	46	30	0	1	19	0	114	613	
6:30 PM	0	0	0	0	0	19	0	2	0	0	35	24	0	2	23	0	105	559	
6:45 PM	0	0	0	0	0	14	0	2	0	0	20	22	0	0	13	0	71	469	
Count Total	0	0	0	0	0	179	0	47	0	0	815	397	0	37	428	0	1,903	0	
Peak Hour	All	0	0	0	0	0	45	0	17	0	0	376	153	0	18	185	0	794	0
	HV	0	0	0	0	0	2	0	1	0	0	28	1	0	0	6	0	38	0
	HV%	-	-	-	-	-	4%	-	6%	-	-	7%	1%	-	0%	3%	-	5%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	5	1	6	0	1	1	0	2	2	0	0	0	2
4:15 PM	0	0	2	1	3	0	0	1	0	1	0	0	0	0	0
<b>4:30 PM</b>	<b>0</b>	<b>2</b>	<b>8</b>	<b>1</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>
4:45 PM	0	0	6	3	9	0	0	1	0	1	0	0	0	0	0
5:00 PM	0	1	11	2	14	0	0	0	1	1	0	0	0	0	0
<b>5:15 PM</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
5:30 PM	0	2	2	2	6	0	0	1	0	1	1	0	0	0	1
5:45 PM	0	0	7	1	8	0	0	3	0	3	1	0	0	0	1
6:00 PM	0	4	5	2	11	0	0	1	0	1	0	0	0	0	0
6:15 PM	0	1	7	0	8	0	0	0	3	3	0	0	0	2	2
6:30 PM	0	1	4	0	5	0	0	0	0	0	0	0	1	0	1
6:45 PM	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0
Count Total	0	11	66	14	91	0	1	8	9	18	5	0	1	3	9
Peak Hr	0	3	29	6	38	0	0	1	6	7	1	0	0	1	2

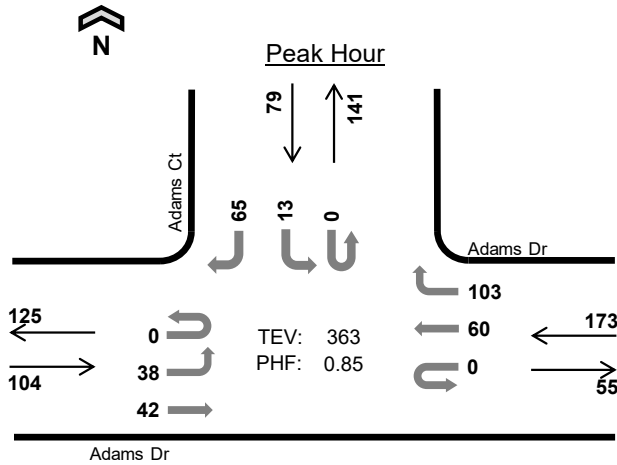
Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Kavanaugh Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	4	1	0	0	1	0	6	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	0
4:30 PM	0	0	0	0	0	2	0	0	0	0	8	0	0	0	1	0	11	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	5	1	0	0	3	0	9	29
5:00 PM	0	0	0	0	0	0	0	1	0	0	11	0	0	0	2	0	14	37
5:15 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	38
5:30 PM	0	0	0	0	0	0	0	2	0	0	2	0	0	2	0	0	6	33
5:45 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	1	0	8	32
6:00 PM	0	0	0	0	0	1	0	3	0	0	4	1	0	0	2	0	11	29
6:15 PM	0	0	0	0	0	0	0	1	0	0	7	0	0	0	0	0	8	33
6:30 PM	0	0	0	0	0	0	0	1	0	0	4	0	0	0	0	0	5	32
6:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	0	6	30
Count Total	0	0	0	0	0	3	0	8	0	0	63	3	0	2	12	0	91	0
Peak Hour	0	0	0	0	0	2	0	1	0	0	28	1	0	0	6	0	38	0

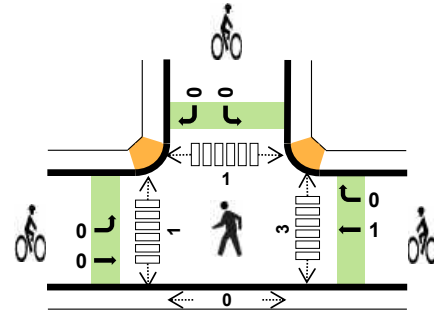
Three-Hour Count Summaries - Bikes																	
Interval Start	n/a			Kavanaugh Dr			O'Brien Dr			O'Brien Dr			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	1	0	0	0	0	1	0	0	0	2	0			
4:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	2	0			
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	6			
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	5			
5:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	3	7			
5:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	6			
5:45 PM	0	0	0	0	0	0	0	0	1	2	0	0	3	8			
6:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	8			
6:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	3	8			
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7			
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4			
Count Total	0	0	0	1	0	0	0	0	1	7	1	8	0	18	0		
Peak Hour	0	0	0	0	0	0	0	0	0	1	1	5	0	7	0		

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### Adams Ct Adams Dr



Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 8:15 AM to 9:15 AM



	HV %:	PHF
EB	12.5%	0.84
WB	15.6%	0.82
NB	-	0.88
SB	46.8%	0.56
TOTAL	21.6%	0.85

#### Three-Hour Count Summaries

Interval Start	Adams Dr Eastbound				Adams Dr Westbound				n/a Northbound				Adams Ct Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:15 AM	0	15	9	3	0	3	15	35	0	1	0	0	0	0	0	8	89	0	
8:30 AM	0	7	14	10	0	4	19	28	0	1	0	1	0	2	0	8	94	0	
8:45 AM	0	10	3	5	0	1	12	14	0	0	1	1	0	6	0	20	73	0	
9:00 AM	0	6	16	6	0	2	14	26	1	1	0	0	0	5	1	29	107	363	
Peak Hour	All	0	38	42	24	0	10	60	103	0	0	0	0	0	13	1	65	356	0
	HV	0	5	3	5	0	0	3	24	0	0	0	0	0	3	0	34	77	0
	HV%	-	13%	7%	21%	-	0%	5%	23%	-	-	-	-	-	23%	0%	52%	22%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:15 AM	1	3	0	3	7	0	1	0	1	2	0	0	0	0	0
8:30 AM	6	9	0	1	16	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	3	0	5	8	1	0	0	2	3	0	0	0	0	0
9:00 AM	6	12	0	28	46	0	1	0	0	1	3	1	1	0	5
Peak Hour	13	27	0	37	77	1	2	0	3	6	3	1	1	0	5

Three-Hour Count Summaries																			
Interval Start	Adams Dr				Adams Dr				n/a				Adams Ct				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	9	1	2	0	0	5	15	0	1	0	0	0	0	0	5	38	0	
7:15 AM	0	3	4	0	0	0	7	8	0	1	0	0	0	2	0	5	30	0	
7:30 AM	0	8	3	0	0	2	8	20	0	0	0	0	0	4	0	6	51	0	
7:45 AM	0	9	6	0	0	2	14	22	0	0	0	0	0	1	0	5	59	178	
8:00 AM	0	12	7	2	0	2	21	33	1	1	0	0	0	2	0	13	94	234	
<b>8:15 AM</b>	<b>0</b>	<b>15</b>	<b>9</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>15</b>	<b>35</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>89</b>	<b>293</b>	
<b>8:30 AM</b>	<b>0</b>	<b>7</b>	<b>14</b>	<b>10</b>	<b>0</b>	<b>4</b>	<b>19</b>	<b>28</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>94</b>	<b>336</b>	
<b>8:45 AM</b>	<b>0</b>	<b>10</b>	<b>3</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>12</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>20</b>	<b>73</b>	<b>350</b>	
<b>9:00 AM</b>	<b>0</b>	<b>6</b>	<b>16</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>14</b>	<b>26</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>29</b>	<b>107</b>	<b>363</b>	
9:15 AM	0	4	5	4	0	7	9	20	1	2	0	2	0	2	0	32	88	362	
9:30 AM	0	3	6	5	0	5	8	14	1	1	0	2	0	3	0	11	59	327	
9:45 AM	0	2	9	2	1	2	6	20	1	1	0	1	0	5	0	6	56	310	
Count Total	0	88	83	39	1	30	138	255	0	0	0	0	0	32	1	148	815	0	
Peak Hour	All	0	38	42	24	0	10	60	103	0	0	0	0	0	13	1	65	356	0
	HV	0	5	3	5	0	0	3	24	0	0	0	0	0	3	0	34	77	0
	HV%	-	13%	7%	21%	-	0%	5%	23%	-	-	-	-	-	23%	0%	52%	22%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	0	0	4	5	0	0	0	0	0	0	0	1	0	1
7:15 AM	1	0	0	2	3	1	0	0	0	1	0	0	0	0	0
7:30 AM	2	2	0	1	5	0	0	0	0	0	1	1	0	0	2
7:45 AM	3	4	0	1	8	1	0	0	0	1	0	0	0	0	0
8:00 AM	0	2	0	1	3	1	1	0	0	2	2	0	2	0	4
<b>8:15 AM</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>8:30 AM</b>	<b>6</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>8:45 AM</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:00 AM</b>	<b>6</b>	<b>12</b>	<b>0</b>	<b>28</b>	<b>46</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>
9:15 AM	1	6	0	26	33	0	0	0	1	1	0	0	0	0	0
9:30 AM	0	0	0	8	8	1	0	0	3	4	0	1	0	0	1
9:45 AM	2	1	0	3	6	0	0	0	1	1	0	0	1	0	1
Count Total	23	42	0	83	148	5	3	0	8	16	6	3	5	0	14
Peak Hr	13	27	0	37	77	1	2	0	3	6	3	1	1	0	5

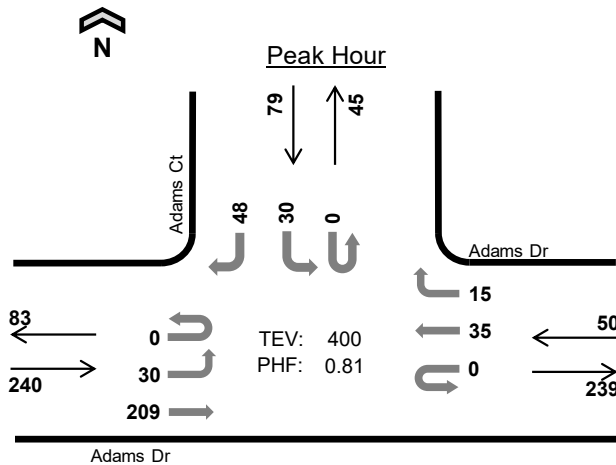
Three-Hour Count Summaries - Heavy Vehicles																			
Interval Start	Adams Dr				Adams Dr				n/a				Adams Ct				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	4	6	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	0
7:30 AM	0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	5	0
7:45 AM	0	3	0	0	0	0	0	4	0	0	0	0	0	0	0	0	1	8	22
8:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	3	19
8:15 AM	0	0	1	0	0	0	0	3	0	1	0	0	0	0	0	0	3	8	24
8:30 AM	0	1	1	4	0	0	0	9	0	0	0	0	0	0	0	0	1	16	35
8:45 AM	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	5	8	35
9:00 AM	0	4	1	1	0	0	2	10	0	0	0	0	0	0	3	0	25	46	78
9:15 AM	0	0	1	0	0	1	0	5	0	1	0	1	0	1	0	0	25	35	105
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	7	8	97	
9:45 AM	0	1	1	0	0	0	0	1	0	0	0	1	0	2	0	1	7	96	
Count Total	0	12	6	5	0	1	4	37	0	0	0	0	0	7	0	76	148	0	
Peak Hour	0	5	3	5	0	0	3	24	0	0	0	0	0	3	0	34	77	0	

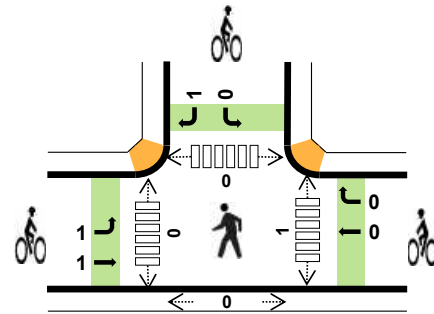
Three-Hour Count Summaries - Bikes																		
Interval Start	Adams Dr			Adams Dr			n/a			Adams Ct			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
8:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	4
8:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	2	5
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	3	7
9:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	6
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
9:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	2	0	4	9
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	7
Count Total	1	2	2	1	2	0	0	0	0	0	0	0	1	4	3	0	16	0
Peak Hour	0	0	1	1	1	0	0	0	0	0	0	0	3	0	0	0	6	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### Adams Ct Adams Dr



Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	7.9%	0.74
WB	14.0%	0.78
NB	-	0.86
SB	12.7%	0.79
TOTAL	9.8%	0.81

#### Three-Hour Count Summaries

Interval Start	Adams Dr Eastbound				Adams Dr Westbound				n/a Northbound				Adams Ct Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:30 PM	0	6	51	1	0	0	6	5	0	4	0	4	0	8	0	9	94	0	
4:45 PM	0	8	26	0	0	0	9	0	0	6	0	0	0	4	1	14	68	0	
5:00 PM	0	12	55	0	0	0	8	6	0	4	0	5	0	12	0	13	115	0	
5:15 PM	0	4	77	0	0	0	12	4	0	6	0	2	0	6	0	12	123	400	
Peak Hour	All	0	30	209	1	0	0	35	15	0	0	0	0	0	30	1	48	369	0
	HV	0	16	3	0	0	0	1	6	0	0	0	0	0	5	0	5	36	0
	HV%	-	53%	1%	0%	-	-	3%	40%	-	-	-	-	-	17%	0%	10%	10%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	4	0	0	1	5	0	0	0	0	0	0	0	0	0	0
4:45 PM	4	1	0	2	7	1	0	0	0	1	1	0	0	0	1
5:00 PM	9	3	0	4	16	1	0	0	1	2	0	0	0	0	0
5:15 PM	2	3	0	3	8	0	0	0	0	0	0	0	0	0	0
Peak Hour	19	7	0	10	36	2	0	0	1	3	1	0	0	0	1

Three-Hour Count Summaries																			
Interval Start	Adams Dr				Adams Dr				n/a				Adams Ct				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	5	9	1	0	0	8	5	0	1	1	2	0	9	0	15	56	0	
4:15 PM	0	5	30	1	0	1	9	4	0	3	0	2	0	9	0	12	76	0	
<b>4:30 PM</b>	<b>0</b>	<b>6</b>	<b>51</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>5</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>9</b>	<b>94</b>	<b>0</b>	
4:45 PM	0	8	26	0	0	0	9	0	0	6	0	0	0	4	1	14	68	294	
5:00 PM	0	12	55	0	0	0	8	6	0	4	0	5	0	12	0	13	115	353	
<b>5:15 PM</b>	<b>0</b>	<b>4</b>	<b>77</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>4</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>12</b>	<b>123</b>	<b>400</b>	
5:30 PM	0	3	37	0	0	0	8	1	0	3	0	1	0	2	0	8	63	369	
5:45 PM	0	6	39	3	0	0	7	3	1	2	1	2	0	2	0	9	75	376	
6:00 PM	0	5	54	0	0	0	4	3	0	5	0	0	0	2	0	18	91	352	
6:15 PM	0	8	19	0	0	0	2	3	0	5	0	2	0	3	0	9	51	280	
6:30 PM	0	5	7	1	0	0	4	2	0	4	0	0	0	3	0	16	42	259	
6:45 PM	0	7	2	1	0	0	0	3	0	1	0	2	0	2	0	7	25	209	
Count Total	0	74	406	8	0	1	77	39	0	0	0	0	0	62	1	142	810	0	
Peak Hour	All	0	30	209	1	0	0	35	15	0	0	0	0	0	30	1	48	369	0
	HV	0	16	3	0	0	0	1	6	0	0	0	0	0	5	0	5	36	0
	HV%	-	53%	1%	0%	-	-	3%	40%	-	-	-	-	-	17%	0%	10%	10%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	2	0	2	8	0	0	0	1	1	0	0	0	1	1
4:15 PM	2	1	0	4	7	0	0	0	0	0	0	0	0	0	0
<b>4:30 PM</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
4:45 PM	4	1	0	2	7	1	0	0	0	1	1	0	0	0	1
5:00 PM	9	3	0	4	16	1	0	0	1	2	0	0	0	0	0
<b>5:15 PM</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
5:30 PM	2	1	0	1	4	0	0	0	1	1	0	0	0	1	1
5:45 PM	4	1	0	3	8	0	0	0	1	1	0	0	0	0	0
6:00 PM	4	2	0	2	8	0	1	0	0	1	0	0	0	0	0
6:15 PM	7	2	0	0	9	0	0	0	0	0	0	0	0	0	0
6:30 PM	3	1	0	0	4	0	0	0	1	1	0	0	0	0	0
6:45 PM	5	1	0	2	8	0	0	0	0	0	0	0	0	0	0
Count Total	50	18	0	24	92	2	1	0	5	8	1	0	0	2	3
Peak Hr	19	7	0	10	36	2	0	0	1	3	1	0	0	0	1



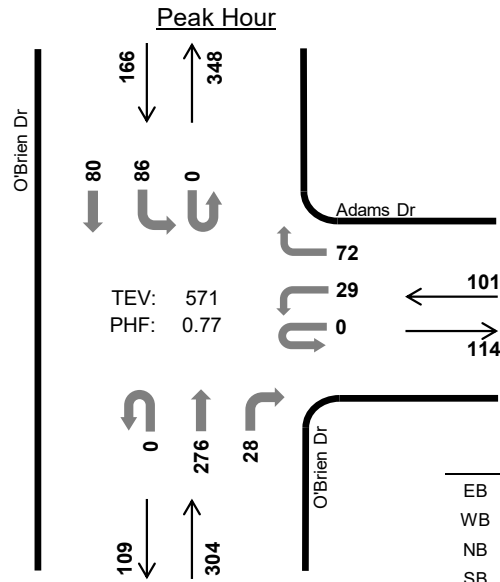
Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Adams Dr				Adams Dr				n/a				Adams Ct				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	2	2	0	0	0	0	2	0	0	0	0	0	1	0	1	8	0
4:15 PM	0	2	0	0	0	0	0	1	0	0	0	0	0	1	0	3	7	0
4:30 PM	0	4	0	0	0	0	0	0	0	1	0	0	0	1	0	0	6	0
4:45 PM	0	3	1	0	0	0	1	0	0	1	0	0	0	1	0	1	8	29
5:00 PM	0	7	2	0	0	0	0	3	0	0	0	0	0	3	0	1	16	37
5:15 PM	0	2	0	0	0	0	0	3	0	0	0	0	0	0	0	3	8	38
5:30 PM	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	4	36
5:45 PM	0	3	1	0	0	0	0	1	0	0	1	0	0	1	0	2	9	37
6:00 PM	0	3	1	0	0	0	1	1	0	0	0	0	0	0	0	2	8	29
6:15 PM	0	6	1	0	0	0	0	2	0	0	0	0	0	0	0	0	9	30
6:30 PM	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	30
6:45 PM	0	5	0	0	0	0	0	1	0	1	0	0	0	1	0	1	9	30
Count Total	0	41	9	0	0	0	2	16	0	0	0	0	0	9	0	15	92	0
Peak Hour	0	16	3	0	0	0	1	6	0	0	0	0	0	5	0	5	36	0

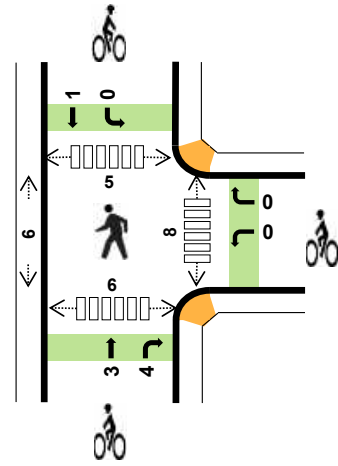
Three-Hour Count Summaries - Bikes																	
Interval Start	Adams Dr			Adams Dr			n/a			Adams Ct			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0			
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
4:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	1	2			
5:00 PM	0	1	0	0	0	0	0	0	0	0	0	1	2	3			
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3			
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	1	2	5			
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	5			
6:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	4			
6:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	5			
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	4			
6:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	4			
Count Total	1	1	0	0	1	0	0	0	0	1	0	4	8	0			
Peak Hour	1	1	0	0	0	0	0	0	0	0	0	1	3	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

O'Brien Dr  
Adams Dr



Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	-	-
WB	8.9%	0.77
NB	3.0%	0.59
SB	6.6%	0.90
TOTAL	5.1%	0.77

Three-Hour Count Summaries

Interval Start	n/a				Adams Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:45 AM	0	0	0	0	0	4	0	13	0	0	124	5	0	14	25	0	185	0	
8:00 AM	0	0	0	0	0	9	0	24	0	0	67	9	0	19	27	0	155	0	
8:15 AM	0	0	0	0	0	7	0	17	0	0	54	8	0	27	14	0	127	0	
8:30 AM	0	0	0	0	0	9	0	18	0	0	31	6	0	26	14	0	104	571	
Peak Hour	All	0	0	0	0	0	29	0	72	0	0	276	28	0	86	80	0	571	0
	HV	0	0	0	0	0	5	0	4	0	0	6	3	0	8	3	0	29	0
	HV%	-	-	-	-	-	17%	-	6%	-	-	2%	11%	-	9%	4%	-	5%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:45 AM	0	1	3	2	6	0	0	2	1	3	2	1	2	1	6
8:00 AM	0	2	2	2	6	0	0	2	0	2	2	2	1	3	8
8:15 AM	0	5	2	2	9	0	0	3	0	3	4	1	2	1	8
8:30 AM	0	1	2	5	8	0	0	0	0	0	0	2	0	1	3
Peak Hour	0	9	9	11	29	0	0	7	1	8	8	6	5	6	25

Three-Hour Count Summaries																			
Interval Start	n/a				Adams Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	5	0	7	0	0	17	4	1	6	11	0	51	0	
7:15 AM	0	0	0	0	0	3	0	9	0	0	30	3	0	5	13	0	63	0	
7:30 AM	0	0	0	0	0	2	0	9	0	0	56	4	0	7	17	0	95	0	
<b>7:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>124</b>	<b>5</b>	<b>0</b>	<b>14</b>	<b>25</b>	<b>0</b>	<b>185</b>	394	
8:00 AM	0	0	0	0	0	9	0	24	0	0	67	9	0	19	27	0	155	498	
8:15 AM	0	0	0	0	0	7	0	17	0	0	54	8	0	27	14	0	127	562	
8:30 AM	0	0	0	0	0	9	0	18	0	0	31	6	0	26	14	0	104	571	
8:45 AM	0	0	0	0	0	13	0	13	0	0	38	6	0	15	28	0	113	499	
9:00 AM	0	0	0	0	0	20	0	16	0	0	32	15	0	30	27	0	140	484	
9:15 AM	0	0	0	0	0	24	0	20	0	0	23	12	0	15	17	0	111	468	
9:30 AM	0	0	0	0	0	6	0	14	0	0	36	3	0	19	24	0	102	466	
9:45 AM	0	0	0	0	0	2	0	9	0	0	17	5	0	15	12	0	60	413	
Count Total	0	0	0	0	0	104	0	169	0	0	525	80	1	198	229	0	1,306	0	
Peak Hour	All	0	0	0	0	0	29	0	72	0	0	276	28	0	86	80	0	571	0
	HV	0	0	0	0	0	5	0	4	0	0	6	3	0	8	3	0	29	0
	HV%	-	-	-	-	-	17%	-	6%	-	-	2%	11%	-	9%	4%	-	5%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	5	1	3	9	0	0	0	0	0	0	2	1	2	5
7:15 AM	0	2	0	2	4	0	0	1	0	1	1	0	0	0	1
7:30 AM	0	1	1	2	4	0	1	0	1	2	1	0	1	0	2
<b>7:45 AM</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>6</b>
8:00 AM	0	2	2	2	6	0	0	2	0	2	2	2	1	3	8
8:15 AM	0	5	2	2	9	0	0	3	0	3	4	1	2	1	8
8:30 AM	0	1	2	5	8	0	0	0	0	0	0	2	0	1	3
8:45 AM	0	5	0	1	6	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	23	4	3	30	0	1	0	1	2	11	0	1	2	14
9:15 AM	0	29	0	2	31	0	1	0	1	2	1	1	1	1	4
9:30 AM	0	7	0	0	7	0	1	0	1	2	1	3	0	4	8
9:45 AM	0	2	2	3	7	0	0	0	2	2	3	0	2	0	5
Count Total	0	83	17	27	127	0	4	8	7	19	26	12	11	15	64
Peak Hr	0	9	9	11	29	0	0	7	1	8	8	6	5	6	25

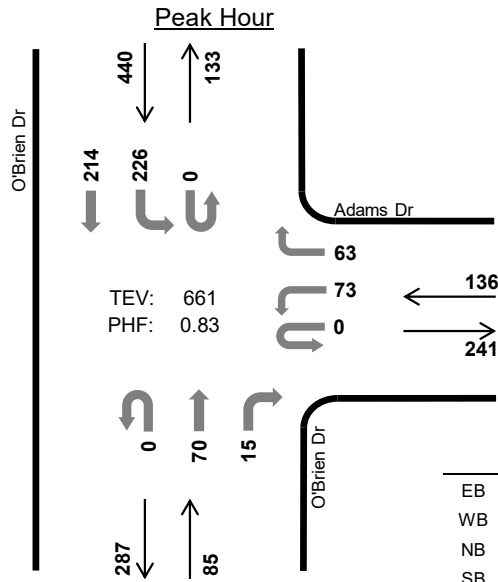
Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Adams Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	4	0	1	0	0	1	0	1	0	2	0	9	0
7:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	1	0	4	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	2	0	0	4	0
<b>7:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>6</b>	23
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>6</b>	20
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>9</b>	25
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>8</b>	29
8:45 AM	0	0	0	0	0	2	0	3	0	0	0	0	0	0	1	0	6	29
9:00 AM	0	0	0	0	0	16	0	7	0	0	1	3	0	1	2	0	30	53
9:15 AM	0	0	0	0	0	16	0	13	0	0	0	0	0	0	2	0	31	75
9:30 AM	0	0	0	0	0	3	0	4	0	0	0	0	0	0	0	0	7	74
9:45 AM	0	0	0	0	0	0	0	2	0	0	2	0	0	2	1	0	7	75
Count Total	0	0	0	0	0	47	0	36	0	0	11	6	1	14	12	0	127	0
Peak Hour	0	0	0	0	0	5	0	4	0	0	6	3	0	8	3	0	29	0

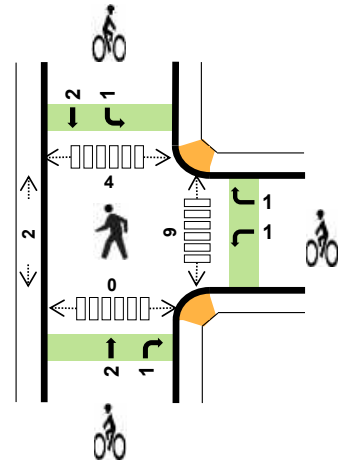
Three-Hour Count Summaries - Bikes																		
Interval Start	n/a			Adams Dr			O'Brien Dr			O'Brien Dr			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	0	
<b>7:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	6	
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	8	
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	10	
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	8	
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5
9:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	5	5
9:15 AM	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	4	4
9:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2	6	6
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	8	8
Count Total	0	0	0	0	1	0	3	0	3	5	0	2	5	0	0	19	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	3	4	0	1	0	0	8	0	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

O'Brien Dr  
Adams Dr



Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:30 PM to 5:30 PM



	HV %:	PHF
EB	-	-
WB	5.1%	0.87
NB	3.5%	0.89
SB	6.1%	0.80
TOTAL	5.6%	0.83

Three-Hour Count Summaries

Interval Start	n/a				Adams Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:30 PM	0	0	0	0	0	11	0	12	0	0	15	1	0	61	51	0	151	0	
4:45 PM	0	0	0	0	0	17	0	18	0	0	22	2	0	27	50	0	136	0	
5:00 PM	0	0	0	0	0	25	0	14	0	0	16	6	0	64	49	0	174	0	
5:15 PM	0	0	0	0	0	20	0	19	0	0	17	6	0	74	64	0	200	661	
Peak Hour	All	0	0	0	0	0	73	0	63	0	0	70	15	0	226	214	0	661	0
	HV	0	0	0	0	0	3	0	4	0	0	3	0	0	20	7	0	37	0
	HV%	-	-	-	-	-	4%	-	6%	-	-	4%	0%	-	9%	3%	-	6%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	0	1	1	7	9	0	1	0	0	1	0	0	0	0	0
4:45 PM	0	1	1	4	6	0	0	1	0	1	8	2	3	0	13
5:00 PM	0	1	1	12	14	0	1	0	1	2	1	0	1	0	2
5:15 PM	0	4	0	4	8	0	0	2	2	4	0	0	0	0	0
Peak Hour	0	7	3	27	37	0	2	3	3	8	9	2	4	0	15

Three-Hour Count Summaries																			
Interval Start	n/a				Adams Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	18	0	12	0	0	20	3	0	15	46	0	114	0	
4:15 PM	0	0	0	0	0	17	0	14	0	0	17	0	0	31	55	0	134	0	
<b>4:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>1</b>	<b>0</b>	<b>61</b>	<b>51</b>	<b>0</b>	<b>151</b>	<b>0</b>	
<b>4:45 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>2</b>	<b>0</b>	<b>27</b>	<b>50</b>	<b>0</b>	<b>136</b>	<b>535</b>	
<b>5:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>6</b>	<b>0</b>	<b>64</b>	<b>49</b>	<b>0</b>	<b>174</b>	<b>595</b>	
<b>5:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>6</b>	<b>0</b>	<b>74</b>	<b>64</b>	<b>0</b>	<b>200</b>	<b>661</b>	
5:30 PM	0	0	0	0	0	11	0	15	0	0	18	2	0	37	34	0	117	627	
5:45 PM	0	0	0	0	0	15	0	12	0	0	10	4	0	44	43	0	128	619	
6:00 PM	0	0	0	0	0	12	0	9	0	0	12	2	1	52	39	0	127	572	
6:15 PM	0	0	0	0	0	11	0	9	0	0	6	2	0	25	29	0	82	454	
6:30 PM	0	0	0	0	0	13	0	16	0	0	4	4	0	14	27	0	78	415	
6:45 PM	0	0	0	0	0	9	0	2	0	0	5	3	0	9	23	0	51	338	
Count Total	0	0	0	0	0	179	0	152	0	0	162	35	1	453	510	0	1,492	0	
Peak Hour	All	0	0	0	0	0	73	0	63	0	0	70	15	0	226	214	0	661	0
	HV	0	0	0	0	0	3	0	4	0	0	3	0	0	20	7	0	37	0
	HV%	-	-	-	-	-	4%	-	6%	-	-	4%	0%	-	9%	3%	-	6%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	2	4	7	0	0	0	0	0	0	1	1	1	3
4:15 PM	0	3	0	2	5	0	0	0	0	0	3	0	2	0	5
<b>4:30 PM</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>7</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>4:45 PM</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>2</b>	<b>3</b>	<b>0</b>	
<b>5:00 PM</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>12</b>	<b>14</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	
<b>5:15 PM</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
5:30 PM	0	1	0	4	5	0	3	0	0	3	1	1	1	1	4
5:45 PM	0	2	1	6	9	0	2	0	2	4	0	1	0	1	2
6:00 PM	0	1	1	6	8	0	1	0	0	1	0	0	0	0	0
6:15 PM	0	1	0	8	9	0	0	2	0	2	0	0	0	0	0
6:30 PM	0	0	0	5	5	0	1	0	1	2	2	0	2	0	4
6:45 PM	0	2	0	6	8	0	1	0	1	2	2	3	2	1	8
Count Total	0	18	7	68	93	0	10	5	7	22	17	8	12	4	41
Peak Hr	0	7	3	27	37	0	2	3	3	8	9	2	4	0	15

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Adams Dr				O'Brien Dr				O'Brien Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	1	0	0	0	0	1	1	0	4	0	0	7	0
4:15 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	1	0	5	0
4:30 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	6	1	0	9	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	1	0	0	3	1	0	6	27
5:00 PM	0	0	0	0	0	0	0	1	0	0	1	0	0	9	3	0	14	34
5:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	2	0	8	37
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	4	0	0	5	33
5:45 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	4	2	0	9	36
6:00 PM	0	0	0	0	0	0	0	1	0	0	1	0	0	4	2	0	8	30
6:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	7	1	0	9	31
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	31
6:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	0	8	30
Count Total	0	0	0	0	0	10	0	8	0	0	6	1	0	55	13	0	93	0
Peak Hour	0	0	0	0	0	3	0	4	0	0	3	0	0	20	7	0	37	0

Three-Hour Count Summaries - Bikes																		
Interval Start	n/a			Adams Dr			O'Brien Dr			O'Brien Dr			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2
5:00 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	4
5:15 PM	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	4	8
5:30 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	10
5:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	2	0	0	0	4	13
6:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	12
6:15 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	10
6:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2	9
6:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2	7
Count Total	0	0	0	7	0	3	0	0	4	1	0	1	6	0	0	0	22	0
Peak Hour	0	0	0	1	0	1	0	0	2	1	0	1	2	0	0	0	8	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# Traffic Data Service

San Jose, CA  
 (408) 622-4787  
 tdsbay@cs.com

File Name : 38AM FINAL  
 Site Code : 00000038  
 Start Date : 4/25/2019  
 Page No : 1

Groups Printed- Vehicles

Start Time	Southbound					BAYFRONT EXPY Westbound					UNIVERSITY AVE Northbound					BAYFRONT EXPY Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	724	243	0	967	88	0	39	2	129	19	216	0	0	235	1331
07:15 AM	0	0	0	0	0	0	699	269	1	969	108	0	55	6	169	17	209	0	0	226	1364
07:30 AM	0	0	0	0	0	0	636	332	0	968	112	0	58	4	174	17	196	0	0	213	1355
07:45 AM	0	0	0	0	0	0	636	304	1	941	108	0	53	1	162	14	208	0	0	222	1325
Total	0	0	0	0	0	0	2695	1148	2	3845	416	0	205	13	634	67	829	0	0	896	5375
08:00 AM	0	0	0	0	0	0	494	426	2	922	93	0	48	4	145	29	161	0	0	190	1257
08:15 AM	0	0	0	0	0	0	462	394	0	856	107	0	57	5	169	35	137	0	0	172	1197
08:30 AM	0	0	0	0	0	0	536	376	2	914	127	0	70	7	204	32	145	0	0	177	1295
08:45 AM	0	0	0	0	0	0	520	388	5	913	106	0	83	3	192	29	130	0	0	159	1264
Total	0	0	0	0	0	0	2012	1584	9	3605	433	0	258	19	710	125	573	0	0	698	5013
09:00 AM	0	0	0	0	0	0	576	362	4	942	118	0	96	5	219	31	161	0	0	192	1353
09:15 AM	0	0	0	0	0	0	581	358	4	943	107	0	81	2	190	24	153	0	0	177	1310
09:30 AM	0	0	0	0	0	0	635	368	3	1006	113	0	81	3	197	11	168	0	0	179	1382
09:45 AM	0	0	0	0	0	0	589	335	0	924	86	0	73	2	161	21	174	0	0	195	1280
Total	0	0	0	0	0	0	2381	1423	11	3815	424	0	331	12	767	87	656	0	0	743	5325
Grand Total	0	0	0	0	0	0	7088	4155	22	11265	1273	0	794	44	2111	279	2058	0	0	2337	15713
Apprch %	0	0	0	0	0	0	62.9	36.9	0.2		60.3	0	37.6	2.1		11.9	88.1	0	0		
Total %	0	0	0	0	0	0	45.1	26.4	0.1	71.7	8.1	0	5.1	0.3	13.4	1.8	13.1	0	0	14.9	

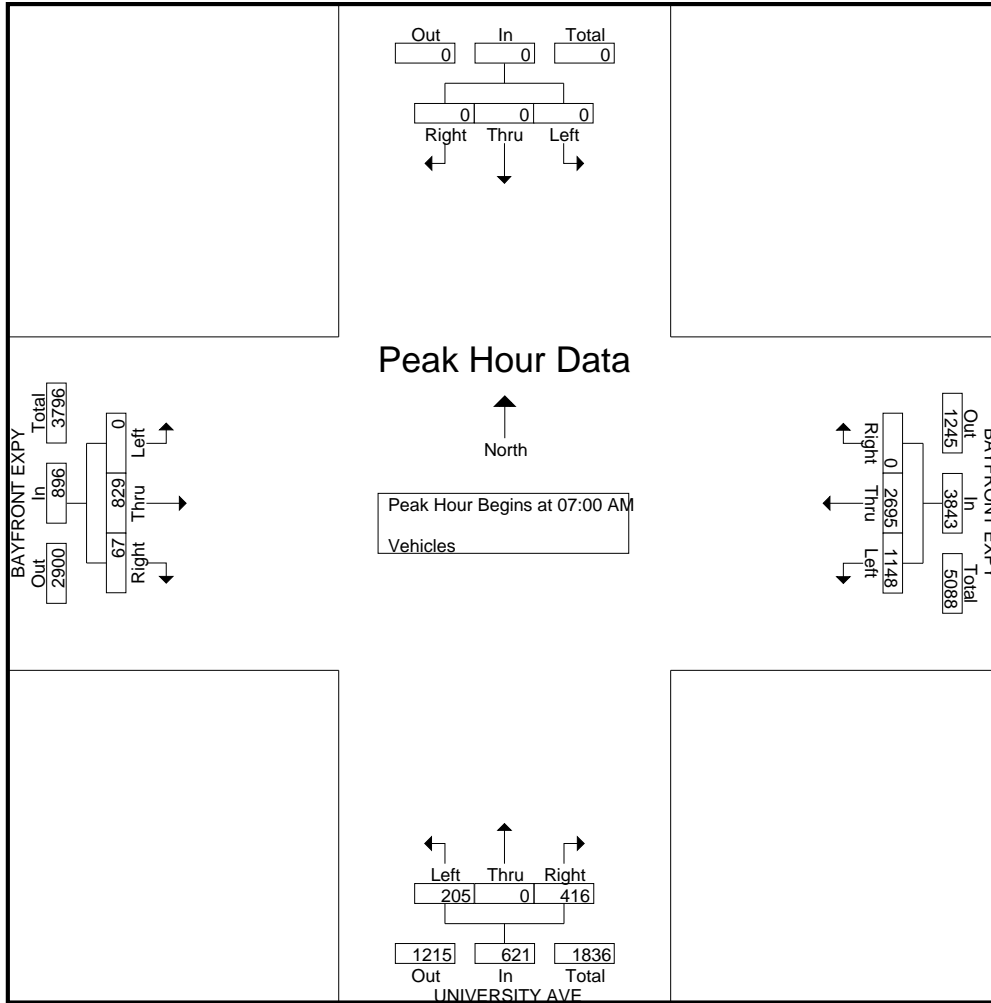
Start Time	Southbound				BAYFRONT EXPY Westbound				UNIVERSITY AVE Northbound				BAYFRONT EXPY Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	<b>724</b>	243	967	88	0	39	127	<b>19</b>	<b>216</b>	0	<b>235</b>	1329
07:15 AM	0	0	0	0	0	699	269	<b>968</b>	108	0	55	163	17	209	0	<b>226</b>	<b>1357</b>
07:30 AM	0	0	0	0	0	636	<b>332</b>	968	<b>112</b>	0	<b>58</b>	<b>170</b>	17	196	0	213	1351
07:45 AM	0	0	0	0	0	636	304	940	108	0	53	161	14	208	0	222	1323
Total Volume	0	0	0	0	0	2695	1148	3843	416	0	205	621	67	829	0	896	5360
% App. Total	0	0	0	0	0	70.1	29.9		67	0	33		7.5	92.5	0		
PHF	.000	.000	.000	.000	.000	.931	.864	.993	.929	.000	.884	.913	.882	.959	.000	.953	.987



# Traffic Data Service

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Groups Printed- Bikes

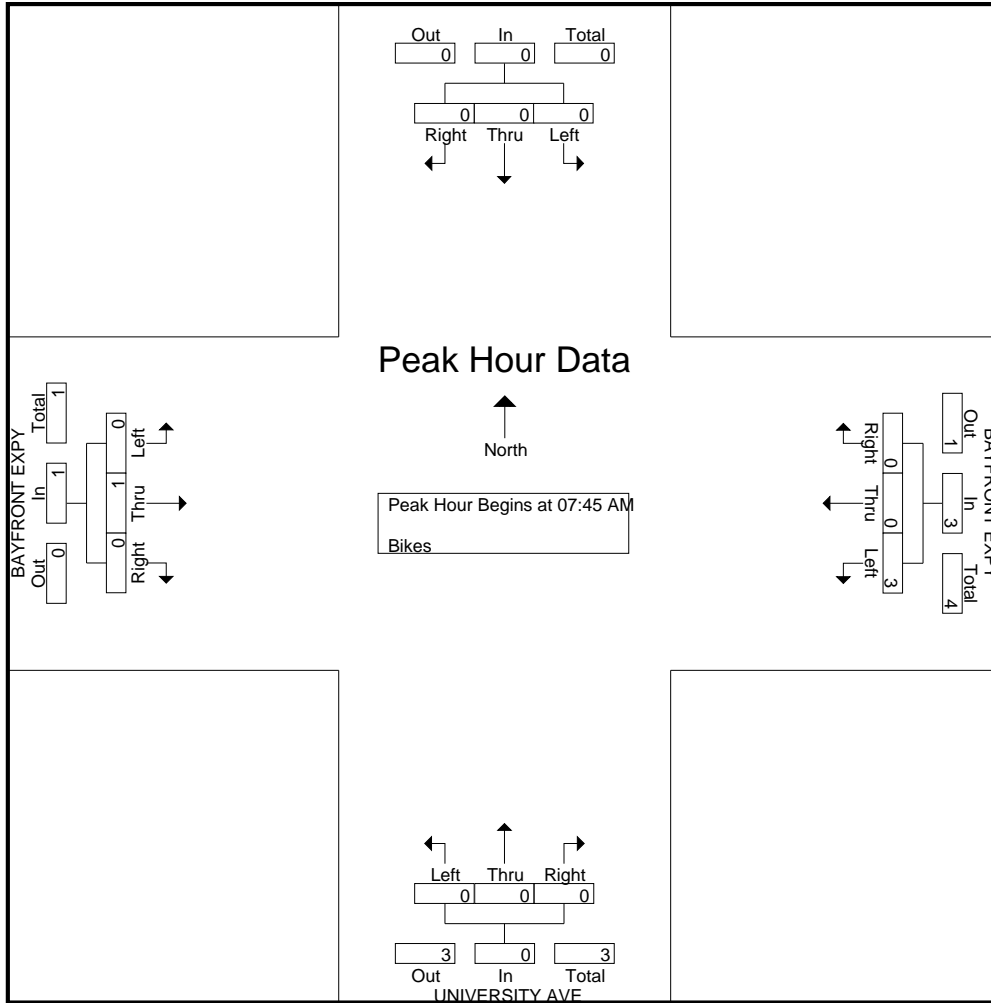
Start Time	Southbound					BAYFRONT EXPY Westbound					UNIVERSITY AVE Northbound					BAYFRONT EXPY Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2
08:30 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	1	0	0	1	4
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	1	0	0	1	5
Apprch %	0	0	0	0		0	0	100	0		0	0	0	0		0	100	0	0		
Total %	0	0	0	0	0	0	0	80	0	80	0	0	0	0	0	0	20	0	0	20	

Start Time	Southbound				BAYFRONT EXPY Westbound				UNIVERSITY AVE Northbound				BAYFRONT EXPY Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	2
08:30 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	3	3	0	0	0	0	0	1	0	1	4
% App. Total	0	0	0		0	0	100		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.750	.750	.000	.000	.000	.000	.000	.250	.000	.250	.500

# Traffic Data Service

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File Name : 38PM FINAL  
Site Code : 00000038  
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## Groups Printed- Vehicles

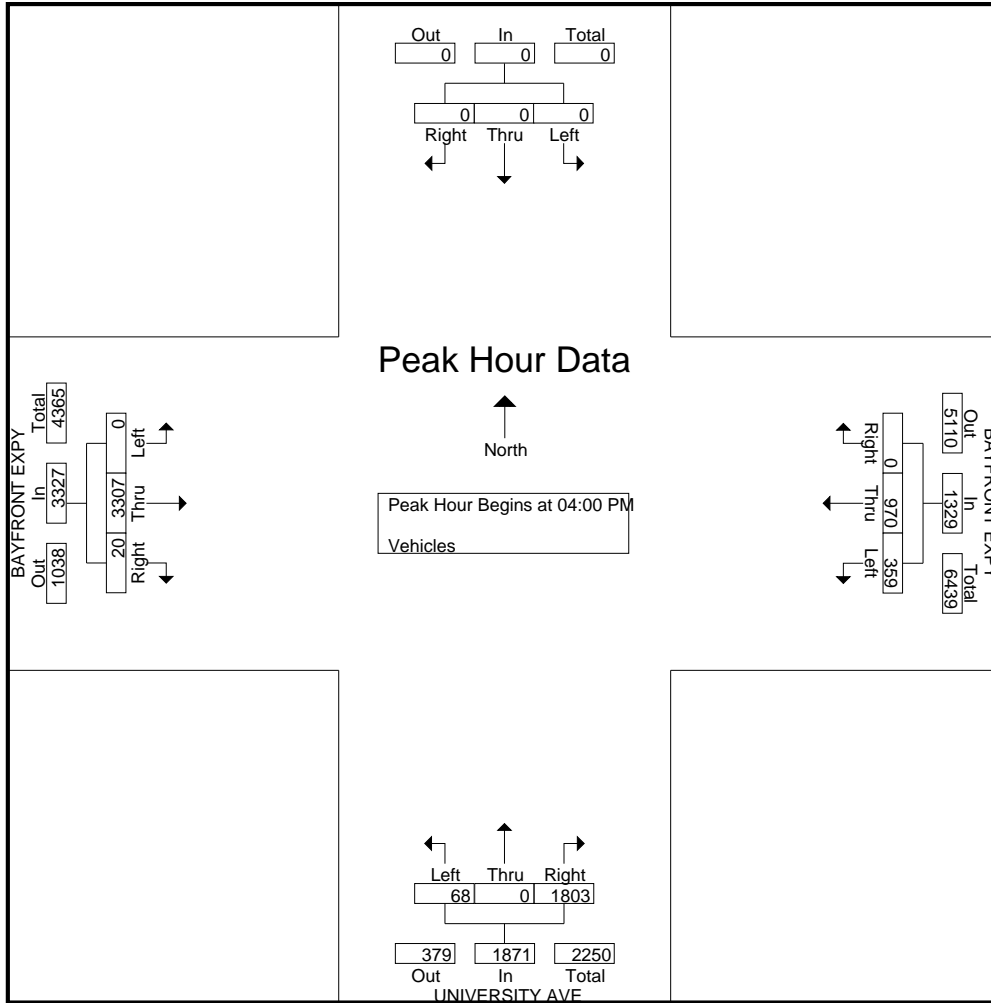
Start Time	Southbound					BAYFRONT EXPY Westbound					UNIVERSITY AVE Northbound					BAYFRONT EXPY Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	268	102	0	370	467	0	16	1	484	2	810	0	0	812	1666
04:15 PM	0	0	0	0	0	0	262	74	0	336	410	0	15	4	429	9	877	0	0	886	1651
04:30 PM	0	0	0	0	0	0	230	95	0	325	525	0	19	5	549	6	791	0	0	797	1671
04:45 PM	0	0	0	0	0	0	210	88	0	298	401	0	18	5	424	3	829	0	0	832	1554
Total	0	0	0	0	0	0	970	359	0	1329	1803	0	68	15	1886	20	3307	0	0	3327	6542
05:00 PM	0	0	0	0	0	0	246	109	2	357	478	0	17	3	498	12	698	0	0	710	1565
05:15 PM	0	0	0	0	0	0	225	82	1	308	358	0	4	4	366	4	791	0	0	795	1469
05:30 PM	0	0	0	0	0	0	272	129	0	401	471	0	19	3	493	4	671	0	0	675	1569
05:45 PM	0	0	0	0	0	0	233	104	0	337	380	0	11	3	394	8	797	0	0	805	1536
Total	0	0	0	0	0	0	976	424	3	1403	1687	0	51	13	1751	28	2957	0	0	2985	6139
06:00 PM	0	0	0	0	0	0	183	104	2	289	368	0	12	7	387	8	477	0	0	485	1161
06:15 PM	0	0	0	0	0	0	164	71	2	237	355	0	9	9	373	5	498	0	0	503	1113
06:30 PM	0	0	0	0	0	0	156	99	1	256	426	0	18	3	447	5	478	0	0	483	1186
06:45 PM	0	0	0	0	0	0	124	63	1	188	277	0	9	2	288	5	465	0	0	470	946
Total	0	0	0	0	0	0	627	337	6	970	1426	0	48	21	1495	23	1918	0	0	1941	4406
Grand Total	0	0	0	0	0	0	2573	1120	9	3702	4916	0	167	49	5132	71	8182	0	0	8253	17087
Apprch %	0	0	0	0	0	0	69.5	30.3	0.2		95.8	0	3.3	1		0.9	99.1	0	0		
Total %	0	0	0	0	0	0	15.1	6.6	0.1	21.7	28.8	0	1	0.3	30	0.4	47.9	0	0	48.3	

Start Time	Southbound				BAYFRONT EXPY Westbound				UNIVERSITY AVE Northbound				BAYFRONT EXPY Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	<b>268</b>	<b>102</b>	<b>370</b>	467	0	16	483	2	810	0	812	1665
04:15 PM	0	0	0	0	0	262	74	336	410	0	15	425	<b>9</b>	<b>877</b>	0	<b>886</b>	1647
04:30 PM	0	0	0	0	0	230	95	325	<b>525</b>	0	<b>19</b>	<b>544</b>	6	791	0	797	<b>1666</b>
04:45 PM	0	0	0	0	0	210	88	298	401	0	18	419	3	829	0	832	1549
Total Volume	0	0	0	0	0	970	359	1329	1803	0	68	1871	20	3307	0	3327	6527
% App. Total	0	0	0	0	0	73	27		96.4	0	3.6		0.6	99.4	0		
PHF	.000	.000	.000	.000	.000	.905	.880	.898	.859	.000	.895	.860	.556	.943	.000	.939	.979

# Traffic Data Service

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File Name : 38PM FINAL  
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Groups Printed- Bikes

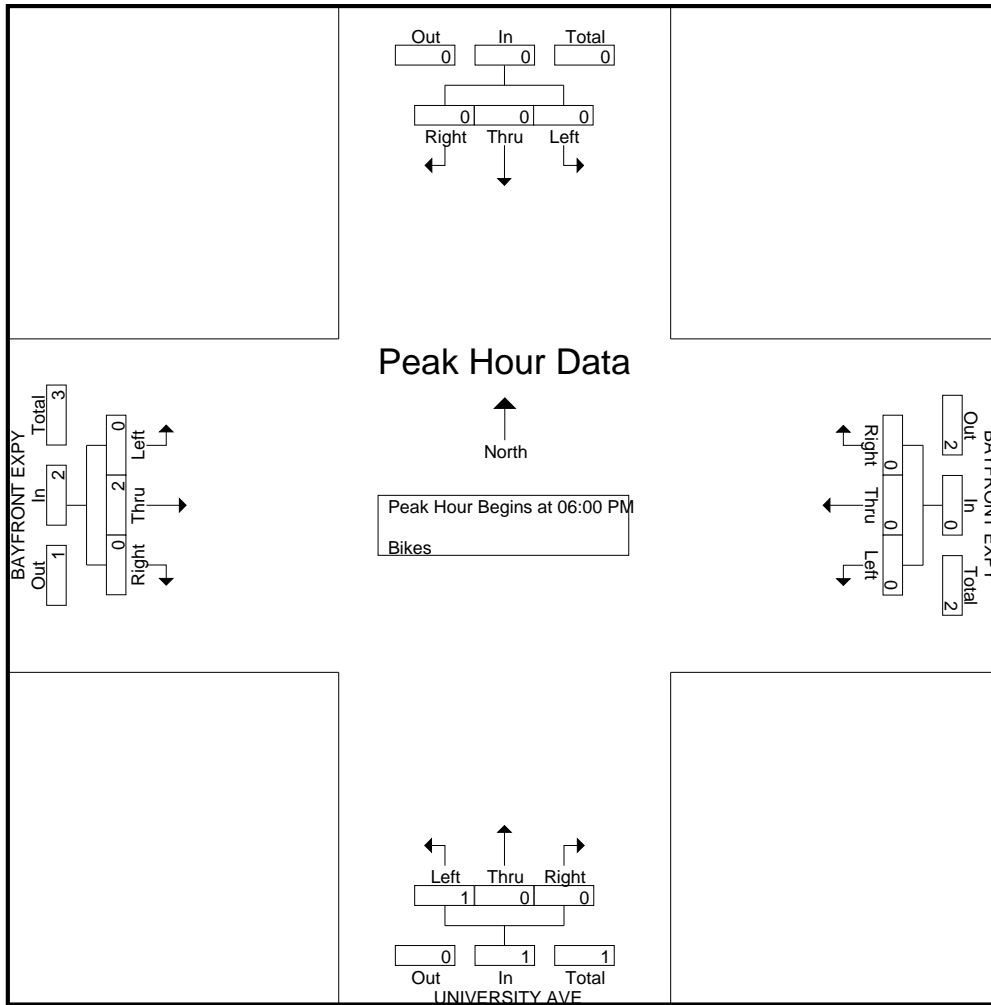
Start Time	Southbound					BAYFRONT EXPY Westbound					UNIVERSITY AVE Northbound					BAYFRONT EXPY Eastbound					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	3
Grand Total	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	2	0	0	2	4
Apprch %	0	0	0	0		0	0	100	0		0	0	100	0		0	100	0	0		
Total %	0	0	0	0	0	0	0	25	0	25	0	0	25	0	25	0	50	0	0	50	

Start Time	Southbound				BAYFRONT EXPY Westbound				UNIVERSITY AVE Northbound				BAYFRONT EXPY Eastbound				Int. Total
	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 06:00 PM																	
06:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	3
% App. Total	0	0	0		0	0	0		0	0	100		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.500	.000	.500	.750

# Traffic Data Service

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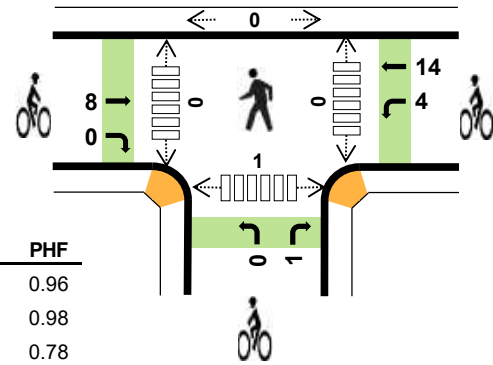
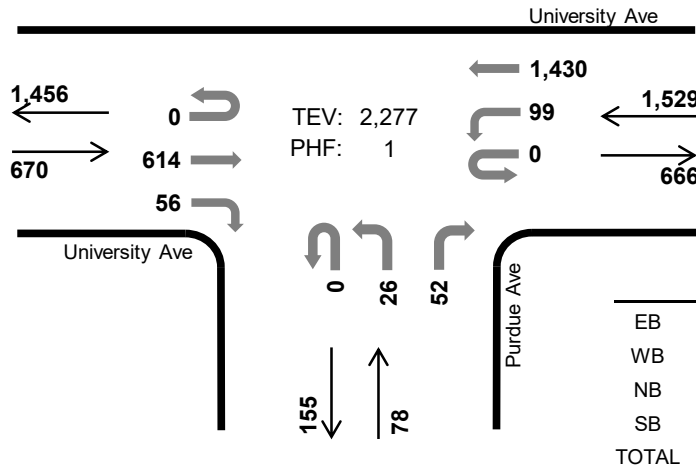


# Purdue Ave University Ave



Peak Hour

Date: 06-05-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 8:15 AM to 9:15 AM



	HV %:	PHF
EB	4.0%	0.96
WB	2.7%	0.98
NB	0.0%	0.78
SB	-	-
TOTAL	3.0%	1.00

### Three-Hour Count Summaries

Interval Start	University Ave				University Ave				Purdue Ave				n/a				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:15 AM	0	0	144	23	0	33	351	0	0	8	0	12	0	0	0	0	571	0	
8:30 AM	0	0	159	12	0	19	356	0	0	7	0	18	0	0	0	0	571	0	
8:45 AM	0	0	145	13	0	20	372	0	0	6	0	16	0	0	0	0	572	0	
9:00 AM	0	0	166	8	0	27	351	0	0	5	0	6	0	0	0	0	563	2,277	
Peak Hour	All	0	0	614	56	0	99	1,430	0	0	26	0	52	0	0	0	0	2,277	0
	HV	0	0	27	0	0	0	42	0	0	0	0	0	0	0	0	0	69	0
	HV%	-	-	4%	0%	-	0%	3%	-	-	0%	-	0%	-	-	-	-	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:15 AM	5	16	0	0	21	1	1	0	0	2	0	0	0	1	1
8:30 AM	7	6	0	0	13	2	5	0	0	7	0	0	0	0	0
8:45 AM	7	10	0	0	17	2	3	0	0	5	0	0	0	0	0
9:00 AM	8	10	0	0	18	3	9	1	0	13	0	0	0	0	0
Peak Hour	27	42	0	0	69	8	18	1	0	27	0	0	0	1	1



**Three-Hour Count Summaries**

Interval Start	University Ave				University Ave				Purdue Ave				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	95	11	0	3	295	0	0	12	0	20	0	0	0	0	436	0
7:15 AM	0	0	123	4	0	22	317	0	0	14	0	20	0	0	0	0	500	0
7:30 AM	0	0	136	6	0	22	356	0	0	9	0	15	0	0	0	0	544	0
7:45 AM	0	0	161	7	0	24	332	0	0	7	0	13	0	0	0	0	544	2,024
8:00 AM	0	0	126	6	0	34	335	0	0	7	0	11	0	0	0	0	519	2,107
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>144</b>	<b>23</b>	<b>0</b>	<b>33</b>	<b>351</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>571</b>	2,178
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>159</b>	<b>12</b>	<b>0</b>	<b>19</b>	<b>356</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>571</b>	2,205
<b>8:45 AM</b>	<b>0</b>	<b>0</b>	<b>145</b>	<b>13</b>	<b>0</b>	<b>20</b>	<b>372</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>572</b>	2,233
<b>9:00 AM</b>	<b>0</b>	<b>0</b>	<b>166</b>	<b>8</b>	<b>0</b>	<b>27</b>	<b>351</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>563</b>	<b>2,277</b>
9:15 AM	0	0	128	6	0	30	332	0	0	1	0	9	0	0	0	0	506	2,212
9:30 AM	0	0	161	3	1	20	365	0	0	6	0	10	0	0	0	0	566	2,207
9:45 AM	0	0	140	9	0	25	348	0	0	5	0	6	0	0	0	0	533	2,168
Count Total	0	0	1,684	108	1	279	4,110	0	0	87	0	156	0	0	0	0	6,425	0
Peak Hour	All	0	0	614	56	0	99	1,430	0	0	26	0	52	0	0	0	2,277	0
	HV	0	0	27	0	0	0	42	0	0	0	0	0	0	0	0	69	0
	HV%	-	-	4%	0%	-	0%	3%	-	-	0%	-	0%	-	-	-	3%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	11	7	1	0	19	1	4	1	0	6	0	0	0	2	2
7:15 AM	2	7	1	0	10	0	0	0	0	0	0	0	2	0	2
7:30 AM	5	8	0	0	13	0	6	0	0	6	0	0	0	0	0
7:45 AM	4	5	0	0	9	1	2	0	0	3	0	0	0	0	0
8:00 AM	2	9	1	0	12	2	2	1	0	5	0	0	0	0	0
<b>8:15 AM</b>	<b>5</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>21</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>8:30 AM</b>	<b>7</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>8:45 AM</b>	<b>7</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>9:00 AM</b>	<b>8</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>3</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
9:15 AM	6	15	0	0	21	1	0	0	0	1	0	0	1	0	1
9:30 AM	14	12	0	0	26	3	3	1	0	7	0	0	0	0	0
9:45 AM	14	19	0	0	33	1	3	2	0	6	0	0	4	0	4
Count Total	85	124	3	0	212	17	38	6	0	61	0	0	7	3	10
Peak Hr	27	42	0	0	69	8	18	1	0	27	0	0	0	1	1

**Three-Hour Count Summaries - Heavy Vehicles**

Interval Start	University Ave				University Ave				Purdue Ave				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	10	1	0	0	7	0	0	0	0	1	0	0	0	0	19	0
7:15 AM	0	0	2	0	0	0	7	0	0	1	0	0	0	0	0	0	10	0
7:30 AM	0	0	5	0	0	0	8	0	0	0	0	0	0	0	0	0	13	0
7:45 AM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	9	51
8:00 AM	0	0	1	1	0	0	9	0	0	0	0	1	0	0	0	0	12	44
8:15 AM	0	0	5	0	0	0	16	0	0	0	0	0	0	0	0	0	21	55
8:30 AM	0	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0	13	55
8:45 AM	0	0	7	0	0	0	10	0	0	0	0	0	0	0	0	0	17	63
9:00 AM	0	0	8	0	0	0	10	0	0	0	0	0	0	0	0	0	18	69
9:15 AM	0	0	5	1	0	1	14	0	0	0	0	0	0	0	0	0	21	69
9:30 AM	0	0	14	0	0	1	11	0	0	0	0	0	0	0	0	0	26	82
9:45 AM	0	0	14	0	0	0	19	0	0	0	0	0	0	0	0	0	33	98
Count Total	0	0	82	3	0	2	122	0	0	1	0	2	0	0	0	0	212	0
Peak Hour	0	0	27	0	0	0	42	0	0	0	0	0	0	0	0	0	69	0

**Three-Hour Count Summaries - Bikes**

Interval Start	University Ave			University Ave			Purdue Ave			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	1	0	4	0	0	0	1	0	0	0	6	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	1	5	0	0	0	0	0	0	0	6	0
7:45 AM	0	1	0	2	0	0	0	0	0	0	0	0	3	15
8:00 AM	0	2	0	1	1	0	0	0	1	0	0	0	5	14
8:15 AM	0	1	0	1	0	0	0	0	0	0	0	0	2	16
8:30 AM	0	2	0	1	4	0	0	0	0	0	0	0	7	17
8:45 AM	0	2	0	0	3	0	0	0	0	0	0	0	5	19
9:00 AM	0	3	0	2	7	0	0	0	1	0	0	0	13	27
9:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	26
9:30 AM	0	3	0	3	0	0	0	0	1	0	0	0	7	26
9:45 AM	0	1	0	0	3	0	2	0	0	0	0	0	6	27
Count Total	0	16	1	11	27	0	2	0	4	0	0	0	61	0
Peak Hour	0	8	0	4	14	0	0	0	1	0	0	0	27	0

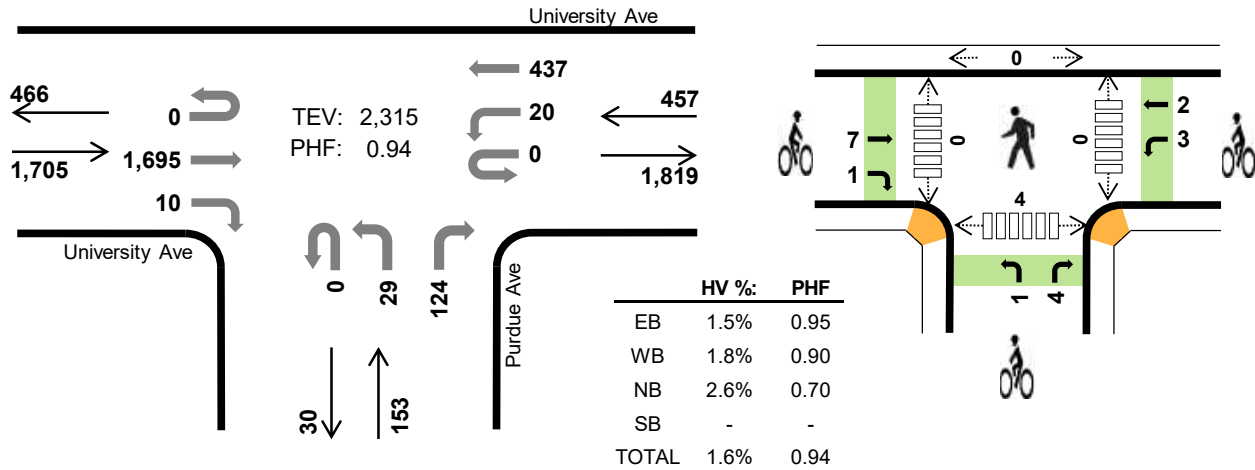
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# Purdue Ave University Ave



Peak Hour

Date: 06-05-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 5:15 PM to 6:15 PM



### Three-Hour Count Summaries

Interval Start	University Ave				University Ave				Purdue Ave				n/a				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
5:15 PM	0	0	450	1	0	9	99	0	0	10	0	45	0	0	0	0	614	0	
5:30 PM	0	0	409	2	0	7	118	0	0	6	0	29	0	0	0	0	571	0	
5:45 PM	0	0	447	4	0	0	97	0	0	5	0	34	0	0	0	0	587	0	
6:00 PM	0	0	389	3	0	4	123	0	0	8	0	16	0	0	0	0	543	2,315	
Peak Hour	All	0	0	1,695	10	0	20	437	0	0	29	0	124	0	0	0	0	2,315	0
	HV	0	0	25	0	0	0	8	0	0	0	0	4	0	0	0	0	37	0
	HV%	-	-	1%	0%	-	0%	2%	-	-	0%	-	3%	-	-	-	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:15 PM	7	2	0	0	9	3	0	1	0	4	0	0	0	0	0
5:30 PM	9	2	2	0	13	1	1	2	0	4	0	0	0	3	3
5:45 PM	6	1	1	0	8	3	1	1	0	5	0	0	0	1	1
6:00 PM	3	3	1	0	7	1	3	1	0	5	0	0	0	0	0
Peak Hour	25	8	4	0	37	8	5	5	0	18	0	0	0	4	4

**Three-Hour Count Summaries**

Interval Start	University Ave				University Ave				Purdue Ave				n/a				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	465	4	0	9	103	0	0	6	0	15	0	0	0	0	602	0	
4:15 PM	0	0	476	0	0	7	75	0	0	3	0	22	0	0	0	0	583	0	
4:30 PM	0	0	407	3	0	6	108	0	0	3	0	34	0	0	0	0	561	0	
4:45 PM	0	0	379	1	0	9	98	0	0	4	0	33	0	0	0	0	524	2,270	
5:00 PM	0	0	370	2	0	4	92	0	0	3	0	39	0	0	0	0	510	2,178	
<b>5:15 PM</b>	<b>0</b>	<b>0</b>	<b>450</b>	<b>1</b>	<b>0</b>	<b>9</b>	<b>99</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>614</b>	2,209	
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>409</b>	<b>2</b>	<b>0</b>	<b>7</b>	<b>118</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>571</b>	2,219	
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>447</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>97</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>34</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>587</b>	2,282	
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>389</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>123</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>543</b>	<b>2,315</b>	
6:15 PM	0	0	433	4	0	5	83	0	0	3	0	34	0	0	0	0	562	2,263	
6:30 PM	0	0	426	6	0	10	102	0	0	7	0	17	0	0	0	0	568	2,260	
6:45 PM	0	0	434	7	0	10	61	0	0	3	0	16	0	0	0	0	531	2,204	
Count Total	0	0	5,085	37	0	80	1,159	0	0	61	0	334	0	0	0	0	6,756	0	
Peak Hour	All	0	0	1,695	10	0	20	437	0	0	29	0	124	0	0	0	0	2,315	0
	HV	0	0	25	0	0	0	8	0	0	0	0	4	0	0	0	0	37	0
	HV%	-	-	1%	0%	-	0%	2%	-	-	0%	-	3%	-	-	-	-	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	13	2	0	0	15	2	1	0	0	3	0	0	0	1	1
4:15 PM	11	1	0	0	12	1	1	0	0	2	0	0	0	2	2
4:30 PM	13	4	0	0	17	3	0	0	0	3	0	0	0	0	0
4:45 PM	10	4	0	0	14	2	1	2	0	5	0	0	0	0	0
5:00 PM	5	4	0	0	9	5	2	1	0	8	0	1	0	0	1
<b>5:15 PM</b>	<b>7</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>5:30 PM</b>	<b>9</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>13</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>
<b>5:45 PM</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>8</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>
<b>6:00 PM</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
6:15 PM	12	0	1	0	13	1	2	0	0	3	0	0	0	0	0
6:30 PM	4	3	2	0	9	1	5	1	0	7	0	0	0	3	3
6:45 PM	11	3	1	0	15	0	1	0	0	1	0	0	1	0	1
Count Total	104	29	8	0	141	23	18	9	0	50	0	1	1	10	12
Peak Hr	25	8	4	0	37	8	5	5	0	18	0	0	0	4	4

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	University Ave				University Ave				Purdue Ave				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	13	0	0	0	2	0	0	0	0	0	0	0	0	0	15	0
4:15 PM	0	0	11	0	0	0	1	0	0	0	0	0	0	0	0	0	12	0
4:30 PM	0	0	13	0	0	0	4	0	0	0	0	0	0	0	0	0	17	0
4:45 PM	0	0	10	0	0	0	4	0	0	0	0	0	0	0	0	0	14	58
5:00 PM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0	9	52
<b>5:15 PM</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	49
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	45
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	39
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>37</b>
6:15 PM	0	0	12	0	0	0	0	0	0	0	0	1	0	0	0	0	13	41
6:30 PM	0	0	4	0	0	0	3	0	0	1	0	1	0	0	0	0	9	37
6:45 PM	0	0	11	0	0	0	3	0	0	0	0	1	0	0	0	0	15	44
Count Total	0	0	104	0	0	0	29	0	0	1	0	7	0	0	0	0	141	0
<b>Peak Hour</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>37</b>	<b>0</b>

### Three-Hour Count Summaries - Bikes

Interval Start	University Ave			University Ave			Purdue Ave			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	2	0	1	0	0	0	0	0	0	0	0	3	0
4:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	2	0
4:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	3	0
4:45 PM	0	2	0	0	1	0	0	0	2	0	0	0	5	13
5:00 PM	0	5	0	0	2	0	0	0	1	0	0	0	8	18
<b>5:15 PM</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	20
<b>5:30 PM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	21
<b>5:45 PM</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	21
<b>6:00 PM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>18</b>
6:15 PM	0	1	0	0	2	0	0	0	0	0	0	0	3	17
6:30 PM	0	1	0	0	5	0	0	0	1	0	0	0	7	20
6:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	16
Count Total	0	22	1	5	13	0	1	0	8	0	0	0	50	0
<b>Peak Hour</b>	<b>0</b>	<b>7</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>0</b>

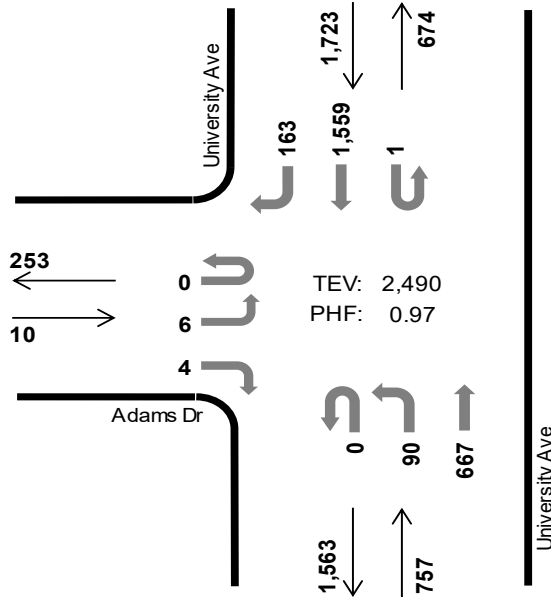
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# University Ave Adams Dr



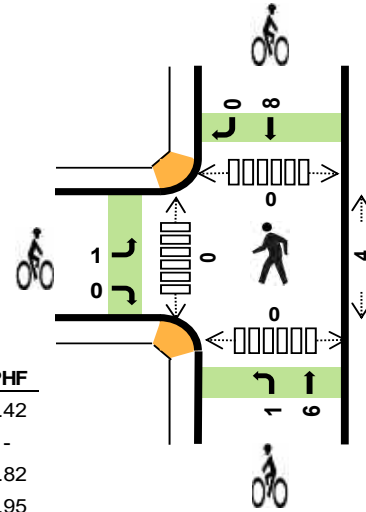
Peak Hour

Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 7:45 AM to 8:45 AM



TEV: 2,490  
PHF: 0.97

	HV %:	PHF
EB	10.0%	0.42
WB	-	-
NB	3.7%	0.82
SB	3.4%	0.95
TOTAL	3.5%	0.97



## Three-Hour Count Summaries

Interval Start	Adams Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:45 AM	0	1	0	0	0	0	0	0	0	15	149	0	0	0	425	30	620	0	
8:00 AM	0	1	0	1	0	0	0	0	0	29	144	0	0	0	393	41	609	0	
8:15 AM	0	1	0	0	0	0	0	0	0	20	168	0	0	0	381	51	621	0	
8:30 AM	0	3	0	3	0	0	0	0	0	26	206	0	1	0	360	41	640	2,490	
Peak Hour	All	0	6	0	4	0	0	0	0	0	90	667	0	1	0	1,559	163	2,490	0
	HV	0	1	0	0	0	0	0	0	0	1	27	0	0	0	41	17	87	0
	HV%	-	17%	-	0%	-	-	-	-	-	1%	4%	-	0%	-	3%	10%	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:45 AM	0	0	3	12	15	0	0	0	2	2	0	0	0	0	0
8:00 AM	0	0	8	7	15	1	0	2	1	4	2	0	0	0	2
8:15 AM	1	0	8	18	27	0	0	4	3	7	2	0	0	0	2
8:30 AM	0	0	9	21	30	0	0	1	2	3	0	0	0	0	0
Peak Hour	1	0	28	58	87	1	0	7	8	16	4	0	0	0	4

### Three-Hour Count Summaries

Interval Start	Adams Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	1	0	0	0	0	0	0	0	9	97	0	0	0	295	15	417	0	
7:15 AM	0	1	0	0	0	0	0	0	0	5	152	0	0	0	316	14	488	0	
7:30 AM	0	3	0	0	0	0	0	0	1	12	144	0	0	0	393	22	575	0	
<b>7:45 AM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>149</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>425</b>	<b>30</b>	<b>620</b>	2,100	
<b>8:00 AM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>144</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>393</b>	<b>41</b>	<b>609</b>	2,292	
<b>8:15 AM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>168</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>381</b>	<b>51</b>	<b>621</b>	2,425	
<b>8:30 AM</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>26</b>	<b>206</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>360</b>	<b>41</b>	<b>640</b>	<b>2,490</b>	
8:45 AM	0	5	0	2	0	0	0	0	0	13	187	0	0	0	370	31	608	2,478	
9:00 AM	0	4	0	0	0	0	0	0	1	17	202	0	0	0	312	46	582	2,451	
9:15 AM	0	2	0	4	0	0	0	0	0	23	180	0	0	0	339	33	581	2,411	
9:30 AM	0	3	0	1	0	0	0	0	0	12	185	0	0	0	341	25	567	2,338	
9:45 AM	0	3	0	5	0	0	0	0	0	15	167	0	0	0	323	21	534	2,264	
Count Total	0	28	0	16	0	0	0	0	2	196	1,981	0	1	0	4,248	370	6,842	0	
Peak Hour	All	0	6	0	4	0	0	0	0	0	90	667	0	1	0	1,559	163	2,490	0
	HV	0	1	0	0	0	0	0	0	0	1	27	0	0	0	41	17	87	0
	HV%	-	17%	-	0%	-	-	-	-	-	1%	4%	-	0%	-	3%	10%	3%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	0	4	5	10	0	0	1	2	3	2	1	0	0	3
7:15 AM	0	0	6	8	14	0	0	1	2	3	0	0	0	0	0
7:30 AM	0	0	3	16	19	0	0	0	4	4	0	0	0	0	0
<b>7:45 AM</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>12</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>7</b>	<b>15</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>8:15 AM</b>	<b>1</b>	<b>0</b>	<b>8</b>	<b>18</b>	<b>27</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>21</b>	<b>30</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
8:45 AM	0	0	2	15	17	0	0	3	1	4	0	0	0	0	0
9:00 AM	2	0	17	29	48	0	0	2	4	6	0	0	0	0	0
9:15 AM	3	0	14	28	45	0	0	4	1	5	1	0	0	1	2
9:30 AM	1	0	10	12	23	0	0	2	3	5	2	0	1	0	3
9:45 AM	2	0	6	17	25	0	0	0	0	0	2	0	0	0	2
Count Total	10	0	90	188	288	1	0	20	25	46	11	1	1	1	14
Peak Hr	1	0	28	58	87	1	0	7	8	16	4	0	0	0	4

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Adams Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	0	0	0	0	0	0	0	4	0	0	0	5	0	10	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	8	0	14	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	15	1	19	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	8	4	15	58
8:00 AM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	5	2	15	63
8:15 AM	0	1	0	0	0	0	0	0	0	0	8	0	0	0	15	3	27	76
8:30 AM	0	0	0	0	0	0	0	0	0	1	8	0	0	0	13	8	30	87
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	12	3	17	89
9:00 AM	0	2	0	0	0	0	0	0	0	1	16	0	0	0	18	11	48	122
9:15 AM	0	1	0	2	0	0	0	0	0	1	13	0	0	0	24	4	45	140
9:30 AM	0	1	0	0	0	0	0	0	0	0	10	0	0	0	12	0	23	133
9:45 AM	0	2	0	0	0	0	0	0	0	0	6	0	0	0	16	1	25	141
Count Total	0	8	0	2	0	0	0	0	0	3	87	0	0	0	151	37	288	0
Peak Hour	0	1	0	0	0	0	0	0	0	1	27	0	0	0	41	17	87	0

### Three-Hour Count Summaries - Bikes

Interval Start	Adams Dr			n/a			University Ave			University Ave			15-min Total	Rolling One Hour	
	Eastbound			Westbound			Northbound			Southbound					
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	1	0	0	2	0	3	0	
7:15 AM	0	0	0	0	0	0	0	1	0	0	2	0	3	0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	4	0	4	0	
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	12	
8:00 AM	1	0	0	0	0	0	0	2	0	0	1	0	4	13	
8:15 AM	0	0	0	0	0	0	0	1	3	0	3	0	7	17	
8:30 AM	0	0	0	0	0	0	0	1	0	0	2	0	3	16	
8:45 AM	0	0	0	0	0	0	0	3	0	0	1	0	4	18	
9:00 AM	0	0	0	0	0	0	0	2	0	0	2	2	6	20	
9:15 AM	0	0	0	0	0	0	0	4	0	0	1	0	5	18	
9:30 AM	0	0	0	0	0	0	0	2	0	0	3	0	5	20	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	16	
Count Total	1	0	0	0	0	0	0	1	19	0	0	23	2	46	0
Peak Hour	1	0	0	0	0	0	0	1	6	0	0	8	0	16	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

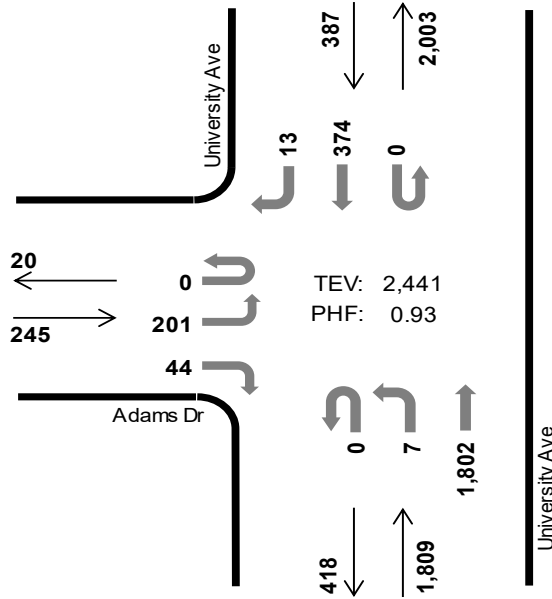


# University Ave Adams Dr

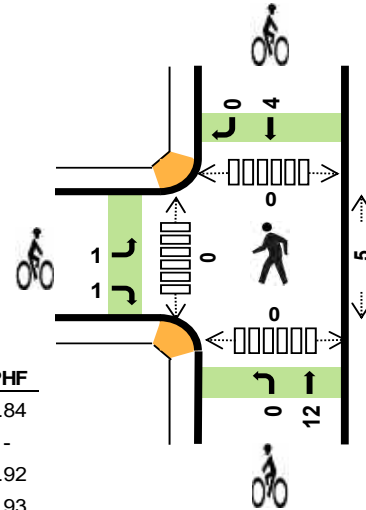


Peak Hour

Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:15 PM to 5:15 PM



	HV %:	PHF
EB	2.4%	0.84
WB	-	-
NB	1.8%	0.92
SB	4.1%	0.93
TOTAL	2.2%	0.93



## Three-Hour Count Summaries

Interval Start	Adams Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:15 PM	0	41	0	8	0	0	0	0	0	2	449	0	0	0	93	2	595	0	
4:30 PM	0	58	0	14	0	0	0	0	0	2	490	0	0	0	90	4	658	0	
4:45 PM	0	40	0	11	0	0	0	0	0	1	443	0	0	0	102	2	599	0	
5:00 PM	0	62	0	11	0	0	0	0	0	2	420	0	0	0	89	5	589	2,441	
Peak Hour	All	0	201	0	44	0	0	0	0	0	7	1,802	0	0	0	374	13	2,441	0
	HV	0	6	0	0	0	0	0	0	0	3	29	0	0	0	13	3	54	0
	HV%	-	3%	-	0%	-	-	-	-	-	43%	2%	-	-	-	3%	23%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:15 PM	1	0	9	3	13	0	0	3	1	4	1	0	0	0	1
4:30 PM	1	0	8	4	13	0	0	4	1	5	3	0	0	0	3
4:45 PM	2	0	7	2	11	0	0	3	0	3	0	0	0	0	0
5:00 PM	2	0	8	7	17	2	0	2	2	6	1	0	0	0	1
Peak Hour	6	0	32	16	54	2	0	12	4	18	5	0	0	0	5

### Three-Hour Count Summaries

Interval Start	Adams Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	25	0	15	0	0	0	0	0	1	437	0	0	0	89	3	570	0	
4:15 PM	0	41	0	8	0	0	0	0	0	2	449	0	0	0	93	2	595	0	
4:30 PM	0	58	0	14	0	0	0	0	0	2	490	0	0	0	90	4	658	0	
4:45 PM	0	40	0	11	0	0	0	0	0	1	443	0	0	0	102	2	599	2,422	
5:00 PM	0	62	0	11	0	0	0	0	0	2	420	0	0	0	89	5	589	2,441	
5:15 PM	0	78	0	17	0	0	0	0	0	1	310	0	0	0	106	3	515	2,361	
5:30 PM	0	43	0	16	0	0	0	0	0	1	401	0	0	0	108	0	569	2,272	
5:45 PM	0	44	0	7	0	0	0	0	0	1	378	0	0	0	137	3	570	2,243	
6:00 PM	0	50	0	9	0	0	0	0	0	3	387	0	0	0	98	2	549	2,203	
6:15 PM	0	22	0	3	0	0	0	0	0	2	403	0	0	0	111	5	546	2,234	
6:30 PM	0	8	0	5	0	0	0	0	0	2	470	0	0	0	85	2	572	2,237	
6:45 PM	0	5	0	7	0	0	0	0	0	2	285	0	0	0	87	2	388	2,055	
Count Total	0	476	0	123	0	0	0	0	0	20	4,873	0	0	0	1,195	33	6,720	0	
Peak Hour	All	0	201	0	44	0	0	0	0	0	7	1,802	0	0	0	374	13	2,441	0
	HV	0	6	0	0	0	0	0	0	0	3	29	0	0	0	13	3	54	0
	HV%	-	3%	-	0%	-	-	-	-	-	43%	2%	-	-	-	3%	23%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	9	3	13	2	0	0	1	3	0	0	0	0	0
4:15 PM	1	0	9	3	13	0	0	3	1	4	1	0	0	0	1
4:30 PM	1	0	8	4	13	0	0	4	1	5	3	0	0	0	3
4:45 PM	2	0	7	2	11	0	0	3	0	3	0	0	0	0	0
5:00 PM	2	0	8	7	17	2	0	2	2	6	1	0	0	0	1
5:15 PM	2	0	12	3	17	0	0	4	2	6	3	1	0	0	4
5:30 PM	1	0	4	1	6	0	0	3	3	6	0	2	0	0	2
5:45 PM	1	0	2	2	5	0	0	11	1	12	4	1	0	0	5
6:00 PM	0	0	13	2	15	1	0	3	1	5	1	2	0	0	3
6:15 PM	1	0	7	7	15	0	0	1	1	2	0	0	0	0	0
6:30 PM	0	0	6	2	8	0	0	9	0	9	0	0	0	0	0
6:45 PM	1	0	6	0	7	0	0	2	4	6	2	0	0	0	2
Count Total	13	0	91	36	140	5	0	45	17	67	15	6	0	0	21
Peak Hr	6	0	32	16	54	2	0	12	4	18	5	0	0	0	5

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Adams Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	1	0	0	0	0	0	0	0	0	9	0	0	0	2	1	13	0	
4:15 PM	0	1	0	0	0	0	0	0	0	0	1	8	0	0	0	3	0	13	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	8	0	0	0	4	0	13	0
4:45 PM	0	2	0	0	0	0	0	0	0	0	1	6	0	0	0	1	1	11	50
5:00 PM	0	2	0	0	0	0	0	0	0	0	1	7	0	0	0	5	2	17	54
5:15 PM	0	2	0	0	0	0	0	0	0	0	0	12	0	0	0	1	2	17	58
5:30 PM	0	0	0	1	0	0	0	0	0	0	0	4	0	0	0	1	0	6	51
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	1	1	5	45
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	2	15	43
6:15 PM	0	1	0	0	0	0	0	0	0	0	0	7	0	0	0	4	3	15	41
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	1	1	8	43
6:45 PM	0	1	0	0	0	0	0	0	0	0	1	5	0	0	0	0	0	7	45
Count Total	0	11	0	2	0	0	0	0	0	0	4	87	0	0	0	23	13	140	0
Peak Hour	0	6	0	0	0	0	0	0	0	0	3	29	0	0	0	13	3	54	0

### Three-Hour Count Summaries - Bikes

Interval Start	Adams Dr			n/a			University Ave			University Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	1	0	1	0	0	0	0	0	0	0	0	1	3	0
4:15 PM	0	0	0	0	0	0	0	3	0	0	1	0	4	0
4:30 PM	0	0	0	0	0	0	0	4	0	0	1	0	5	0
4:45 PM	0	0	0	0	0	0	0	3	0	0	0	0	3	15
5:00 PM	1	0	1	0	0	0	0	2	0	0	2	0	6	18
5:15 PM	0	0	0	0	0	0	0	4	0	0	2	0	6	20
5:30 PM	0	0	0	0	0	0	0	3	0	0	3	0	6	21
5:45 PM	0	0	0	0	0	0	0	11	0	0	1	0	12	30
6:00 PM	1	0	0	0	0	0	0	3	0	0	1	0	5	29
6:15 PM	0	0	0	0	0	0	0	1	0	0	1	0	2	25
6:30 PM	0	0	0	0	0	0	0	9	0	0	0	0	9	28
6:45 PM	0	0	0	0	0	0	0	2	0	0	4	0	6	22
Count Total	3	0	2	0	0	0	0	45	0	0	16	1	67	0
Peak Hour	1	0	1	0	0	0	0	12	0	0	4	0	18	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

File Name: G:\Data 2019\Menlo Park 3-19\39AM FINAL.ppd

Start Date: 4/23/2019

Start Time: 7:00:00 AM

Site Code: 00000039

Comment 1: 0

Comment 2: 0

Comment 3: 0

Comment 4: 0

Start Time	UNIVERSITY AVE Southbound				Westbound				UNIVERSITY AVE Northbound				OBRIEN DR Eastbound			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
07:00 AM	19	305	0	0	0	0	0	0	0	92	13	0	5	0	5	2
07:15 AM	31	278	0	0	0	0	0	0	0	144	7	0	7	0	0	0
07:30 AM	52	303	0	0	0	0	0	0	0	154	18	0	4	0	3	0
07:45 AM	82	284	0	0	0	0	0	0	0	191	24	0	3	0	6	0
08:00 AM	60	324	0	0	0	0	0	0	0	158	23	0	8	0	2	3
08:15 AM	76	308	0	0	0	0	0	0	0	195	33	0	3	0	13	0
08:30 AM	57	268	0	0	0	0	0	0	0	189	30	0	6	0	11	2
08:45 AM	31	285	0	0	0	0	0	0	0	197	29	0	12	0	11	0
09:00 AM	26	245	0	0	0	0	0	0	0	244	37	0	10	0	5	0
09:15 AM	21	282	0	0	0	0	0	0	0	181	37	0	17	0	11	0
09:30 AM	13	284	0	0	0	0	0	0	0	167	26	0	16	0	12	1
09:45 AM	15	279	0	0	0	0	0	0	0	168	17	0	11	0	9	0

Start Time	UNIVERSITY AVE				UNIVERSITY AVE				UNIVERSITY AVE				OBRIEN DR				Vehicle Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
7:00-8:00	184	1170	0	0	0	0	0	0	0	581	62	0	19	0	14	2	2,030
7:15-8:15	225	1189	0	0	0	0	0	0	0	647	72	0	22	0	11	3	2,166
7:30-8:30	270	1219	0	0	0	0	0	0	0	698	98	0	18	0	24	3	2,327
7:45-8:45	275	1184	0	0	0	0	0	0	0	733	110	0	20	0	32	5	2,354
8:00-9:00	224	1185	0	0	0	0	0	0	0	739	115	0	29	0	37	5	2,329
8:00-9:00	190	1106	0	0	0	0	0	0	0	825	129	0	31	0	40	2	2,321
8:15-9:15	135	1080	0	0	0	0	0	0	0	811	133	0	45	0	38	2	2,242
8:30-9:30	91	1096	0	0	0	0	0	0	0	789	129	0	55	0	39	1	2,199
8:45-9:45	75	1090	0	0	0	0	0	0	0	760	117	0	54	0	37	1	2,133
9:00-10:00	49	845	0	0	0	0	0	0	0	516	80	0	44	0	32	1	1,566

File Name: G:\Data 2019\Menlo Park 3-19\39AM FINAL.ppd

Start Date: 4/23/2019

Start Time: 7:00:00 AM

Site Code: 00000039

Comment 1: 0

Comment 2: 0

Comment 3: 0

Comment 4: 0

Start Time	UNIVERSITY AVE Southbound				Westbound				UNIVERSITY AVE Northbound				OBRIEN DR Eastbound			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
07:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
08:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
09:00 AM	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	0
09:15 AM	0	1	0	0	0	0	0	0	0	0	1	1	0	1	0	0
09:30 AM	1	1	0	0	0	0	0	0	0	0	3	1	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0

File Name: G:\Data 2019\Menlo Park 3-19\39PM FINAL.ppd

Start Date: 4/23/2019

Start Time: 4:00:00 PM

Site Code: 00000039

Comment 1: 0

Comment 2: 0

Comment 3: 0

Comment 4: 0

Start Time	UNIVERSITY AVE Southbound				Westbound				UNIVERSITY AVE Northbound				OBRIEN DR Eastbound			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
04:00 PM	0	73	0	0	0	0	0	0	0	442	2	0	41	0	38	0
04:15 PM	3	85	0	0	0	0	0	0	0	431	4	0	25	0	51	1
04:30 PM	2	81	1	0	0	0	0	0	0	414	2	0	26	0	46	0
04:45 PM	1	117	0	0	0	0	0	0	0	359	4	0	26	0	40	0
05:00 PM	2	104	0	0	0	0	0	0	0	397	3	0	36	0	49	1
05:15 PM	2	120	0	0	0	0	0	0	0	360	0	0	36	0	44	2
05:30 PM	3	111	1	0	0	0	0	0	0	375	2	0	37	0	44	0
05:45 PM	2	129	0	0	0	0	0	0	0	390	1	0	32	0	48	0
06:00 PM	0	86	0	0	0	0	0	0	0	430	1	0	28	0	33	2
06:15 PM	4	119	0	0	0	0	0	0	0	364	5	0	22	0	24	2
06:30 PM	3	104	0	0	0	0	0	0	0	259	0	0	17	0	17	2
06:45 PM	2	111	0	0	0	0	0	0	0	386	2	0	11	0	17	1

Start Time	UNIVERSITY AVE				UNIVERSITY AVE				UNIVERSITY AVE				OBRIEN DR				Vehicle Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
4:00-5:00	6	356	1	0	0	0	0	0	0	1646	12	0	118	0	175	1	2,314
4:15-5:15	8	387	1	0	0	0	0	0	0	1601	13	0	113	0	186	2	2,309
4:30-5:30	7	422	1	0	0	0	0	0	0	1530	9	0	124	0	179	3	2,272
4:45-5:45	8	452	1	0	0	0	0	0	0	1491	9	0	135	0	177	3	2,273
5:00-6:00	9	464	1	0	0	0	0	0	0	1522	6	0	141	0	185	3	2,328
5:00-6:00	7	446	1	0	0	0	0	0	0	1555	4	0	133	0	169	4	2,315
5:15-6:15	9	445	1	0	0	0	0	0	0	1559	9	0	119	0	149	4	2,291
5:30-6:30	9	438	0	0	0	0	0	0	0	1443	7	0	99	0	122	6	2,118
5:45-6:45	9	420	0	0	0	0	0	0	0	1439	8	0	78	0	91	7	2,045
6:00-7:00	9	334	0	0	0	0	0	0	0	1009	7	0	50	0	58	5	1,467

File Name: G:\Data 2019\Menlo Park 3-19\39PM FINAL.ppd

Start Date: 4/23/2019

Start Time: 4:00:00 PM

Site Code: 00000039

Comment 1: 0

Comment 2: 0

Comment 3: 0

Comment 4: 0

Start Time	UNIVERSITY AVE Southbound				Westbound				UNIVERSITY AVE Northbound				OBRIEN DR Eastbound				
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
04:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	3	0	0	0
04:30 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0
04:45 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	8	0	0	2	0	0	0
06:00 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
06:15 PM	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
06:30 PM	0	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0
06:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0



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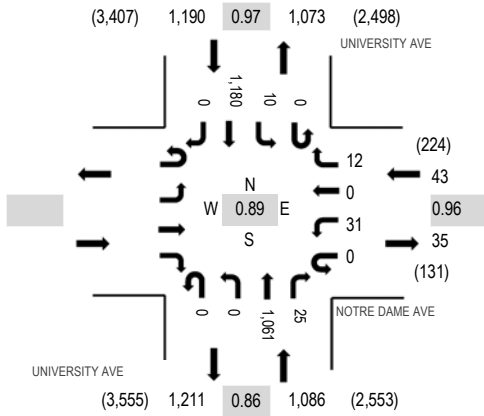
Location: 1 UNIVERSITY AVE & NOTRE DAME AVE AM

Date: Wednesday, March 4, 2020

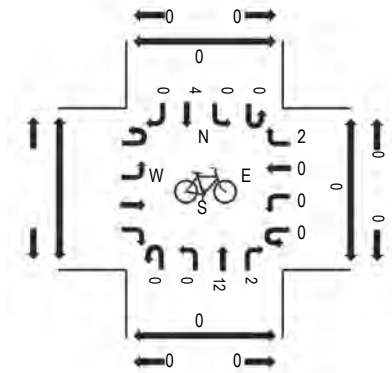
Peak Hour: 08:45 AM - 09:45 AM

Peak 15-Minutes: 09:00 AM - 09:15 AM

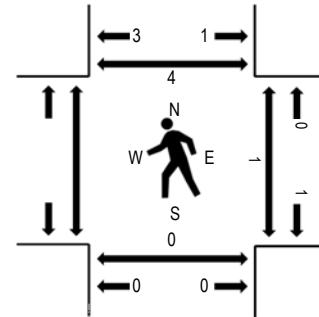
### Peak Hour - Motorized Vehicles



### Peak Hour - Bicycles



### Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

### Traffic Counts - Motorized Vehicles

Interval Start Time	NOTRE DAME AVE				UNIVERSITY AVE				UNIVERSITY AVE				Total	Rolling Hour	Pedestrian Crossings						
	Eastbound		Westbound		Northbound		Southbound		Southbound		West	East			South	North					
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right					
7:00 AM					0	19	0	2	0	0	120	8	0	0	270	0	419	1,776	1	0	1
7:15 AM					0	18	0	7	0	0	131	11	0	1	285	0	453	1,824	0	0	1
7:30 AM					0	22	0	5	0	0	144	8	0	1	259	0	439	1,913	0	0	0
7:45 AM					0	18	0	5	0	0	161	11	0	2	268	0	465	2,010	0	0	1
8:00 AM					0	22	0	5	0	0	183	14	0	2	241	0	467	2,094	0	0	1
8:15 AM					0	19	0	8	0	0	202	15	0	1	297	0	542	2,281	0	0	0
8:30 AM					0	13	0	5	0	0	245	9	0	4	260	0	536	2,307	0	0	1
8:45 AM					0	12	0	5	0	0	276	8	0	1	247	0	549	2,319	1	0	1
9:00 AM					0	7	0	2	0	0	316	6	0	1	322	0	654	2,314	0	0	0
9:15 AM					0	5	0	4	0	0	246	5	0	4	304	0	568		0	0	2
9:30 AM					0	7	0	1	0	0	223	6	0	4	307	0	548		0	0	1
9:45 AM					0	9	0	4	0	0	198	7	0	2	324	0	544		0	0	0

### Peak Rolling Hour Flow Rates

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks					0	0	0	0	0	0	2	0	0	0	5	0	7
Lights					0	31	0	12	0	0	1,011	25	0	7	1,104	0	2,190
Mediums					0	0	0	0	0	0	48	0	0	3	71	0	122
Total					0	31	0	12	0	0	1,061	25	0	10	1,180	0	2,319





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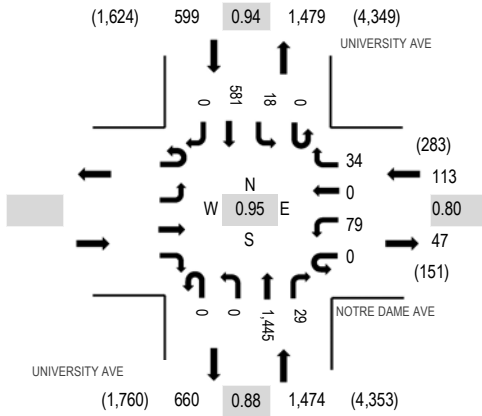
Location: 1 UNIVERSITY AVE & NOTRE DAME AVE PM

Date: Wednesday, March 4, 2020

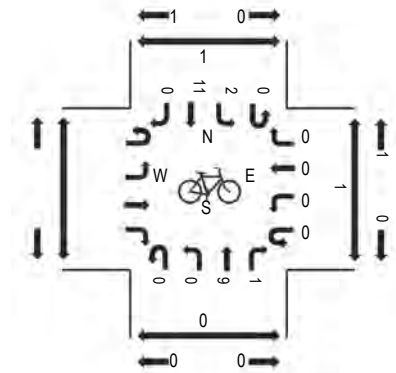
Peak Hour: 05:30 PM - 06:30 PM

Peak 15-Minutes: 05:45 PM - 06:00 PM

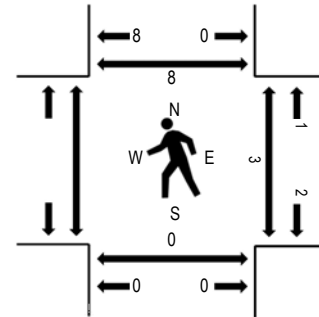
### Peak Hour - Motorized Vehicles



### Peak Hour - Bicycles



### Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

### Traffic Counts - Motorized Vehicles

Interval Start Time	NOTRE DAME AVE				UNIVERSITY AVE				UNIVERSITY AVE				Total	Rolling Hour	Pedestrian Crossings						
	Eastbound		Westbound		Northbound		Southbound		Eastbound		Southbound				West	East	South	North			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right					
4:00 PM					0	8	0	6	0	0	420	11	0	7	94	0	546	2,098	0	0	2
4:15 PM					0	14	0	5	0	0	370	5	0	7	117	0	518	2,058	1	0	0
4:30 PM					0	14	0	7	0	0	360	10	0	6	129	0	526	2,054	1	0	1
4:45 PM					0	17	0	10	0	0	342	4	0	3	132	0	508	2,081	2	0	1
5:00 PM					0	14	0	5	0	0	351	1	0	5	130	0	506	2,151	2	0	0
5:15 PM					0	18	0	10	0	0	328	3	0	6	149	0	514	2,163	4	0	0
5:30 PM					0	17	0	6	0	0	358	11	0	3	158	0	553	2,186	0	0	0
5:45 PM					0	29	0	8	0	0	368	10	0	5	158	0	578	2,155	3	0	0
6:00 PM					0	16	0	14	0	0	356	6	0	4	122	0	518	2,011	0	0	5
6:15 PM					0	17	0	6	0	0	363	2	0	6	143	0	537		0	0	3
6:30 PM					0	19	0	5	0	0	355	17	0	6	120	0	522		0	0	0
6:45 PM					0	13	0	5	0	0	291	11	0	2	112	0	434		0	0	0

### Peak Rolling Hour Flow Rates

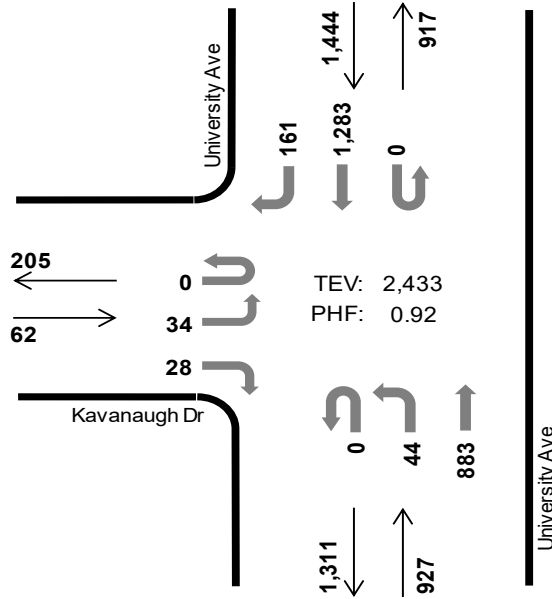
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks					0	0	0	0	0	0	1	0	0	0	1	0	2
Lights					0	79	0	33	0	0	1,413	29	0	18	573	0	2,145
Mediums					0	0	0	1	0	0	31	0	0	0	7	0	39
Total					0	79	0	34	0	0	1,445	29	0	18	581	0	2,186

# University Ave Kavanaugh Dr

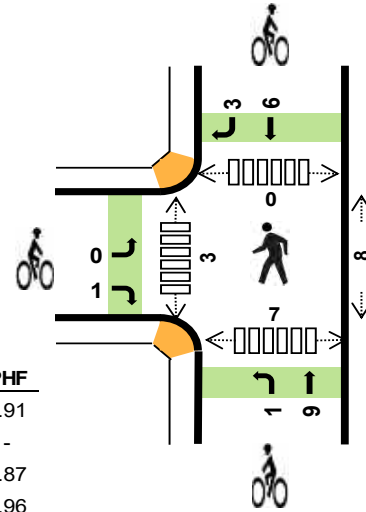


Peak Hour

Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	0.0%	0.91
WB	-	-
NB	2.6%	0.87
SB	3.3%	0.96
TOTAL	2.9%	0.92



## Three-Hour Count Summaries

Interval Start	Kavanaugh Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:00 AM	0	6	0	11	0	0	0	0	0	19	193	0	0	0	329	34	592	0	
8:15 AM	0	11	0	4	0	0	0	0	0	13	208	0	0	0	309	37	582	0	
8:30 AM	0	11	0	5	0	0	0	0	0	8	257	0	0	0	307	70	658	0	
8:45 AM	0	6	0	8	0	0	0	0	0	4	225	0	0	0	338	20	601	2,433	
Peak Hour	All	0	34	0	28	0	0	0	0	0	44	883	0	0	0	1,283	161	2,433	0
	HV	0	0	0	0	0	0	0	0	0	1	23	0	0	0	42	5	71	0
	HV%	-	0%	-	0%	-	-	-	-	-	2%	3%	-	-	-	3%	3%	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	0	0	6	6	12	0	0	4	5	9	2	0	0	2	4
8:15 AM	0	0	6	14	20	0	0	3	1	4	4	2	0	3	9
8:30 AM	0	0	10	14	24	0	0	0	1	1	1	1	0	1	3
8:45 AM	0	0	2	13	15	1	0	3	2	6	1	0	0	1	2
Peak Hour	0	0	24	47	71	1	0	10	9	20	8	3	0	7	18

### Three-Hour Count Summaries

Interval Start	Kavanaugh Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	4	0	12	0	0	0	0	0	5	119	0	0	0	285	16	441	0	
7:15 AM	0	3	0	12	0	0	0	0	0	9	160	0	0	0	287	17	488	0	
7:30 AM	0	7	0	14	0	0	0	0	0	4	157	0	0	0	326	26	534	0	
7:45 AM	0	8	0	13	0	0	0	0	0	13	182	0	0	0	305	30	551	2,014	
<b>8:00 AM</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>193</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>329</b>	<b>34</b>	<b>592</b>	<b>2,165</b>	
<b>8:15 AM</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>208</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>309</b>	<b>37</b>	<b>582</b>	<b>2,259</b>	
<b>8:30 AM</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>257</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>307</b>	<b>70</b>	<b>658</b>	<b>2,383</b>	
<b>8:45 AM</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>225</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>338</b>	<b>20</b>	<b>601</b>	<b>2,433</b>	
9:00 AM	0	11	0	6	0	0	0	0	0	5	248	0	1	0	276	17	564	2,405	
9:15 AM	0	6	0	10	0	0	0	0	0	6	205	0	0	0	328	14	569	2,392	
9:30 AM	0	8	0	6	0	0	0	0	0	5	208	0	0	0	353	13	593	2,327	
9:45 AM	1	3	0	4	0	0	0	0	0	3	200	0	0	0	314	5	530	2,256	
Count Total	1	84	0	105	0	0	0	0	0	94	2,362	0	1	0	3,757	299	6,703	0	
Peak Hour	All	0	34	0	28	0	0	0	0	0	44	883	0	0	0	1,283	161	2,433	0
	HV	0	0	0	0	0	0	0	0	0	1	23	0	0	0	42	5	71	0
	HV%	-	0%	-	0%	-	-	-	-	-	2%	3%	-	-	-	3%	3%	3%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total	
7:00 AM	1	0	8	9	18	0	0	0	2	2	2	0	0	0	1	3
7:15 AM	0	0	7	10	17	0	0	1	3	4	4	1	0	0	4	9
7:30 AM	0	0	3	12	15	1	0	0	3	4	3	0	0	0	3	6
7:45 AM	1	0	6	9	16	0	0	0	2	2	6	2	0	0	6	14
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>6</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>9</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>14</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>9</b>
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>14</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>
<b>8:45 AM</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>13</b>	<b>15</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>
9:00 AM	0	0	9	23	32	0	0	0	3	3	0	2	0	0	1	3
9:15 AM	0	0	4	38	42	0	0	2	0	2	2	1	2	0	2	7
9:30 AM	0	0	9	15	24	0	0	1	4	5	0	2	0	0	0	2
9:45 AM	0	0	7	14	21	0	0	0	0	0	0	0	0	0	0	0
Count Total	2	0	77	177	256	2	0	14	26	42	25	11	2	0	24	62
Peak Hr	0	0	24	47	71	1	0	10	9	20	8	3	0	0	7	18

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Kavanaugh Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	1	0	0	0	0	0	0	8	0	0	0	9	0	18	0
7:15 AM	0	0	0	0	0	0	0	0	0	1	6	0	0	0	10	0	17	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	12	0	15	0
7:45 AM	0	1	0	0	0	0	0	0	0	0	6	0	0	0	7	2	16	66
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>12</b>	<b>60</b>
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>2</b>	<b>20</b>	<b>63</b>
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>1</b>	<b>24</b>	<b>72</b>
<b>8:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>1</b>	<b>15</b>	<b>71</b>
9:00 AM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	21	2	32	91
9:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	38	0	42	113
9:30 AM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	13	2	24	113
9:45 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	14	0	21	119
Count Total	0	1	0	1	0	0	0	0	0	2	75	0	0	0	166	11	256	0
Peak Hour	0	0	0	0	0	0	0	0	0	1	23	0	0	0	42	5	71	0

### Three-Hour Count Summaries - Bikes

Interval Start	Kavanaugh Dr			n/a			University Ave			University Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	2	1	4	0
7:30 AM	0	0	1	0	0	0	0	0	0	0	3	0	4	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	12
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>9</b>
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>8:45 AM</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>6</b>
9:00 AM	0	0	0	0	0	0	0	0	0	0	2	1	3	14
9:15 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	12
9:30 AM	0	0	0	0	0	0	0	0	1	0	0	4	0	16
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10
Count Total	0	0	2	0	0	0	0	1	13	0	0	21	5	42
Peak Hour	0	0	1	0	0	0	0	1	9	0	0	6	3	20

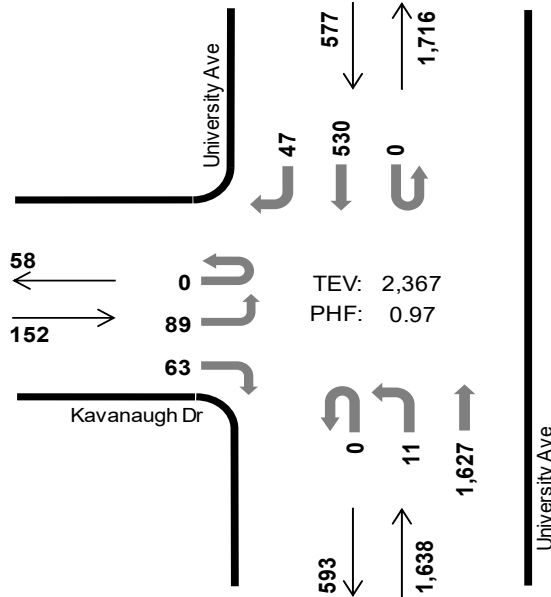
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# University Ave Kavanaugh Dr



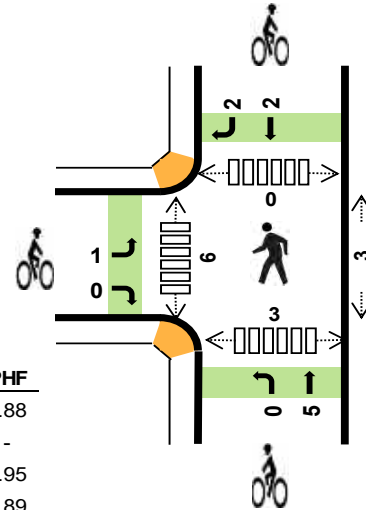
Peak Hour

Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:00 PM to 5:00 PM



TEV: 2,367  
PHF: 0.97

	HV %:	PHF
EB	2.0%	0.88
WB	-	-
NB	1.5%	0.95
SB	2.3%	0.89
TOTAL	1.7%	0.97



## Three-Hour Count Summaries

Interval Start	Kavanaugh Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		UT		LT		TH		RT				
4:00 PM	0	19	0	17	0	0	0	0	0	3	392	0	0	0	129	13	573	0	
4:15 PM	0	25	0	12	0	0	0	0	0	3	402	0	0	0	137	7	586	0	
4:30 PM	0	21	0	15	0	0	0	0	0	4	427	0	0	0	115	14	596	0	
4:45 PM	0	24	0	19	0	0	0	0	0	1	406	0	0	0	149	13	612	2,367	
Peak Hour	All	0	89	0	63	0	0	0	0	0	11	1,627	0	0	0	530	47	2,367	0
	HV	0	2	0	1	0	0	0	0	0	0	24	0	0	0	12	1	40	0
	HV%	-	2%	-	2%	-	-	-	-	-	0%	1%	-	-	-	2%	2%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	8	3	12	1	0	0	2	3	1	1	0	1	3
4:15 PM	1	0	7	4	12	0	0	0	0	0	1	2	0	1	4
4:30 PM	1	0	4	4	9	0	0	2	1	3	0	0	0	0	0
4:45 PM	0	0	5	2	7	0	0	3	1	4	1	3	0	1	5
Peak Hour	3	0	24	13	40	1	0	5	4	10	3	6	0	3	12

### Three-Hour Count Summaries

Interval Start	Kavanaugh Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	19	0	17	0	0	0	0	0	3	392	0	0	0	129	13	573	0	
4:15 PM	0	25	0	12	0	0	0	0	0	3	402	0	0	0	137	7	586	0	
4:30 PM	0	21	0	15	0	0	0	0	0	4	427	0	0	0	115	14	596	0	
4:45 PM	0	24	0	19	0	0	0	0	0	1	406	0	0	0	149	13	612	2,367	
5:00 PM	0	37	0	11	0	0	0	0	0	3	350	0	0	0	135	9	545	2,339	
5:15 PM	0	28	0	17	0	0	0	0	0	0	251	0	0	0	150	14	460	2,213	
5:30 PM	0	25	0	16	0	0	0	0	0	1	327	0	0	0	154	14	537	2,154	
5:45 PM	0	31	0	15	0	0	0	0	0	2	336	0	0	0	159	23	566	2,108	
6:00 PM	0	28	0	14	0	0	0	0	0	3	312	0	1	0	127	22	507	2,070	
6:15 PM	0	17	0	12	0	0	0	0	0	4	378	0	0	0	135	13	559	2,169	
6:30 PM	0	12	0	13	0	0	0	0	0	4	402	0	0	0	112	11	554	2,186	
6:45 PM	0	11	0	14	0	0	0	0	0	9	251	0	0	0	112	13	410	2,030	
Count Total	0	278	0	175	0	0	0	0	0	37	4,234	0	1	0	1,614	166	6,505	0	
Peak Hour	All	0	89	0	63	0	0	0	0	0	11	1,627	0	0	0	530	47	2,367	0
	HV	0	2	0	1	0	0	0	0	0	0	24	0	0	0	12	1	40	0
	HV%	-	2%	-	2%	-	-	-	-	-	0%	1%	-	-	-	2%	2%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	8	3	12	1	0	0	2	3	1	1	0	1	3
4:15 PM	1	0	7	4	12	0	0	0	0	0	1	2	0	1	4
4:30 PM	1	0	4	4	9	0	0	2	1	3	0	0	0	0	0
4:45 PM	0	0	5	2	7	0	0	3	1	4	1	3	0	1	5
5:00 PM	0	0	5	5	10	0	0	0	4	4	1	0	0	1	2
5:15 PM	0	0	6	3	9	0	0	5	5	10	3	2	0	6	11
5:30 PM	0	0	3	3	6	0	0	2	4	6	0	1	0	1	2
5:45 PM	0	0	2	2	4	0	0	9	3	12	1	4	0	1	6
6:00 PM	1	0	9	1	11	0	0	3	0	3	0	2	0	0	2
6:15 PM	0	0	6	4	10	0	0	1	0	1	0	0	0	0	0
6:30 PM	0	0	8	1	9	0	0	9	2	11	0	0	0	0	0
6:45 PM	0	0	3	0	3	0	0	2	4	6	1	1	0	1	3
Count Total	4	0	66	32	102	1	0	36	26	63	9	16	0	13	38
Peak Hr	3	0	24	13	40	1	0	5	4	10	3	6	0	3	12

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Kavanaugh Dr				n/a				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	0	0	0	0	8	0	0	0	3	0	12	0
4:15 PM	0	1	0	0	0	0	0	0	0	0	7	0	0	0	4	0	12	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	4	0	0	0	3	1	9	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	2	0	7	40
5:00 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	10	38
5:15 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	2	1	9	35
5:30 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	1	6	32
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	1	4	29
6:00 PM	0	1	0	0	0	0	0	0	0	0	9	0	0	0	1	0	11	30
6:15 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	4	0	10	31
6:30 PM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	1	0	9	34
6:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	33
Count Total	0	3	0	1	0	0	0	0	0	0	66	0	0	0	28	4	102	0
Peak Hour	0	2	0	1	0	0	0	0	0	0	24	0	0	0	12	1	40	0

### Three-Hour Count Summaries - Bikes

Interval Start	Kavanaugh Dr			n/a			University Ave			University Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	1	0	0	0	0	0	0	0	0	0	1	1	3	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	2	0	0	1	0	3	0
4:45 PM	0	0	0	0	0	0	0	3	0	0	0	1	4	10
5:00 PM	0	0	0	0	0	0	0	0	0	0	3	1	4	11
5:15 PM	0	0	0	0	0	0	0	5	0	0	5	0	10	21
5:30 PM	0	0	0	0	0	0	0	2	0	0	4	0	6	24
5:45 PM	0	0	0	0	0	0	0	9	0	0	3	0	12	32
6:00 PM	0	0	0	0	0	0	0	3	0	0	0	0	3	31
6:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	22
6:30 PM	0	0	0	0	0	0	0	9	0	0	2	0	11	27
6:45 PM	0	0	0	0	0	0	0	2	0	0	4	0	6	21
Count Total	1	0	0	0	0	0	0	36	0	0	23	3	63	0
Peak Hour	1	0	0	0	0	0	0	5	0	0	2	2	10	0

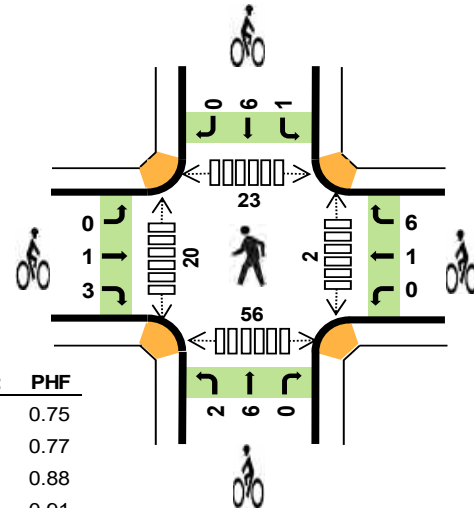
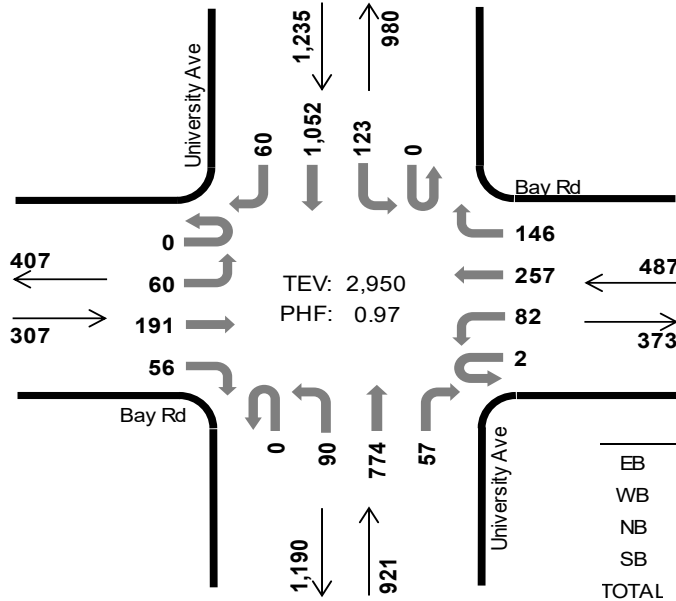
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# University Ave Bay Rd



Peak Hour

Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	2.3%	0.75
WB	3.1%	0.77
NB	2.2%	0.88
SB	3.0%	0.91
TOTAL	2.7%	0.97

## Three-Hour Count Summaries

Interval Start	Bay Rd				Bay Rd				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:00 AM	0	16	56	11	0	24	86	49	0	27	166	23	0	28	228	25	739	0	
8:15 AM	0	22	67	14	2	18	62	42	0	25	169	11	0	22	261	13	728	0	
8:30 AM	0	12	37	16	0	21	62	31	0	20	231	10	0	32	274	14	760	0	
8:45 AM	0	10	31	15	0	19	47	24	0	18	208	13	0	41	289	8	723	2,950	
Peak Hour	All	0	60	191	56	2	82	257	146	0	90	774	57	0	123	1,052	60	2,950	0
	HV	0	0	5	2	0	3	5	7	0	4	16	0	0	4	32	1	79	0
	HV%	-	0%	3%	4%	0%	4%	2%	5%	-	4%	2%	0%	-	3%	3%	2%	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	1	6	4	5	16	1	2	3	2	8	0	3	8	19	30
8:15 AM	2	3	5	5	15	0	1	2	2	5	1	5	10	17	33
8:30 AM	2	4	9	16	31	2	0	0	2	4	0	9	0	12	21
8:45 AM	2	2	2	11	17	1	4	3	1	9	1	3	5	8	17
Peak Hour	7	15	20	37	79	4	7	8	7	26	2	20	23	56	101



### Three-Hour Count Summaries

Interval Start	Bay Rd				Bay Rd				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	17	39	6	1	36	40	26	1	13	96	26	0	40	246	11	598	0	
7:15 AM	0	13	35	9	0	32	39	44	0	16	116	26	0	23	242	12	607	0	
7:30 AM	0	8	41	13	1	39	53	34	0	17	128	21	0	34	271	16	676	0	
7:45 AM	0	10	65	5	0	12	69	50	1	23	147	18	1	27	208	51	687	2,568	
<b>8:00 AM</b>	<b>0</b>	<b>16</b>	<b>56</b>	<b>11</b>	<b>0</b>	<b>24</b>	<b>86</b>	<b>49</b>	<b>0</b>	<b>27</b>	<b>166</b>	<b>23</b>	<b>0</b>	<b>28</b>	<b>228</b>	<b>25</b>	<b>739</b>	<b>2,709</b>	
<b>8:15 AM</b>	<b>0</b>	<b>22</b>	<b>67</b>	<b>14</b>	<b>2</b>	<b>18</b>	<b>62</b>	<b>42</b>	<b>0</b>	<b>25</b>	<b>169</b>	<b>11</b>	<b>0</b>	<b>22</b>	<b>261</b>	<b>13</b>	<b>728</b>	<b>2,830</b>	
<b>8:30 AM</b>	<b>0</b>	<b>12</b>	<b>37</b>	<b>16</b>	<b>0</b>	<b>21</b>	<b>62</b>	<b>31</b>	<b>0</b>	<b>20</b>	<b>231</b>	<b>10</b>	<b>0</b>	<b>32</b>	<b>274</b>	<b>14</b>	<b>760</b>	<b>2,914</b>	
<b>8:45 AM</b>	<b>0</b>	<b>10</b>	<b>31</b>	<b>15</b>	<b>0</b>	<b>19</b>	<b>47</b>	<b>24</b>	<b>0</b>	<b>18</b>	<b>208</b>	<b>13</b>	<b>0</b>	<b>41</b>	<b>289</b>	<b>8</b>	<b>723</b>	<b>2,950</b>	
9:00 AM	0	9	30	19	0	17	26	28	0	12	221	19	0	25	247	13	666	2,877	
9:15 AM	0	12	31	16	0	20	23	14	0	18	203	20	2	10	298	7	674	2,823	
9:30 AM	0	6	38	17	0	21	26	22	0	16	191	15	0	31	266	7	656	2,719	
9:45 AM	0	3	32	16	0	20	20	20	1	13	174	22	0	23	299	6	649	2,645	
Count Total	0	138	502	157	4	279	553	384	3	218	2,050	224	3	336	3,129	183	8,163	0	
Peak Hour	All	0	60	191	56	2	82	257	146	0	90	774	57	0	123	1,052	60	2,950	0
	HV	0	0	5	2	0	3	5	7	0	4	16	0	0	4	32	1	79	0
	HV%	-	0%	3%	4%	0%	4%	2%	5%	-	4%	2%	0%	-	3%	3%	2%	3%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	6	9	5	10	30	0	1	0	1	2	2	2	2	10	16
7:15 AM	6	4	3	10	23	2	1	1	0	4	2	5	1	4	12
7:30 AM	2	5	5	14	26	1	0	1	3	5	3	3	13	3	22
7:45 AM	2	3	6	7	18	1	0	2	1	4	0	8	8	12	28
<b>8:00 AM</b>	<b>1</b>	<b>6</b>	<b>4</b>	<b>5</b>	<b>16</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>8</b>	<b>0</b>	<b>3</b>	<b>8</b>	<b>19</b>	<b>30</b>
<b>8:15 AM</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>15</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>5</b>	<b>10</b>	<b>17</b>	<b>33</b>
<b>8:30 AM</b>	<b>2</b>	<b>4</b>	<b>9</b>	<b>16</b>	<b>31</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>12</b>	<b>21</b>
<b>8:45 AM</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>11</b>	<b>17</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>9</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>8</b>	<b>17</b>
9:00 AM	2	4	9	21	36	2	1	3	2	8	4	2	3	5	14
9:15 AM	4	3	9	36	52	0	4	2	0	6	1	8	2	7	18
9:30 AM	6	3	14	12	35	2	0	1	2	5	1	17	4	6	28
9:45 AM	2	3	5	16	26	0	0	2	1	3	0	3	3	7	13
Count Total	37	49	76	163	325	12	14	20	17	63	15	68	59	110	252
Peak Hour	7	15	20	37	79	4	7	8	7	26	2	20	23	56	101

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Bay Rd				Bay Rd				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	4	2	0	0	2	6	1	0	0	2	3	0	2	8	0	30	0
7:15 AM	0	3	2	1	0	0	3	1	0	1	2	0	0	2	8	0	23	0
7:30 AM	0	0	0	2	0	4	1	0	0	1	3	1	0	1	13	0	26	0
7:45 AM	0	0	1	1	0	0	2	1	0	0	6	0	0	2	5	0	18	97
8:00 AM	0	0	1	0	0	0	3	3	0	1	3	0	0	1	4	0	16	83
8:15 AM	0	0	2	0	0	1	1	1	0	1	4	0	0	1	4	0	15	75
8:30 AM	0	0	1	1	0	2	0	2	0	1	8	0	0	1	14	1	31	80
8:45 AM	0	0	1	1	0	0	1	1	0	1	1	0	0	1	10	0	17	79
9:00 AM	0	0	0	2	0	0	2	2	0	2	6	1	0	0	21	0	36	99
9:15 AM	0	0	2	2	0	1	2	0	0	1	4	4	0	1	34	1	52	136
9:30 AM	0	0	4	2	0	0	1	2	0	4	8	2	0	1	10	1	35	140
9:45 AM	0	0	1	1	0	1	1	1	0	0	5	0	0	3	12	1	26	149
Count Total	0	7	17	13	0	11	23	15	0	13	52	11	0	16	143	4	325	0
Peak Hour	0	0	5	2	0	3	5	7	0	4	16	0	0	4	32	1	79	0

### Three-Hour Count Summaries - Bikes

Interval Start	Bay Rd			Bay Rd			University Ave			University Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	1	0	0	0	0	0	0	1	2	0
7:15 AM	0	2	0	1	0	0	0	1	0	0	0	0	4	0
7:30 AM	0	1	0	0	0	0	1	0	0	1	1	1	5	0
7:45 AM	0	1	0	0	0	0	0	2	0	1	0	0	4	15
8:00 AM	0	1	0	0	0	2	1	2	0	1	1	0	8	21
8:15 AM	0	0	0	0	0	1	0	2	0	0	2	0	5	22
8:30 AM	0	0	2	0	0	0	0	0	0	0	2	0	4	21
8:45 AM	0	0	1	0	1	3	1	2	0	0	1	0	9	26
9:00 AM	0	2	0	0	1	0	0	3	0	0	2	0	8	26
9:15 AM	0	0	0	0	3	1	0	2	0	0	0	0	6	27
9:30 AM	0	1	1	0	0	0	0	1	0	0	2	0	5	28
9:45 AM	0	0	0	0	0	0	1	1	0	0	1	0	3	22
Count Total	0	8	4	1	6	7	4	16	0	3	12	2	63	0
Peak Hour	0	1	3	0	1	6	2	6	0	1	6	0	26	0

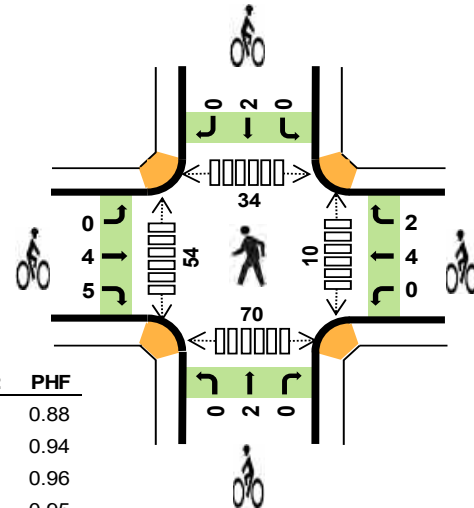
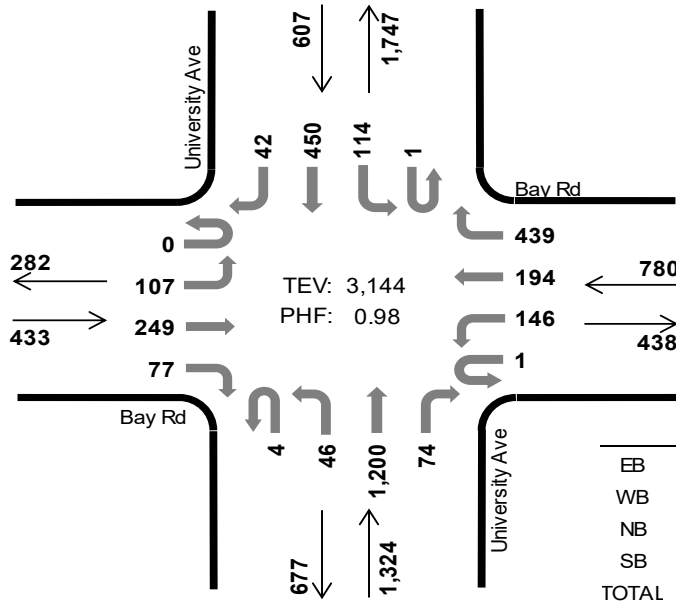
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# University Ave Bay Rd



Peak Hour

Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	2.5%	0.88
WB	1.8%	0.94
NB	2.0%	0.96
SB	2.3%	0.95
TOTAL	2.1%	0.98

## Three-Hour Count Summaries

Interval Start	Bay Rd				Bay Rd				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	37	60	26	0	42	50	115	2	14	273	19	0	35	111	12	796	0	
4:15 PM	0	25	67	21	0	37	50	92	1	12	292	27	0	25	113	11	773	0	
4:30 PM	0	22	55	10	0	35	47	114	1	8	325	12	1	25	109	5	769	0	
4:45 PM	0	23	67	20	1	32	47	118	0	12	310	16	0	29	117	14	806	3,144	
Peak Hour	All	0	107	249	77	1	146	194	439	4	46	1,200	74	1	114	450	42	3,144	0
	HV	0	1	6	4	0	0	7	7	0	3	17	7	0	4	7	3	66	0
	HV%	-	1%	2%	5%	0%	0%	4%	2%	0%	7%	1%	9%	0%	4%	2%	7%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	4	7	5	19	6	0	0	0	6	6	7	10	14	37
4:15 PM	3	4	12	3	22	1	1	1	1	4	1	16	14	28	59
4:30 PM	3	2	4	4	13	1	2	1	0	4	1	22	9	15	47
4:45 PM	2	4	4	2	12	1	3	0	1	5	2	9	1	13	25
Peak Hour	11	14	27	14	66	9	6	2	2	19	10	54	34	70	168

### Three-Hour Count Summaries

Interval Start	Bay Rd				Bay Rd				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	37	60	26	0	42	50	115	2	14	273	19	0	35	111	12	796	0	
4:15 PM	0	25	67	21	0	37	50	92	1	12	292	27	0	25	113	11	773	0	
4:30 PM	0	22	55	10	0	35	47	114	1	8	325	12	1	25	109	5	769	0	
4:45 PM	0	23	67	20	1	32	47	118	0	12	310	16	0	29	117	14	806	3,144	
5:00 PM	0	29	51	27	1	32	68	85	0	7	251	20	0	24	124	9	728	3,076	
5:15 PM	0	20	84	23	2	29	49	85	0	12	169	6	1	28	129	10	647	2,950	
5:30 PM	0	31	73	32	0	23	78	86	0	8	192	5	0	19	142	15	704	2,885	
5:45 PM	0	27	66	27	1	33	68	86	0	16	233	5	0	22	132	16	732	2,811	
6:00 PM	0	24	81	23	0	34	66	93	0	12	211	3	0	21	119	14	701	2,784	
6:15 PM	0	22	62	28	1	20	55	95	0	7	247	3	1	22	111	4	678	2,815	
6:30 PM	0	19	39	23	2	46	40	75	1	15	310	2	0	35	93	7	707	2,818	
6:45 PM	0	15	48	17	0	23	47	54	1	19	179	5	1	20	90	7	526	2,612	
Count Total	0	294	753	277	8	386	665	1,098	6	142	2,992	123	4	305	1,390	124	8,567	0	
Peak Hour	All	0	107	249	77	1	146	194	439	4	46	1,200	74	1	114	450	42	3,144	0
	HV	0	1	6	4	0	0	7	7	0	3	17	7	0	4	7	3	66	0
	HV%	-	1%	2%	5%	0%	0%	4%	2%	0%	7%	1%	9%	0%	4%	2%	7%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	4	7	5	19	6	0	0	0	6	6	7	10	14	37
4:15 PM	3	4	12	3	22	1	1	1	1	4	1	16	14	28	59
4:30 PM	3	2	4	4	13	1	2	1	0	4	1	22	9	15	47
4:45 PM	2	4	4	2	12	1	3	0	1	5	2	9	1	13	25
5:00 PM	4	1	4	5	14	1	1	0	1	3	1	15	3	16	35
5:15 PM	1	3	7	1	12	1	1	2	4	8	1	4	9	8	22
5:30 PM	5	6	3	2	16	0	1	3	4	8	4	14	5	34	57
5:45 PM	3	1	4	1	9	2	5	4	1	12	0	7	6	14	27
6:00 PM	4	2	6	1	13	0	1	1	1	3	0	11	8	15	34
6:15 PM	1	4	4	4	13	1	1	0	0	2	3	7	5	13	28
6:30 PM	2	2	8	1	13	3	1	9	0	13	1	5	0	14	20
6:45 PM	2	2	4	0	8	2	2	1	3	8	3	4	4	9	20
Count Total	33	35	67	29	164	19	19	22	16	76	23	121	74	193	411
Peak Hour	11	14	27	14	66	9	6	2	2	19	10	54	34	70	168

### Three-Hour Count Summaries - Heavy Vehicles

Interval Start	Bay Rd				Bay Rd				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	1	1	0	0	2	2	0	1	5	1	0	3	1	1	19	0
4:15 PM	0	0	2	1	0	0	2	2	0	1	6	5	0	1	1	1	22	0
4:30 PM	0	0	2	1	0	0	2	0	0	1	3	0	0	0	4	0	13	0
4:45 PM	0	0	1	1	0	0	1	3	0	0	3	1	0	0	1	1	12	66
5:00 PM	0	2	1	1	0	0	1	0	0	1	3	0	0	1	4	0	14	61
5:15 PM	0	0	0	1	0	0	3	0	0	1	6	0	0	0	1	0	12	51
5:30 PM	0	1	2	2	0	1	3	2	0	1	2	0	0	1	1	0	16	54
5:45 PM	0	1	1	1	0	0	1	0	0	1	3	0	0	0	1	0	9	51
6:00 PM	0	0	2	2	0	0	1	1	0	2	4	0	0	0	1	0	13	50
6:15 PM	0	0	1	0	0	0	1	3	0	1	3	0	0	0	4	0	13	51
6:30 PM	0	0	1	1	0	0	1	1	0	1	7	0	0	0	1	0	13	48
6:45 PM	0	0	1	1	0	1	1	0	0	1	3	0	0	0	0	0	8	47
Count Total	0	5	15	13	0	2	19	14	0	12	48	7	0	6	20	3	164	0
Peak Hour	0	1	6	4	0	0	7	7	0	3	17	7	0	4	7	3	66	0

### Three-Hour Count Summaries - Bikes

Interval Start	Bay Rd			Bay Rd			University Ave			University Ave			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	3	3	0	0	0	0	0	0	0	0	0	6	0
4:15 PM	0	0	1	0	1	0	0	1	0	0	1	0	4	0
4:30 PM	0	0	1	0	1	1	0	1	0	0	0	0	4	0
4:45 PM	0	1	0	0	2	1	0	0	0	0	0	1	5	19
5:00 PM	0	1	0	0	0	1	0	0	0	1	0	0	3	16
5:15 PM	0	1	0	0	0	1	0	2	0	2	2	0	8	20
5:30 PM	0	0	0	0	1	0	0	3	0	2	2	0	8	24
5:45 PM	0	2	0	0	0	5	0	4	0	1	0	0	12	31
6:00 PM	0	0	0	0	0	1	0	1	0	1	0	0	3	31
6:15 PM	0	0	1	0	0	1	0	0	0	0	0	0	2	25
6:30 PM	0	2	1	0	1	0	0	9	0	0	0	0	13	30
6:45 PM	0	2	0	0	0	2	0	1	0	3	0	0	8	26
Count Total	0	12	7	0	6	13	0	22	0	10	6	0	76	0
Peak Hour	0	4	5	0	4	2	0	2	0	0	2	0	19	0

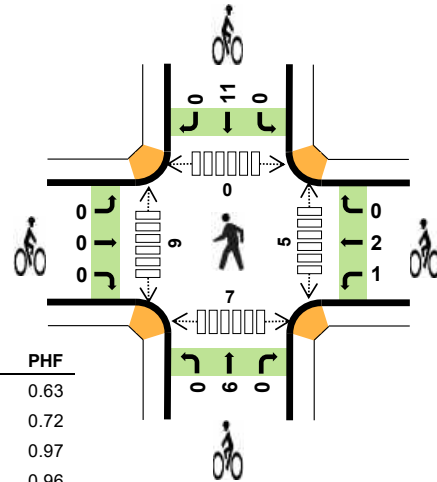
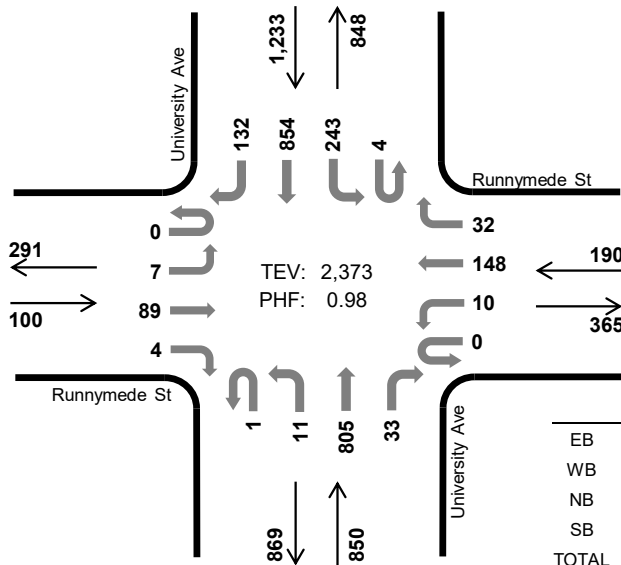
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# University Ave Runnymede St



Peak Hour

Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 8:15 AM to 9:15 AM



	HV %:	PHF
EB	2.0%	0.63
WB	1.6%	0.72
NB	2.8%	0.97
SB	4.5%	0.96
TOTAL	3.6%	0.98

### Three-Hour Count Summaries

Interval Start	Runnymede St				Runnymede St				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:15 AM	0	3	36	1	0	4	55	7	1	3	185	11	1	44	220	37	608	0	
8:30 AM	0	1	17	1	0	3	41	8	0	4	208	8	0	71	205	27	594	0	
8:45 AM	0	2	19	0	0	0	29	11	0	3	204	8	0	65	219	38	598	0	
9:00 AM	0	1	17	2	0	3	23	6	0	1	208	6	3	63	210	30	573	2,373	
Peak Hour	All	0	7	89	4	0	10	148	32	1	11	805	33	4	243	854	132	2,373	0
	HV	0	1	0	1	0	0	3	0	0	0	24	0	1	0	43	12	85	0
	HV%	-	14%	0%	25%	-	0%	2%	0%	0%	0%	3%	0%	25%	0%	5%	9%	4%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:15 AM	0	1	10	4	15	0	1	1	1	3	1	1	0	5	7
8:30 AM	0	1	4	19	24	0	0	0	5	5	1	4	0	0	5
8:45 AM	1	1	1	8	11	0	1	3	1	5	0	3	0	1	4
9:00 AM	1	0	9	25	35	0	1	2	4	7	3	1	0	1	5
Peak Hour	2	3	24	56	85	0	3	6	11	20	5	9	0	7	21

Three-Hour Count Summaries																			
Interval Start	Runnymede St				Runnymede St				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	2	11	0	0	8	28	2	2	2	129	9	0	27	264	25	509	0	
7:15 AM	0	2	17	4	0	6	39	5	0	7	144	14	0	22	255	25	540	0	
7:30 AM	0	2	33	2	0	7	49	6	0	4	148	21	0	26	257	49	604	0	
7:45 AM	0	4	47	0	0	5	52	5	1	2	164	31	0	24	171	41	547	2,200	
8:00 AM	0	3	30	8	0	5	50	3	0	6	154	10	0	16	234	17	536	2,227	
<b>8:15 AM</b>	<b>0</b>	<b>3</b>	<b>36</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>55</b>	<b>7</b>	<b>1</b>	<b>3</b>	<b>185</b>	<b>11</b>	<b>1</b>	<b>44</b>	<b>220</b>	<b>37</b>	<b>608</b>	2,295	
8:30 AM	0	1	17	1	0	3	41	8	0	4	208	8	0	71	205	27	594	2,285	
8:45 AM	0	2	19	0	0	0	29	11	0	3	204	8	0	65	219	38	598	2,336	
9:00 AM	0	1	17	2	0	3	23	6	0	1	208	6	3	63	210	30	573	2,373	
9:15 AM	0	3	2	2	0	8	16	6	0	4	206	11	1	35	267	36	597	2,362	
9:30 AM	0	2	7	1	0	8	12	4	2	7	214	7	2	44	229	23	562	2,330	
9:45 AM	0	2	7	3	0	9	8	7	2	0	204	7	0	31	285	29	594	2,326	
Count Total	0	27	243	24	0	66	402	70	8	43	2,168	143	7	468	2,816	377	6,862	0	
Peak Hour	All	0	7	89	4	0	10	148	32	1	11	805	33	4	243	854	132	2,373	0
	HV	0	1	0	1	0	0	3	0	0	0	24	0	1	0	43	12	85	0
	HV%	-	14%	0%	25%	-	0%	2%	0%	0%	0%	3%	0%	25%	0%	5%	9%	4%	0
Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.																			
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)								
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total				
7:00 AM	1	0	5	10	16	1	1	0	1	3	2	1	2	1	6				
7:15 AM	0	0	2	9	11	0	0	1	3	4	0	4	4	1	9				
7:30 AM	1	1	6	18	26	1	1	0	3	5	3	3	1	1	8				
7:45 AM	0	1	6	7	14	0	1	1	0	2	2	3	0	1	6				
8:00 AM	0	0	2	3	5	1	0	1	2	4	0	2	0	1	3				
<b>8:15 AM</b>	<b>0</b>	<b>1</b>	<b>10</b>	<b>4</b>	<b>15</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>7</b>				
8:30 AM	0	1	4	19	24	0	0	0	5	5	1	4	0	0	5				
8:45 AM	1	1	1	8	11	0	1	3	1	5	0	3	0	1	4				
9:00 AM	1	0	9	25	35	0	1	2	4	7	3	1	0	1	5				
9:15 AM	0	0	10	37	47	0	0	0	0	0	2	3	5	2	12				
9:30 AM	0	0	14	16	30	2	0	0	3	5	0	9	2	0	11				
9:45 AM	1	0	6	14	21	1	1	0	1	3	1	1	1	0	3				
Count Total	5	5	75	170	255	6	7	9	24	46	15	35	15	14	79				
Peak Hour	2	3	24	56	85	0	3	6	11	20	5	9	0	7	21				

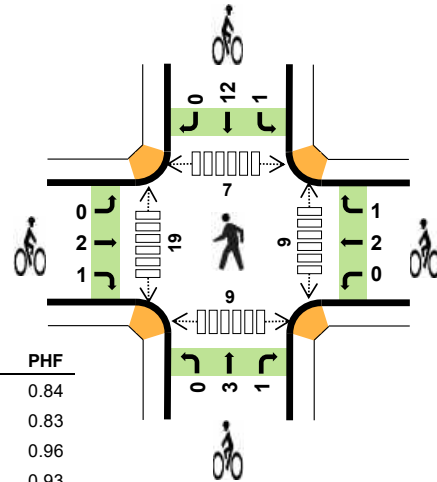
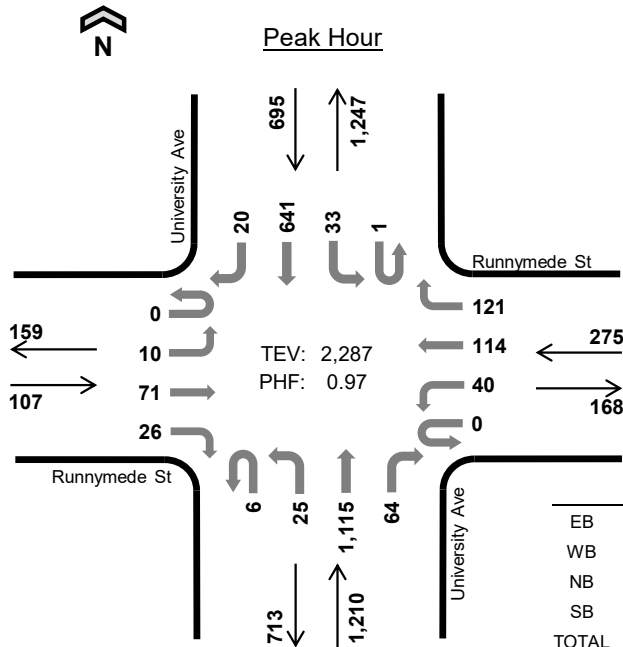
<b>Three-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	Runnymede St				Runnymede St				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	0	0	0	0	0	0	0	5	0	0	1	9	0	16	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	9	0	11	0
7:30 AM	0	0	1	0	0	0	1	0	0	0	6	0	0	1	15	2	26	0
7:45 AM	0	0	0	0	0	0	0	1	0	0	6	0	0	0	7	0	14	67
8:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	5	56
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>15</b>	60
8:30 AM	0	0	0	0	0	0	1	0	0	0	4	0	0	0	15	4	24	58
8:45 AM	0	1	0	0	0	0	1	0	0	0	1	0	0	0	7	1	11	55
9:00 AM	0	0	0	1	0	0	0	0	0	0	9	0	1	0	18	6	35	85
9:15 AM	0	0	0	0	0	0	0	0	0	0	7	3	1	1	27	8	47	117
9:30 AM	0	0	0	0	0	0	0	0	0	1	13	0	0	1	14	1	30	123
9:45 AM	0	0	1	0	0	0	0	0	0	0	6	0	0	0	11	3	21	133
Count Total	0	1	3	1	0	0	4	1	0	1	71	3	2	4	138	26	255	0
Peak Hour	0	1	0	1	0	0	3	0	0	0	24	0	1	0	43	12	85	0
<b>Three-Hour Count Summaries - Bikes</b>																		
Interval Start	Runnymede St			Runnymede St			University Ave			University Ave			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	1	0	0	1	0	0	0	0	0	1	0	3	0				
7:15 AM	0	0	0	0	0	0	0	1	0	0	3	0	4	0				
7:30 AM	0	1	0	0	1	0	0	0	0	0	3	0	5	0				
7:45 AM	0	0	0	0	1	0	0	1	0	0	0	0	2	14				
8:00 AM	0	0	1	0	0	0	0	1	0	0	2	0	4	15				
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>3</b>	14				
8:30 AM	0	0	0	0	0	0	0	0	0	0	5	0	5	14				
8:45 AM	0	0	0	1	0	0	0	3	0	0	1	0	5	17				
9:00 AM	0	0	0	0	1	0	0	2	0	0	4	0	7	20				
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	17				
9:30 AM	0	2	0	0	0	0	0	0	0	0	3	0	5	17				
9:45 AM	0	1	0	1	0	0	0	0	0	0	1	0	3	15				
Count Total	0	5	1	2	5	0	0	9	0	0	24	0	46	0				
Peak Hour	0	0	0	1	2	0	0	6	0	0	11	0	20	0				
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																		



# University Ave Runnymede St



Date: 04-25-2019  
 Count Period: 4:00 PM to 7:00 PM  
 Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	0.0%	0.84
WB	0.4%	0.83
NB	2.6%	0.96
SB	1.6%	0.93
TOTAL	1.9%	0.97

### Three-Hour Count Summaries

Interval Start	Runnymede St				Runnymede St				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	2	16	5	0	12	33	20	4	6	290	16	1	5	176	5	591	0	
4:15 PM	0	5	11	6	0	12	23	24	2	3	263	19	0	11	155	6	540	0	
4:30 PM	0	3	22	7	0	5	33	30	0	9	288	16	0	10	158	4	585	0	
4:45 PM	0	0	22	8	0	11	25	47	0	7	274	13	0	7	152	5	571	2,287	
Peak Hour	All	0	10	71	26	0	40	114	121	6	25	1,115	64	1	33	641	20	2,287	0
	HV	0	0	0	0	0	0	1	0	0	0	30	2	0	0	11	0	44	0
	HV%	-	0%	0%	0%	-	0%	1%	0%	0%	0%	3%	3%	0%	0%	2%	0%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	8	2	11	1	0	1	5	7	1	7	1	4	13
4:15 PM	0	0	10	1	11	1	1	2	3	7	1	2	3	1	7
4:30 PM	0	0	5	6	11	0	0	1	2	3	6	7	1	0	14
4:45 PM	0	0	9	2	11	1	2	0	3	6	1	3	2	4	10
Peak Hour	0	1	32	11	44	3	3	4	13	23	9	19	7	9	44

Three-Hour Count Summaries																			
Interval Start	Runnymede St				Runnymede St				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	2	16	5	0	12	33	20	4	6	290	16	1	5	176	5	591	0	
4:15 PM	0	5	11	6	0	12	23	24	2	3	263	19	0	11	155	6	540	0	
4:30 PM	0	3	22	7	0	5	33	30	0	9	288	16	0	10	158	4	585	0	
4:45 PM	0	0	22	8	0	11	25	47	0	7	274	13	0	7	152	5	571	2,287	
5:00 PM	0	1	22	8	0	11	32	45	2	8	203	16	0	5	166	7	526	2,222	
5:15 PM	0	3	19	3	0	13	34	27	0	9	137	19	1	16	160	9	450	2,132	
5:30 PM	0	2	23	5	0	14	39	30	1	8	153	8	0	14	186	11	494	2,041	
5:45 PM	0	8	33	8	0	18	46	24	1	10	198	5	0	6	178	5	540	2,010	
6:00 PM	0	0	28	6	0	21	39	30	1	11	192	19	1	9	174	7	538	2,022	
6:15 PM	0	3	17	6	0	13	31	29	6	12	224	19	0	7	148	8	523	2,095	
6:30 PM	0	2	15	8	0	22	31	16	2	6	229	18	1	12	162	9	533	2,134	
6:45 PM	0	5	20	7	0	12	10	15	3	15	197	13	0	6	132	5	440	2,034	
Count Total	0	34	248	77	0	164	376	337	22	104	2,648	181	4	108	1,947	81	6,331	0	
Peak Hour	All	0	10	71	26	0	40	114	121	6	25	1,115	64	1	33	641	20	2,287	0
	HV	0	0	0	0	0	0	1	0	0	0	30	2	0	0	11	0	44	0
	HV%	-	0%	0%	0%	-	0%	1%	0%	0%	0%	3%	3%	0%	0%	2%	0%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	8	2	11	1	0	1	5	7	1	7	1	4	13
4:15 PM	0	0	10	1	11	1	1	2	3	7	1	2	3	1	7
4:30 PM	0	0	5	6	11	0	0	1	2	3	6	7	1	0	14
4:45 PM	0	0	9	2	11	1	2	0	3	6	1	3	2	4	10
5:00 PM	0	0	9	3	12	0	0	0	0	0	2	5	2	5	14
5:15 PM	0	0	5	4	9	0	1	2	2	5	2	1	3	1	7
5:30 PM	0	1	1	4	6	2	0	2	3	7	2	5	2	0	9
5:45 PM	0	0	4	2	6	0	0	4	0	4	2	7	2	0	11
6:00 PM	0	1	7	4	12	1	1	1	0	3	3	3	1	0	7
6:15 PM	0	0	5	3	8	1	0	1	0	2	1	1	2	1	5
6:30 PM	0	1	6	3	10	3	0	0	4	7	4	3	1	0	8
6:45 PM	0	0	7	2	9	1	0	2	0	3	0	3	1	3	7
Count Total	0	4	76	36	116	11	5	16	22	54	25	47	21	19	112
Peak Hour	0	1	32	11	44	3	3	4	13	23	9	19	7	9	44

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Runnymede St				Runnymede St				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	1	0	0	0	7	1	0	0	2	0	11	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	10	0	0	0	1	0	11	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	6	0	11	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	8	1	0	0	2	0	11	44
5:00 PM	0	0	0	0	0	0	0	0	0	0	9	0	0	0	3	0	12	45
5:15 PM	0	0	0	0	0	0	0	0	0	0	3	2	0	0	3	1	9	43
5:30 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	4	0	6	38
5:45 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	2	0	6	33
6:00 PM	0	0	0	0	0	0	1	0	0	0	7	0	0	0	4	0	12	33
6:15 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0	8	32
6:30 PM	0	0	0	0	0	0	1	0	0	0	6	0	0	0	3	0	10	36
6:45 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	9	39
Count Total	0	0	0	0	0	1	3	0	0	0	72	4	0	0	35	1	116	0
Peak Hour	0	0	0	0	0	0	1	0	0	0	30	2	0	0	11	0	44	0

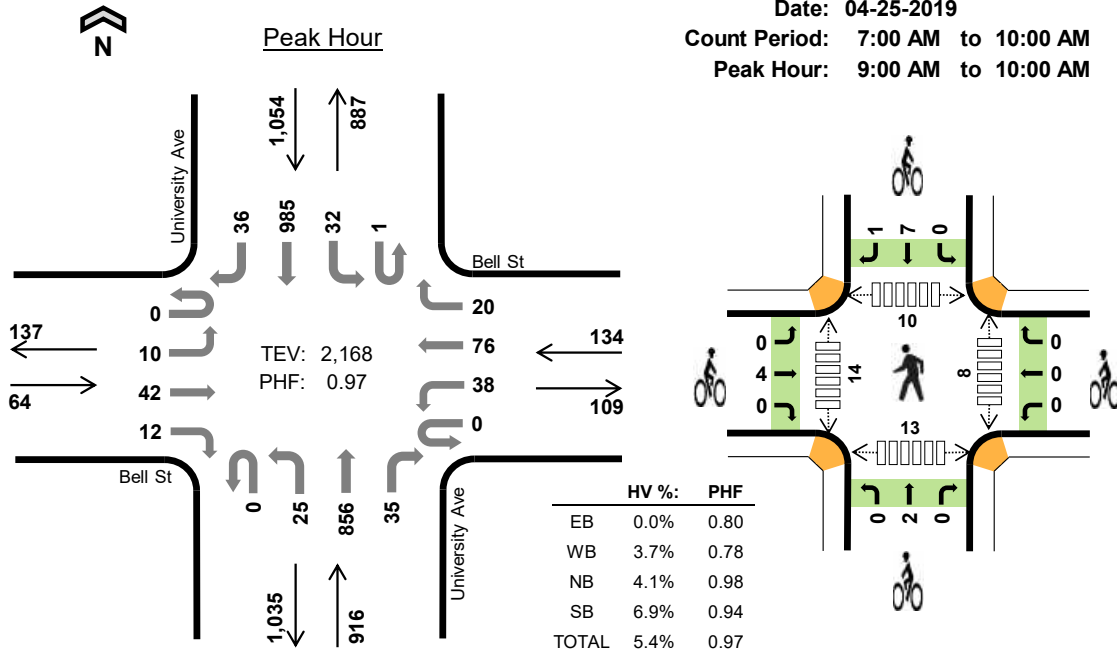
Three-Hour Count Summaries - Bikes																	
Interval Start	Runnymede St			Runnymede St			University Ave			University Ave			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	1	0	0	0	0	1	0	0	5	0	7	0			
4:15 PM	0	1	0	0	1	0	0	1	1	1	2	0	7	0			
4:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	3	0			
4:45 PM	0	1	0	0	1	1	0	0	0	0	3	0	6	23			
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	16			
5:15 PM	0	0	0	0	1	0	0	2	0	0	2	0	5	14			
5:30 PM	0	2	0	0	0	0	0	2	0	0	3	0	7	18			
5:45 PM	0	0	0	0	0	0	0	4	0	0	0	0	4	16			
6:00 PM	0	1	0	0	1	0	0	0	1	0	0	0	3	19			
6:15 PM	0	1	0	0	0	0	0	1	0	0	0	0	2	16			
6:30 PM	1	1	1	0	0	0	0	0	0	0	4	0	7	16			
6:45 PM	0	1	0	0	0	0	0	2	0	0	0	0	3	15			
Count Total	1	8	2	0	4	1	0	14	2	1	21	0	54	0			
Peak Hour	0	2	1	0	2	1	0	3	1	1	12	0	23	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### University Ave Bell St



Date: 04-25-2019  
 Count Period: 7:00 AM to 10:00 AM  
 Peak Hour: 9:00 AM to 10:00 AM



#### Three-Hour Count Summaries

Interval Start	Bell St				Bell St				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		Northbound		Southbound								
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
9:00 AM	0	0	14	6	0	11	30	2	0	9	214	9	0	8	232	4	539	0	
9:15 AM	0	2	5	4	0	5	20	5	0	6	216	8	0	7	234	12	524	0	
9:30 AM	0	3	11	1	0	6	11	4	0	4	224	5	1	9	261	9	549	0	
9:45 AM	0	5	12	1	0	16	15	9	0	6	202	13	0	8	258	11	556	2,168	
Peak Hour	All	0	10	42	12	0	38	76	20	0	25	856	35	1	32	985	36	2,168	0
	HV	0	0	0	0	0	0	2	3	0	0	36	2	0	0	71	2	116	0
	HV%	-	0%	0%	0%	-	0%	3%	15%	-	0%	4%	6%	0%	0%	7%	6%	5%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
9:00 AM	0	1	9	13	23	1	0	2	2	5	1	1	3	6	11
9:15 AM	0	2	9	30	41	1	0	0	1	2	1	1	1	1	4
9:30 AM	0	2	13	19	34	1	0	0	3	4	0	7	2	3	12
9:45 AM	0	0	7	11	18	1	0	0	2	3	6	5	4	3	18
Peak Hour	0	5	38	73	116	4	0	2	8	14	8	14	10	13	45

Three-Hour Count Summaries																			
Interval Start	Bell St				Bell St				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	7	28	0	0	18	27	2	0	7	130	6	0	6	263	12	506	0	
7:15 AM	0	2	23	11	0	21	28	4	1	6	157	9	0	10	239	15	526	0	
7:30 AM	0	5	22	10	0	30	28	0	0	12	164	7	0	9	206	8	501	0	
7:45 AM	0	3	27	22	0	18	35	1	0	12	187	13	0	6	207	9	540	2,073	
8:00 AM	0	2	19	19	0	30	34	1	0	10	165	4	0	4	199	4	491	2,058	
8:15 AM	0	3	20	30	0	20	29	0	0	10	194	5	0	3	197	3	514	2,046	
8:30 AM	0	2	36	17	0	33	21	3	0	8	208	9	0	2	198	2	539	2,084	
8:45 AM	0	1	13	8	0	25	36	3	1	9	209	3	0	2	222	1	533	2,077	
9:00 AM	0	0	14	6	0	11	30	2	0	9	214	9	0	8	232	4	539	2,125	
9:15 AM	0	2	5	4	0	5	20	5	0	6	216	8	0	7	234	12	524	2,135	
9:30 AM	0	3	11	1	0	6	11	4	0	4	224	5	1	9	261	9	549	2,145	
9:45 AM	0	5	12	1	0	16	15	9	0	6	202	13	0	8	258	11	556	2,168	
Count Total	0	35	230	129	0	233	314	34	2	99	2,270	91	1	74	2,716	90	6,318	0	
Peak Hour	All	0	10	42	12	0	38	76	20	0	25	856	35	1	32	985	36	2,168	0
	HV	0	0	0	0	0	0	2	3	0	0	36	2	0	0	71	2	116	0
	HV%	-	0%	0%	0%	-	0%	3%	15%	-	0%	4%	6%	0%	0%	7%	6%	5%	0
Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.																			
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)								
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total				
7:00 AM	0	3	4	9	16	0	1	0	1	2	2	1	5	2	10				
7:15 AM	0	2	3	8	13	1	0	1	2	4	2	4	1	2	9				
7:30 AM	0	0	7	8	15	1	2	0	3	6	4	6	2	5	17				
7:45 AM	0	1	7	10	18	2	0	1	0	3	2	2	2	5	11				
8:00 AM	1	2	1	5	9	1	0	1	1	3	4	5	4	8	21				
8:15 AM	2	1	9	3	15	3	3	1	1	8	5	0	5	9	19				
8:30 AM	0	1	5	13	19	0	0	0	1	1	0	2	1	3	6				
8:45 AM	1	1	0	7	9	0	0	3	3	6	0	4	4	6	14				
9:00 AM	0	1	9	13	23	1	0	2	2	5	1	1	3	6	11				
9:15 AM	0	2	9	30	41	1	0	0	1	2	1	1	1	1	4				
9:30 AM	0	2	13	19	34	1	0	0	3	4	0	7	2	3	12				
9:45 AM	0	0	7	11	18	1	0	0	2	3	6	5	4	3	18				
Count Total	4	16	74	136	230	12	6	9	20	47	27	38	34	53	152				
Peak Hour	0	5	38	73	116	4	0	2	8	14	8	14	10	13	45				

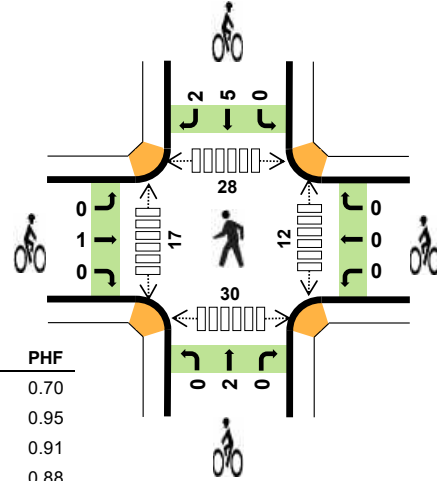
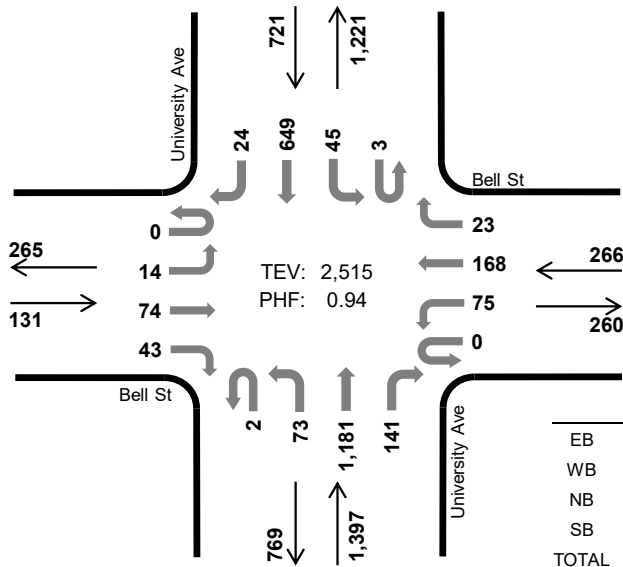
<b>Three-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	Bell St				Bell St				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	2	1	0	0	4	0	0	0	9	0	16	0
7:15 AM	0	0	0	0	0	1	1	0	0	0	2	1	0	0	8	0	13	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	7	1	15	0
7:45 AM	0	0	0	0	0	1	0	0	0	1	6	0	0	0	10	0	18	62
8:00 AM	0	0	1	0	0	0	1	1	0	0	1	0	0	0	4	1	9	55
8:15 AM	0	1	1	0	0	0	1	0	0	0	9	0	0	0	3	0	15	57
8:30 AM	0	0	0	0	0	1	0	0	0	0	4	1	0	0	13	0	19	61
8:45 AM	0	0	1	0	0	0	0	1	0	0	0	0	0	0	7	0	9	52
<b>9:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>23</b>	<b>66</b>
<b>9:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>2</b>	<b>41</b>	<b>92</b>
<b>9:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>34</b>	<b>107</b>
<b>9:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>18</b>	<b>116</b>
Count Total	0	1	3	0	0	3	7	6	0	1	69	4	0	0	132	4	230	0
Peak Hour	0	0	0	0	0	0	2	3	0	0	36	2	0	0	71	2	116	0
<b>Three-Hour Count Summaries - Bikes</b>																		
Interval Start	Bell St			Bell St			University Ave			University Ave			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	1	0	0	0	0	0	1	0	2	0				
7:15 AM	0	1	0	0	0	0	0	1	0	0	2	0	4	0				
7:30 AM	0	1	0	0	2	0	0	0	0	0	3	0	6	0				
7:45 AM	0	2	0	0	0	0	0	1	0	0	0	0	3	15				
8:00 AM	0	1	0	0	0	0	0	1	0	0	1	0	3	16				
8:15 AM	0	3	0	0	3	0	0	1	0	0	1	0	8	20				
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	15				
8:45 AM	0	0	0	0	0	0	0	3	0	0	3	0	6	18				
<b>9:00 AM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>20</b>				
<b>9:15 AM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>14</b>				
<b>9:30 AM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>17</b>				
<b>9:45 AM</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>14</b>				
Count Total	0	12	0	0	6	0	0	9	0	0	19	1	47	0				
Peak Hour	0	4	0	0	0	0	0	2	0	0	7	1	14	0				
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																		

### University Ave Bell St



Peak Hour

Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	3.1%	0.70
WB	1.5%	0.95
NB	2.2%	0.91
SB	1.8%	0.88
TOTAL	2.1%	0.94

#### Three-Hour Count Summaries

Interval Start	Bell St				Bell St				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	3	18	11	0	15	42	8	1	13	302	28	2	18	185	1	647	0	
4:15 PM	0	3	12	6	0	27	39	4	1	16	280	34	0	9	158	8	597	0	
4:30 PM	0	6	22	19	0	16	44	7	0	23	324	35	1	8	159	8	672	0	
4:45 PM	0	2	22	7	0	17	43	4	0	21	275	44	0	10	147	7	599	2,515	
Peak Hour	All	0	14	74	43	0	75	168	23	2	73	1,181	141	3	45	649	24	2,515	0
	HV	0	0	1	3	0	1	3	0	0	0	31	0	0	0	13	0	52	0
	HV%	-	0%	1%	7%	-	1%	2%	0%	0%	0%	3%	0%	0%	0%	2%	0%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	1	8	3	15	1	0	0	2	3	3	6	9	7	25
4:15 PM	1	0	10	1	12	0	0	2	3	5	1	3	7	12	23
4:30 PM	0	1	5	7	13	0	0	0	1	1	5	6	8	5	24
4:45 PM	0	2	8	2	12	0	0	0	1	1	3	2	4	6	15
Peak Hour	4	4	31	13	52	1	0	2	7	10	12	17	28	30	87

Three-Hour Count Summaries																			
Interval Start	Bell St				Bell St				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	3	18	11	0	15	42	8	1	13	302	28	2	18	185	1	647	0	
4:15 PM	0	3	12	6	0	27	39	4	1	16	280	34	0	9	158	8	597	0	
4:30 PM	0	6	22	19	0	16	44	7	0	23	324	35	1	8	159	8	672	0	
4:45 PM	0	2	22	7	0	17	43	4	0	21	275	44	0	10	147	7	599	2,515	
5:00 PM	0	0	15	5	0	14	30	8	0	34	245	35	1	8	181	7	583	2,451	
5:15 PM	0	4	14	5	0	14	43	7	0	25	177	39	0	7	162	5	502	2,356	
5:30 PM	0	1	26	6	0	18	34	7	0	27	135	22	0	11	189	6	482	2,166	
5:45 PM	0	1	27	9	0	29	33	4	1	30	200	39	1	8	186	8	576	2,143	
6:00 PM	0	4	20	4	0	24	36	5	0	14	211	33	0	14	175	10	550	2,110	
6:15 PM	0	2	15	6	0	23	34	6	0	17	240	24	0	10	155	4	536	2,144	
6:30 PM	0	5	11	7	0	16	19	4	0	23	242	18	0	14	162	7	528	2,190	
6:45 PM	0	3	14	3	0	19	25	10	1	18	212	25	2	2	162	2	498	2,112	
Count Total	0	34	216	88	0	232	422	74	4	261	2,843	376	7	119	2,021	73	6,770	0	
Peak Hour	All	0	14	74	43	0	75	168	23	2	73	1,181	141	3	45	649	24	2,515	0
	HV	0	0	1	3	0	1	3	0	0	0	31	0	0	0	13	0	52	0
	HV%	-	0%	1%	7%	-	1%	2%	0%	0%	0%	3%	0%	0%	0%	2%	0%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	3	1	8	3	15	1	0	0	2	3	3	6	9	7	25
4:15 PM	1	0	10	1	12	0	0	2	3	5	1	3	7	12	23
4:30 PM	0	1	5	7	13	0	0	0	1	1	5	6	8	5	24
4:45 PM	0	2	8	2	12	0	0	0	1	1	3	2	4	6	15
5:00 PM	1	0	11	3	15	0	0	0	0	0	0	4	6	3	13
5:15 PM	0	0	4	3	7	0	0	2	2	4	2	1	3	2	8
5:30 PM	0	2	2	5	9	0	0	2	1	3	0	5	10	2	17
5:45 PM	0	1	7	2	10	1	0	5	0	6	3	5	4	11	23
6:00 PM	0	2	8	3	13	0	1	3	3	7	1	5	5	6	17
6:15 PM	0	2	3	4	9	2	0	0	0	2	0	4	2	5	11
6:30 PM	0	0	7	2	9	1	1	1	2	5	0	5	3	9	17
6:45 PM	0	1	5	2	8	2	0	1	0	3	10	9	6	1	26
Count Total	5	12	78	37	132	7	2	16	15	40	28	55	67	69	219
Peak Hour	4	4	31	13	52	1	0	2	7	10	12	17	28	30	87



Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Bell St				Bell St				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	1	2	0	0	1	0	0	0	8	0	0	0	3	0	15	0
4:15 PM	0	0	0	1	0	0	0	0	0	0	10	0	0	0	1	0	12	0
4:30 PM	0	0	0	0	0	0	1	0	0	0	5	0	0	0	7	0	13	0
4:45 PM	0	0	0	0	0	1	1	0	0	0	8	0	0	0	2	0	12	52
5:00 PM	0	0	1	0	0	0	0	0	0	1	9	1	0	0	3	0	15	52
5:15 PM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	3	0	7	47
5:30 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	0	5	0	9	43
5:45 PM	0	0	0	0	0	1	0	0	0	0	5	2	0	0	2	0	10	41
6:00 PM	0	0	0	0	0	0	2	0	0	1	7	0	0	0	3	0	13	39
6:15 PM	0	0	0	0	0	1	1	0	0	0	3	0	0	0	4	0	9	41
6:30 PM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	9	41
6:45 PM	0	0	0	0	0	0	0	1	0	0	5	0	0	0	2	0	8	39
Count Total	0	0	2	3	0	4	6	2	0	2	71	5	0	0	37	0	132	0
Peak Hour	0	0	1	3	0	1	3	0	0	0	31	0	0	0	13	0	52	0

Three-Hour Count Summaries - Bikes																
Interval Start	Bell St			Bell St			University Ave			University Ave			15-min Total	Rolling One Hour		
	Eastbound			Westbound			Northbound			Southbound						
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT				
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	2	3	0		
4:15 PM	0	0	0	0	0	0	0	0	2	0	0	3	5	0		
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	10		
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	7		
5:15 PM	0	0	0	0	0	0	0	0	2	0	0	2	4	6		
5:30 PM	0	0	0	0	0	0	0	0	2	0	0	0	3	8		
5:45 PM	0	1	0	0	0	0	0	0	5	0	0	0	6	13		
6:00 PM	0	0	0	0	0	1	0	0	3	0	0	1	7	20		
6:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	2	18		
6:30 PM	0	0	1	0	0	1	0	0	1	0	0	2	5	20		
6:45 PM	0	2	0	0	0	0	0	0	1	0	0	0	3	17		
Count Total	0	6	1	0	0	2	0	0	16	0	0	10	40	0		
Peak Hour	0	1	0	0	0	0	0	0	2	0	0	5	10	0		

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

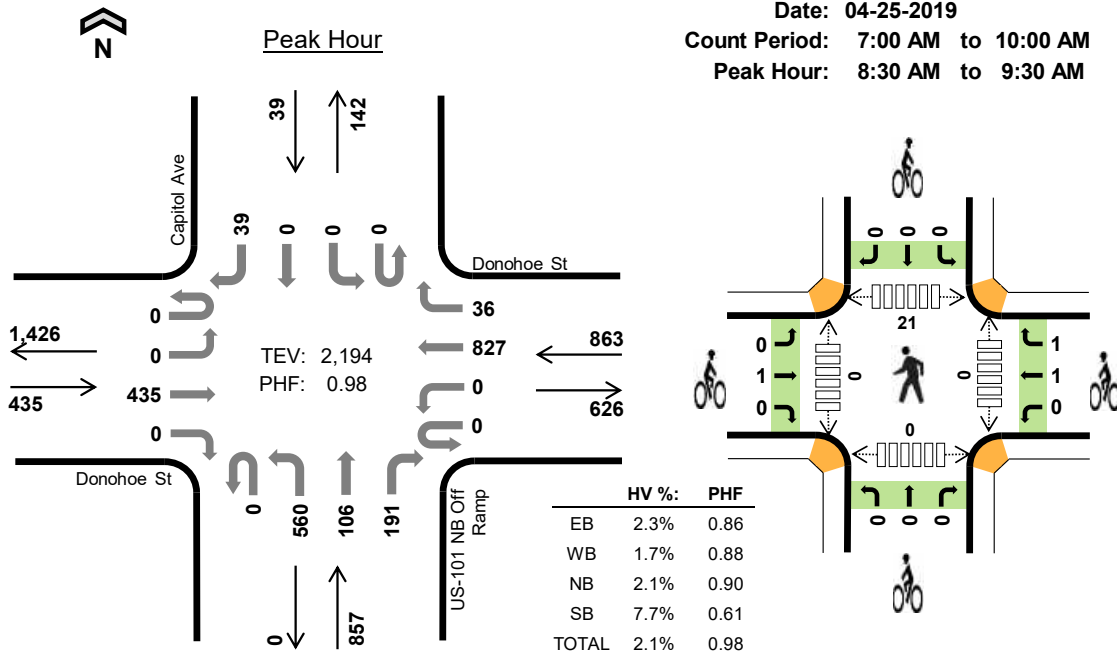




## US-101 NB Ramp Donohoe St



Date: 04-25-2019  
 Count Period: 7:00 AM to 10:00 AM  
 Peak Hour: 8:30 AM to 9:30 AM



### Three-Hour Count Summaries

Interval Start	Donohoe St Eastbound				Donohoe St Westbound				US-101 NB Off Ramp Northbound				Capitol Ave Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
	8:30 AM	0	0	100	0	0	0	214	11	0	145	13	51	0	0	0			4
8:45 AM	0	0	95	0	0	0	238	7	0	125	24	45	0	0	0	8	542	0	
9:00 AM	0	0	126	0	0	0	197	9	0	141	23	51	0	0	0	11	558	0	
9:15 AM	0	0	114	0	0	0	178	9	0	149	46	44	0	0	0	16	556	2,194	
Peak Hour	All	0	0	435	0	0	0	827	36	0	560	106	191	0	0	0	39	2,194	0
	HV	0	0	10	0	0	0	14	1	0	12	2	4	0	0	0	3	46	0
	HV%	-	-	2%	-	-	-	2%	3%	-	2%	2%	2%	-	-	-	8%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:30 AM	2	7	3	0	12	1	1	0	0	2	0	0	7	0	7
8:45 AM	3	3	2	0	8	0	0	0	0	0	0	0	9	0	9
9:00 AM	3	3	8	1	15	0	1	0	0	1	0	0	3	0	3
9:15 AM	2	2	5	2	11	0	0	0	0	0	0	0	2	0	2
Peak Hour	10	15	18	3	46	1	2	0	0	3	0	0	21	0	21

Three-Hour Count Summaries																			
Interval Start	Donohoe St				Donohoe St				US-101 NB Off Ramp				Capitol Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	1	134	0	0	0	227	0	0	82	3	42	0	0	0	1	490	0	
7:15 AM	0	0	143	0	0	0	225	5	0	91	4	40	0	0	0	1	509	0	
7:30 AM	0	0	113	0	0	0	194	2	0	98	10	43	0	0	0	3	463	0	
7:45 AM	0	0	109	0	0	0	195	6	0	101	11	60	0	0	0	3	485	1,947	
8:00 AM	0	0	122	0	0	0	192	6	0	98	10	52	0	0	0	5	485	1,942	
8:15 AM	0	0	114	0	0	0	212	3	0	115	19	44	0	1	0	7	515	1,948	
8:30 AM	0	0	100	0	0	0	214	11	0	145	13	51	0	0	0	4	538	2,023	
8:45 AM	0	0	95	0	0	0	238	7	0	125	24	45	0	0	0	8	542	2,080	
9:00 AM	0	0	126	0	0	0	197	9	0	141	23	51	0	0	0	11	558	2,153	
9:15 AM	0	0	114	0	0	0	178	9	0	149	46	44	0	0	0	16	556	2,194	
9:30 AM	0	0	130	0	0	0	151	10	0	133	39	41	0	2	0	7	513	2,169	
9:45 AM	0	0	128	0	0	0	176	13	0	124	22	52	0	0	0	14	529	2,156	
Count Total	0	1	1,428	0	0	0	2,399	81	0	1,402	224	565	0	3	0	80	6,183	0	
Peak Hour	All	0	0	435	0	0	0	827	36	0	560	106	191	0	0	0	39	2,194	0
	HV	0	0	10	0	0	0	14	1	0	12	2	4	0	0	0	3	46	0
	HV%	-	-	2%	-	-	-	2%	3%	-	2%	2%	2%	-	-	-	8%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

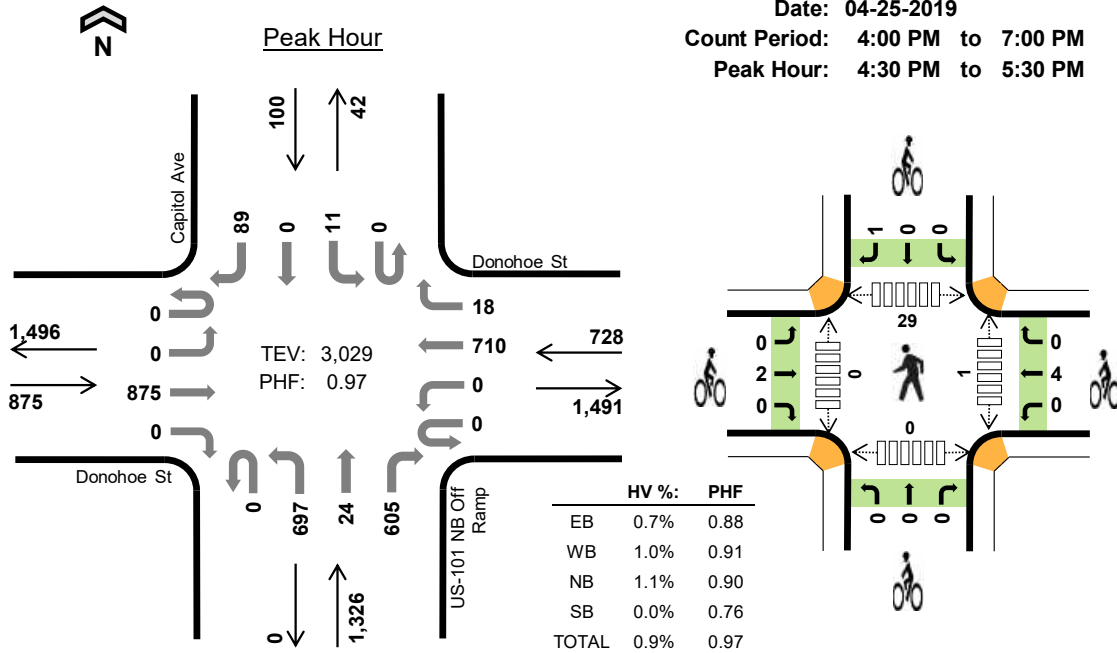
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	8	4	5	0	17	1	1	0	0	2	1	0	7	0	8
7:15 AM	4	4	1	0	9	1	1	0	1	3	0	0	5	0	5
7:30 AM	2	3	7	0	12	0	4	0	0	4	0	0	1	1	2
7:45 AM	1	2	4	0	7	0	0	0	1	1	0	0	4	0	4
8:00 AM	5	2	1	0	8	1	3	0	1	5	0	0	4	0	4
8:15 AM	3	3	7	1	14	0	1	0	0	1	1	0	8	1	10
8:30 AM	2	7	3	0	12	1	1	0	0	2	0	0	7	0	7
8:45 AM	3	3	2	0	8	0	0	0	0	0	0	0	9	0	9
9:00 AM	3	3	8	1	15	0	1	0	0	1	0	0	3	0	3
9:15 AM	2	2	5	2	11	0	0	0	0	0	0	0	2	0	2
9:30 AM	4	6	7	0	17	0	1	0	0	1	0	0	3	0	3
9:45 AM	2	7	7	1	17	0	0	0	0	0	0	0	6	0	6
Count Total	39	46	57	5	147	4	13	0	3	20	2	0	59	2	63
Peak Hour	10	15	18	3	46	1	2	0	0	3	0	0	21	0	21

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Donohoe St				Donohoe St				US-101 NB Off Ramp				Capitol Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	8	0	0	0	4	0	0	4	0	1	0	0	0	0	17	0
7:15 AM	0	0	4	0	0	0	4	0	0	0	0	1	0	0	0	0	9	0
7:30 AM	0	0	2	0	0	0	3	0	0	5	1	1	0	0	0	0	12	0
7:45 AM	0	0	1	0	0	0	2	0	0	4	0	0	0	0	0	0	7	45
8:00 AM	0	0	5	0	0	0	2	0	0	1	0	0	0	0	0	0	8	36
8:15 AM	0	0	3	0	0	0	3	0	0	7	0	0	0	0	0	1	14	41
8:30 AM	0	0	2	0	0	0	7	0	0	2	0	1	0	0	0	0	12	41
8:45 AM	0	0	3	0	0	0	3	0	0	0	0	2	0	0	0	0	8	42
9:00 AM	0	0	3	0	0	0	2	1	0	7	1	0	0	0	0	1	15	49
9:15 AM	0	0	2	0	0	0	2	0	0	3	1	1	0	0	0	2	11	46
9:30 AM	0	0	4	0	0	0	6	0	0	6	0	1	0	0	0	0	17	51
9:45 AM	0	0	2	0	0	0	6	1	0	5	0	2	0	0	0	1	17	60
Count Total	0	0	39	0	0	0	44	2	0	44	3	10	0	0	0	5	147	0
Peak Hour	0	0	10	0	0	0	14	1	0	12	2	4	0	0	0	3	46	0
Three-Hour Count Summaries - Bikes																		
Interval Start	Donohoe St			Donohoe St			US-101 NB Off Ramp			Capitol Ave			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0		
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	1	3	0		
7:30 AM	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0		
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	10		
8:00 AM	0	1	0	0	2	1	0	0	0	0	0	0	0	1	5	13		
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	11		
8:30 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2	9		
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8		
9:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	4		
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3		
9:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	2		
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2		
Count Total	0	4	0	0	11	2	0	0	0	0	0	3	0	0	20	0		
Peak Hour	0	1	0	0	1	1	0	0	0	0	0	0	0	0	3	0		
Note: U-Turn volumes for bikes are included in Left-Turn, if any.																		

## US-101 NB Ramp Donohoe St



Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:30 PM to 5:30 PM



### Three-Hour Count Summaries

Interval Start	Donohoe St				Donohoe St				US-101 NB Off Ramp				Capitol Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:30 PM	0	0	188	0	0	0	196	3	0	189	9	150	0	2	0	17	754	0	
4:45 PM	0	0	250	0	0	0	167	3	0	178	4	156	0	1	0	22	781	0	
5:00 PM	0	0	204	0	0	0	161	7	0	177	6	185	0	4	0	21	765	0	
5:15 PM	0	0	233	0	0	0	186	5	0	153	5	114	0	4	0	29	729	3,029	
Peak Hour	All	0	0	875	0	0	0	710	18	0	697	24	605	0	11	0	89	3,029	0
	HV	0	0	6	0	0	0	7	0	0	11	0	4	0	0	0	0	28	0
	HV%	-	-	1%	-	-	-	1%	0%	-	2%	0%	1%	-	0%	-	0%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	1	2	4	0	7	0	1	0	0	1	0	0	6	0	6
4:45 PM	1	2	4	0	7	0	2	0	0	2	0	0	2	0	2
5:00 PM	2	2	7	0	11	0	0	0	1	1	1	0	9	0	10
5:15 PM	2	1	0	0	3	2	1	0	0	3	0	0	12	0	12
Peak Hour	6	7	15	0	28	2	4	0	1	7	1	0	29	0	30

Three-Hour Count Summaries																			
Interval Start	Donohoe St				Donohoe St				US-101 NB Off Ramp				Capitol Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	205	0	0	0	180	5	0	169	2	128	0	0	0	16	705	0	
4:15 PM	0	0	210	0	0	0	184	3	0	155	4	121	0	1	0	17	695	0	
<b>4:30 PM</b>	<b>0</b>	<b>0</b>	<b>188</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>196</b>	<b>3</b>	<b>0</b>	<b>189</b>	<b>9</b>	<b>150</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>17</b>	<b>754</b>	<b>0</b>	
<b>4:45 PM</b>	<b>0</b>	<b>0</b>	<b>250</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>167</b>	<b>3</b>	<b>0</b>	<b>178</b>	<b>4</b>	<b>156</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>22</b>	<b>781</b>	2,935	
5:00 PM	0	0	204	0	0	0	161	7	0	177	6	185	0	4	0	21	765	2,995	
5:15 PM	0	0	233	0	0	0	186	5	0	153	5	114	0	4	0	29	729	3,029	
5:30 PM	0	0	179	0	0	0	144	8	0	158	4	173	0	2	0	26	694	2,969	
5:45 PM	0	0	214	0	0	0	148	3	0	147	9	148	0	0	0	20	689	2,877	
6:00 PM	0	0	189	0	0	0	154	4	0	168	1	175	0	1	0	26	718	2,830	
6:15 PM	0	0	203	0	0	0	171	4	0	173	1	137	0	1	0	24	714	2,815	
6:30 PM	0	0	158	0	0	0	146	5	0	155	3	125	0	0	0	27	619	2,740	
6:45 PM	0	0	188	0	0	0	133	1	0	147	1	102	0	1	0	25	598	2,649	
Count Total	0	0	2,421	0	0	0	1,970	51	0	1,969	49	1,714	0	17	0	270	8,461	0	
Peak Hour	All	0	0	875	0	0	0	710	18	0	697	24	605	0	11	0	89	3,029	0
	HV	0	0	6	0	0	0	7	0	0	11	0	4	0	0	0	0	28	0
	HV%	-	-	1%	-	-	-	1%	0%	-	2%	0%	1%	-	0%	-	0%	1%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	6	2	3	0	11	0	0	0	0	0	0	0	12	2	14
4:15 PM	5	4	6	1	16	1	1	0	0	2	2	0	10	1	13
4:30 PM	1	2	4	0	7	0	1	0	0	1	0	0	6	0	6
<b>4:45 PM</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>
5:00 PM	2	2	7	0	11	0	0	0	1	1	1	0	9	0	10
5:15 PM	2	1	0	0	3	2	1	0	0	3	0	0	12	0	12
5:30 PM	2	5	3	4	14	2	0	0	0	2	0	0	6	0	6
5:45 PM	2	0	7	0	9	0	0	0	0	0	3	0	4	1	8
6:00 PM	0	0	10	0	10	2	0	0	0	2	0	0	11	0	11
6:15 PM	2	0	7	0	9	1	0	0	0	1	0	0	4	0	4
6:30 PM	0	1	7	0	8	0	2	0	0	2	0	0	1	0	1
6:45 PM	2	1	5	0	8	1	0	0	0	1	0	0	7	0	7
Count Total	25	20	63	5	113	9	7	0	1	17	6	0	84	4	94
Peak Hour	6	7	15	0	28	2	4	0	1	7	1	0	29	0	30

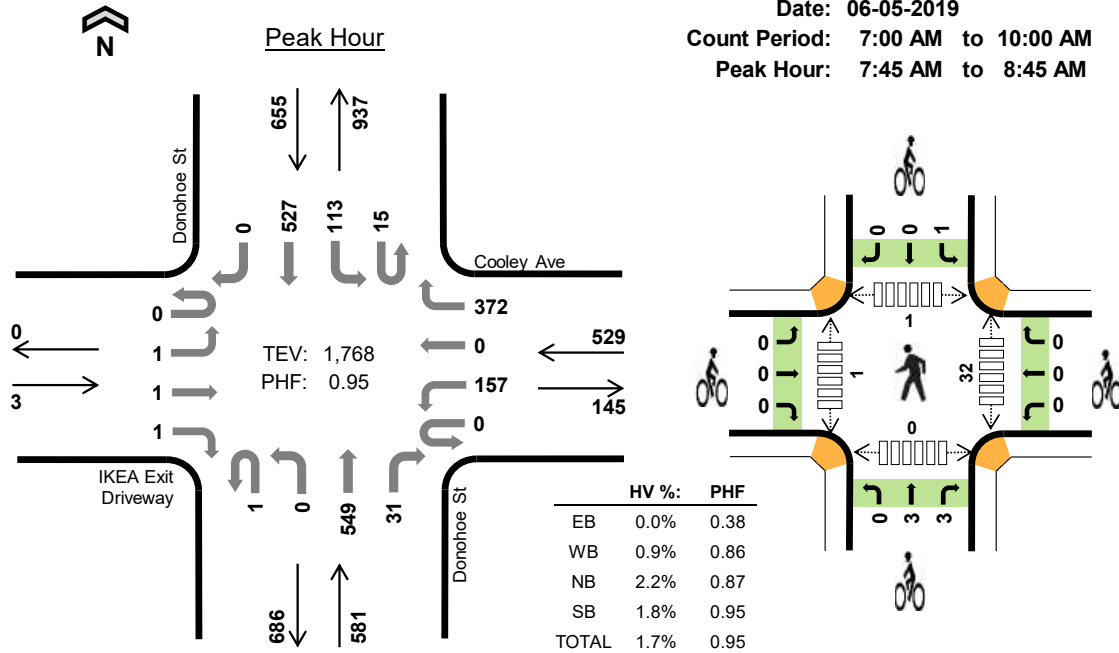


Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Donohoe St				Donohoe St				US-101 NB Off Ramp				Capitol Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	6	0	0	0	1	1	0	2	0	1	0	0	0	0	11	0
4:15 PM	0	0	5	0	0	0	4	0	0	6	0	0	0	0	0	1	16	0
4:30 PM	0	0	1	0	0	0	2	0	0	2	0	2	0	0	0	0	7	0
4:45 PM	0	0	1	0	0	0	2	0	0	3	0	1	0	0	0	0	7	41
5:00 PM	0	0	2	0	0	0	2	0	0	6	0	1	0	0	0	0	11	41
5:15 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3	28
5:30 PM	0	0	2	0	0	0	1	4	0	0	0	3	0	0	0	4	14	35
5:45 PM	0	0	2	0	0	0	0	0	0	6	0	1	0	0	0	0	9	37
6:00 PM	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	10	36
6:15 PM	0	0	2	0	0	0	0	0	0	2	0	5	0	0	0	0	9	42
6:30 PM	0	0	0	0	0	0	1	0	0	6	0	1	0	0	0	0	8	36
6:45 PM	0	0	2	0	0	0	1	0	0	3	0	2	0	0	0	0	8	35
Count Total	0	0	25	0	0	0	15	5	0	41	0	22	0	0	0	5	113	0
Peak Hour	0	0	6	0	0	0	7	0	0	11	0	4	0	0	0	0	28	0
Three-Hour Count Summaries - Bikes																		
Interval Start	Donohoe St			Donohoe St			US-101 NB Off Ramp			Capitol Ave			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0
4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
4:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	5	5
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	6	6
5:15 PM	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	3	7	7
5:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	8
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6
6:00 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7	7
6:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	5
6:30 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	5	5
6:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	6
Count Total	0	9	0	0	6	1	0	0	0	0	0	0	0	0	1	17	0	0
Peak Hour	0	2	0	0	4	0	0	0	0	0	0	0	0	0	1	7	0	0
Note: U-Turn volumes for bikes are included in Left-Turn, if any.																		

### Donohoe St Cooley Ave



Date: 06-05-2019  
 Count Period: 7:00 AM to 10:00 AM  
 Peak Hour: 7:45 AM to 8:45 AM



#### Three-Hour Count Summaries

Interval Start	IKEA Exit Driveway				Cooley Ave				Donohoe St				Donohoe St				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:45 AM	0	1	1	0	0	27	0	103	0	0	146	6	4	36	131	0	455	0	
8:00 AM	0	0	0	0	0	24	0	95	0	0	138	11	2	27	130	0	427	0	
8:15 AM	0	0	0	0	0	42	0	85	1	0	155	11	5	31	136	0	466	0	
8:30 AM	0	0	0	1	0	64	0	89	0	0	110	3	4	19	130	0	420	1,768	
Peak Hour	All	0	1	1	1	0	157	0	372	1	0	549	31	15	113	527	0	1,768	0
	HV	0	0	0	0	0	1	0	4	0	0	13	0	0	0	12	0	30	0
	HV%	-	0%	0%	0%	-	1%	-	1%	0%	-	2%	0%	0%	0%	2%	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:45 AM	0	1	2	5	8	0	0	2	0	2	11	0	0	0	11
8:00 AM	0	2	8	1	11	0	0	0	1	1	9	0	0	0	9
8:15 AM	0	2	2	4	8	0	0	2	0	2	5	0	0	0	5
8:30 AM	0	0	1	2	3	0	0	2	0	2	7	1	1	0	9
Peak Hour	0	5	13	12	30	0	0	6	1	7	32	1	1	0	34

Three-Hour Count Summaries																			
Interval Start	IKEA Exit Driveway				Cooley Ave				Donohoe St				Donohoe St				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	20	0	51	0	0	121	8	4	16	108	0	328	0	
7:15 AM	0	1	0	0	0	31	0	72	0	0	133	9	5	15	140	0	406	0	
7:30 AM	0	0	0	0	0	29	0	75	0	0	151	6	2	17	125	0	405	0	
<b>7:45 AM</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>27</b>	<b>0</b>	<b>103</b>	<b>0</b>	<b>0</b>	<b>146</b>	<b>6</b>	<b>4</b>	<b>36</b>	<b>131</b>	<b>0</b>	<b>455</b>	1,594	
8:00 AM	0	0	0	0	0	24	0	95	0	0	138	11	2	27	130	0	427	1,693	
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>42</b>	<b>0</b>	<b>85</b>	<b>1</b>	<b>0</b>	<b>155</b>	<b>11</b>	<b>5</b>	<b>31</b>	<b>136</b>	<b>0</b>	<b>466</b>	1,753	
8:30 AM	0	0	0	1	0	64	0	89	0	0	110	3	4	19	130	0	420	1,768	
8:45 AM	0	0	0	0	0	51	0	61	0	0	146	17	5	24	125	0	429	1,742	
9:00 AM	0	0	0	1	0	34	0	52	0	0	126	8	11	22	156	0	410	1,725	
9:15 AM	0	3	0	4	0	36	0	36	0	0	135	17	11	20	157	0	419	1,678	
9:30 AM	0	0	0	0	0	38	0	28	0	0	129	17	6	17	133	0	368	1,626	
9:45 AM	0	0	0	1	0	45	0	29	0	0	125	10	8	22	155	0	395	1,592	
Count Total	0	5	1	7	0	441	0	776	1	0	1,615	123	67	266	1,626	0	4,928	0	
Peak Hour	All	0	1	1	1	0	157	0	372	1	0	549	31	15	113	527	0	1,768	0
	HV	0	0	0	0	0	1	0	4	0	0	13	0	0	0	12	0	30	0
	HV%	-	0%	0%	0%	-	1%	-	1%	0%	-	2%	0%	0%	0%	2%	-	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	4	8	12	0	0	0	0	0	9	0	0	0	9
7:15 AM	0	1	0	3	4	0	0	3	0	3	7	0	0	0	7
7:30 AM	0	1	1	7	9	0	0	1	0	1	8	0	0	0	8
<b>7:45 AM</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>
8:00 AM	0	2	8	1	11	0	0	0	1	1	9	0	0	0	9
<b>8:15 AM</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>
8:30 AM	0	0	1	2	3	0	0	2	0	2	7	1	1	0	9
8:45 AM	0	2	6	7	15	0	1	2	0	3	4	0	0	0	4
9:00 AM	0	1	2	6	9	0	0	3	0	3	7	0	2	0	9
9:15 AM	0	0	4	1	5	0	0	3	2	5	6	1	0	0	7
9:30 AM	0	2	6	3	11	0	1	1	0	2	7	2	0	0	9
9:45 AM	0	2	7	2	11	0	1	1	0	2	2	0	0	0	2
Count Total	0	14	43	49	106	0	3	20	3	26	82	4	3	0	89
Peak Hour	0	5	13	12	30	0	0	6	1	7	32	1	1	0	34

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	IKEA Exit Driveway				Cooley Ave				Donohoe St				Donohoe St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	4	0	1	0	7	0	12	0
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3	0	4	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	2	5	0	9	0
7:45 AM	0	0	0	0	0	1	0	0	0	0	2	0	0	0	5	0	8	33
8:00 AM	0	0	0	0	0	0	0	2	0	0	8	0	0	0	1	0	11	32
8:15 AM	0	0	0	0	0	0	0	2	0	0	2	0	0	0	4	0	8	36
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	3	30
8:45 AM	0	0	0	0	0	0	0	2	0	0	6	0	0	0	7	0	15	37
9:00 AM	0	0	0	0	0	0	0	1	0	0	2	0	1	1	4	0	9	35
9:15 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1	0	5	32
9:30 AM	0	0	0	0	0	1	0	1	0	0	6	0	0	0	3	0	11	40
9:45 AM	0	0	0	0	0	1	0	1	0	0	5	2	0	0	2	0	11	36
Count Total	0	0	0	0	0	3	0	11	0	0	40	3	2	3	44	0	106	0
Peak Hour	0	0	0	0	0	1	0	4	0	0	13	0	0	0	12	0	30	0

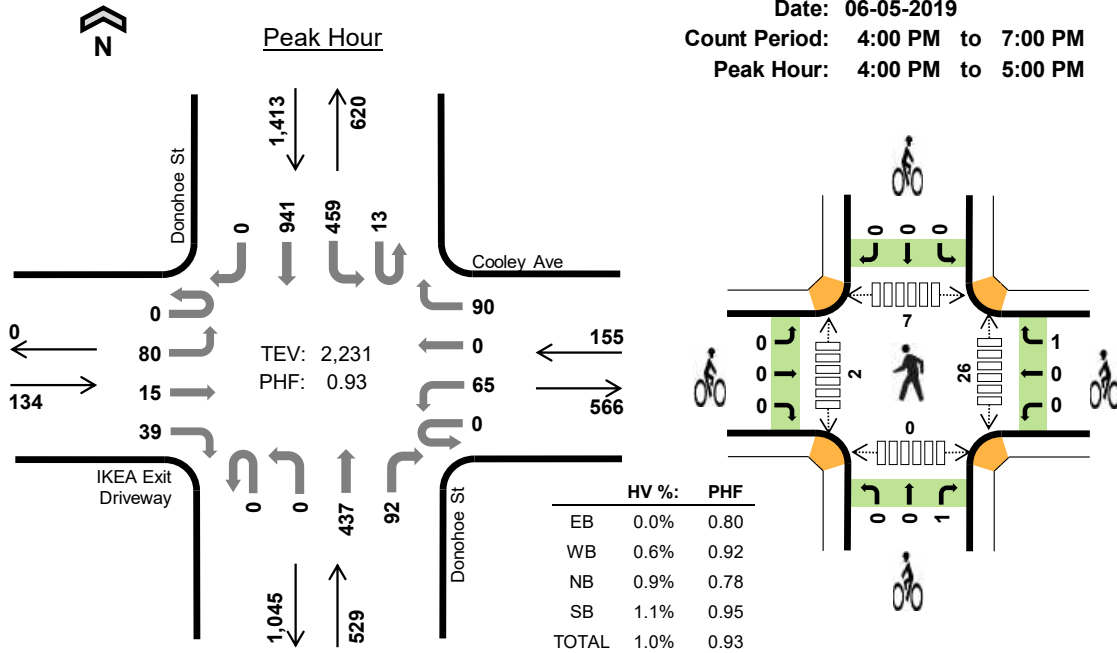
Three-Hour Count Summaries - Bikes																	
Interval Start	IKEA Exit Driveway			Cooley Ave			Donohoe St			Donohoe St			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	0
7:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	6
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	7
8:15 AM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	6
8:30 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	7
8:45 AM	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	3	8
9:00 AM	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3	10
9:15 AM	0	0	0	0	0	0	0	0	1	2	0	2	0	0	0	5	13
9:30 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	13
9:45 AM	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2	12
Count Total	0	0	0	0	1	0	2	0	9	11	0	1	2	0	0	26	0
Peak Hour	0	0	0	0	0	0	0	0	3	3	0	1	0	0	0	7	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### Donohoe St Cooley Ave



Date: 06-05-2019  
 Count Period: 4:00 PM to 7:00 PM  
 Peak Hour: 4:00 PM to 5:00 PM



#### Three-Hour Count Summaries

Interval Start	IKEA Exit Driveway				Cooley Ave				Donohoe St				Donohoe St				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	24	5	13	0	17	0	25	0	0	97	20	7	95	243	0	546	0	
4:15 PM	0	19	3	5	0	14	0	17	0	0	144	26	2	125	243	0	598	0	
4:30 PM	0	19	4	12	0	17	0	24	0	0	93	22	3	118	216	0	528	0	
4:45 PM	0	18	3	9	0	17	0	24	0	0	103	24	1	121	239	0	559	2,231	
Peak Hour	All	0	80	15	39	0	65	0	90	0	0	437	92	13	459	941	0	2,231	0
	HV	0	0	0	0	0	0	0	1	0	0	5	0	0	6	10	0	22	0
	HV%	-	0%	0%	0%	-	0%	-	1%	-	-	1%	0%	0%	1%	1%	-	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	2	2	4	0	0	1	0	1	8	1	4	0	13
4:15 PM	0	0	0	9	9	0	0	0	0	0	4	0	0	0	4
4:30 PM	0	1	0	2	3	0	1	0	0	1	9	0	1	0	10
4:45 PM	0	0	3	3	6	0	0	0	0	0	5	1	2	0	8
Peak Hour	0	1	5	16	22	0	1	1	0	2	26	2	7	0	35

Three-Hour Count Summaries																			
Interval Start	IKEA Exit Driveway				Cooley Ave				Donohoe St				Donohoe St				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	24	5	13	0	17	0	25	0	0	97	20	7	95	243	0	546	0	
4:15 PM	0	19	3	5	0	14	0	17	0	0	144	26	2	125	243	0	598	0	
4:30 PM	0	19	4	12	0	17	0	24	0	0	93	22	3	118	216	0	528	0	
4:45 PM	0	18	3	9	0	17	0	24	0	0	103	24	1	121	239	0	559	2,231	
5:00 PM	0	9	0	4	0	18	0	25	0	0	110	33	1	131	197	0	528	2,213	
5:15 PM	0	13	4	8	0	13	0	22	0	0	97	30	2	119	222	0	530	2,145	
5:30 PM	0	15	3	4	0	19	0	26	0	0	101	21	3	128	225	0	545	2,162	
5:45 PM	0	9	4	7	0	22	0	20	0	0	96	24	1	126	241	0	550	2,153	
6:00 PM	0	22	3	6	0	16	0	28	0	0	90	32	5	114	245	0	561	2,186	
6:15 PM	0	15	3	8	0	16	0	24	0	0	106	31	3	114	244	0	564	2,220	
6:30 PM	0	14	2	5	0	19	0	26	0	0	86	36	4	93	228	0	513	2,188	
6:45 PM	0	11	3	6	0	22	0	25	0	0	87	31	1	93	239	0	518	2,156	
Count Total	0	188	37	87	0	210	0	286	0	0	1,210	330	33	1,377	2,782	0	6,540	0	
Peak Hour	All	0	80	15	39	0	65	0	90	0	0	437	92	13	459	941	0	2,231	0
	HV	0	0	0	0	0	0	0	1	0	0	5	0	0	6	10	0	22	0
	HV%	-	0%	0%	0%	-	0%	-	1%	-	-	1%	0%	0%	1%	1%	-	1%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	2	2	4	0	0	1	0	1	8	1	4	0	13
4:15 PM	0	0	0	9	9	0	0	0	0	0	4	0	0	0	4
4:30 PM	0	1	0	2	3	0	1	0	0	1	9	0	1	0	10
4:45 PM	0	0	3	3	6	0	0	0	0	0	5	1	2	0	8
5:00 PM	0	0	2	3	5	0	0	0	0	0	7	0	0	0	7
5:15 PM	0	0	1	4	5	0	1	1	1	3	11	1	1	0	13
5:30 PM	0	0	1	4	5	1	0	1	2	4	9	1	2	1	13
5:45 PM	0	0	3	2	5	0	1	1	0	2	7	1	0	0	8
6:00 PM	0	0	1	6	7	0	0	1	0	1	9	4	0	0	13
6:15 PM	0	0	0	3	3	0	0	1	0	1	8	0	3	1	12
6:30 PM	0	0	1	6	7	0	1	0	1	2	4	0	0	0	4
6:45 PM	0	0	2	3	5	0	0	2	1	3	15	0	0	0	15
Count Total	0	1	16	47	64	1	4	8	5	18	96	9	13	2	120
Peak Hour	0	1	5	16	22	0	1	1	0	2	26	2	7	0	35

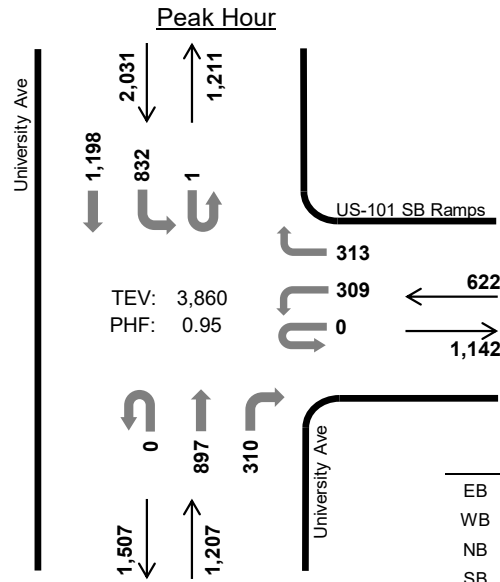
Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	IKEA Exit Driveway				Cooley Ave				Donohoe St				Donohoe St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	4	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	5	0	9	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	3	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	1	2	0	6	22
5:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	5	23
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	3	1	0	5	19
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	3	1	0	5	21
5:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	1	1	0	5	20
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	2	1	3	0	7	22
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	20
6:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	3	3	0	7	22
6:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	2	1	0	5	22
Count Total	0	0	0	0	0	0	0	1	0	0	14	2	2	21	24	0	64	0
Peak Hour	0	0	0	0	0	0	0	1	0	0	5	0	0	6	10	0	22	0

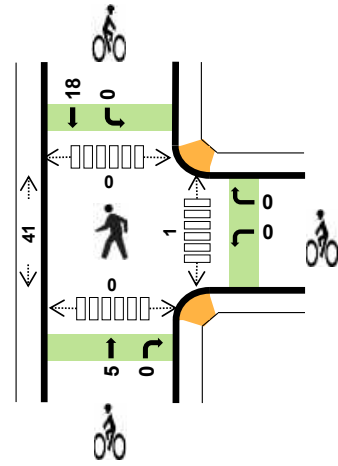
Three-Hour Count Summaries - Bikes																	
Interval Start	IKEA Exit Driveway			Cooley Ave			Donohoe St			Donohoe St			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15 PM	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	3	
5:30 PM	0	1	0	0	0	0	0	0	0	1	0	0	2	0	0	4	
5:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2	
6:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
6:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
6:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2	
6:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	3	
Count Total	0	1	0	2	0	2	0	0	2	6	0	0	5	0	0	18	
Peak Hour	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2	

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# University Ave US-101 SB Ramps



Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	-	-
WB	2.4%	0.93
NB	2.1%	0.98
SB	2.1%	0.92
TOTAL	2.2%	0.95

### Three-Hour Count Summaries

Interval Start	n/a				US-101 SB Ramps				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		UT		LT		TH		RT				
7:30 AM	0	0	0	0	0	59	0	74	0	0	235	70	0	217	295	0	950	0	
7:45 AM	0	0	0	0	0	85	0	81	0	0	229	78	0	225	306	0	1,004	0	
8:00 AM	0	0	0	0	0	77	0	79	0	0	213	82	1	175	261	0	888	0	
8:15 AM	0	0	0	0	0	88	0	79	0	0	220	80	0	215	336	0	1,018	3,860	
Peak Hour	All	0	0	0	0	0	309	0	313	0	0	897	310	1	832	1,198	0	3,860	0
	HV	0	0	0	0	0	9	0	6	0	0	22	3	0	18	25	0	83	0
	HV%	-	-	-	-	-	3%	-	2%	-	-	2%	1%	0%	2%	2%	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:30 AM	0	3	6	10	19	0	0	0	7	7	1	16	0	0	17
7:45 AM	0	1	5	18	24	0	0	1	4	5	0	10	0	0	10
8:00 AM	0	5	9	10	24	0	0	3	4	7	0	7	0	0	7
8:15 AM	0	6	5	5	16	0	0	1	3	4	0	8	0	0	8
Peak Hour	0	15	25	43	83	0	0	5	18	23	1	41	0	0	42



Three-Hour Count Summaries																			
Interval Start	n/a				US-101 SB Ramps				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	58	0	75	0	0	161	58	0	172	244	0	768	0	
7:15 AM	0	0	0	0	0	60	0	69	0	0	215	59	0	220	295	0	918	0	
<b>7:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>59</b>	<b>0</b>	<b>74</b>	<b>0</b>	<b>0</b>	<b>235</b>	<b>70</b>	<b>0</b>	<b>217</b>	<b>295</b>	<b>0</b>	<b>950</b>	<b>0</b>	
7:45 AM	0	0	0	0	0	85	0	81	0	0	229	78	0	225	306	0	1,004	3,640	
8:00 AM	0	0	0	0	0	77	0	79	0	0	213	82	1	175	261	0	888	3,760	
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>88</b>	<b>0</b>	<b>79</b>	<b>0</b>	<b>0</b>	<b>220</b>	<b>80</b>	<b>0</b>	<b>215</b>	<b>336</b>	<b>0</b>	<b>1,018</b>	<b>3,860</b>	
8:30 AM	0	0	0	0	0	67	0	69	0	0	194	83	0	206	310	0	929	3,839	
8:45 AM	0	0	0	0	0	73	0	87	0	0	187	63	0	202	295	0	907	3,742	
9:00 AM	0	0	0	0	0	70	0	89	0	0	194	73	0	209	309	0	944	3,798	
9:15 AM	0	0	0	0	0	72	0	101	0	0	163	89	0	211	272	0	908	3,688	
9:30 AM	0	0	0	0	0	67	0	94	0	0	199	80	0	227	303	0	970	3,729	
9:45 AM	0	0	0	0	0	83	0	100	0	0	182	74	0	195	266	0	900	3,722	
Count Total	0	0	0	0	0	859	0	997	0	0	2,392	889	1	2,474	3,492	0	11,104	0	
Peak Hour	All	0	0	0	0	0	309	0	313	0	0	897	310	1	832	1,198	0	3,860	0
	HV	0	0	0	0	0	9	0	6	0	0	22	3	0	18	25	0	83	0
	HV%	-	-	-	-	-	3%	-	2%	-	-	2%	1%	0%	2%	2%	-	2%	0
Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.																			
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)								
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total				
7:00 AM	0	7	4	15	26	0	0	1	5	6	0	7	0	0	7				
7:15 AM	0	5	6	10	21	0	0	1	5	6	0	10	0	0	10				
<b>7:30 AM</b>	<b>0</b>	<b>3</b>	<b>6</b>	<b>10</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>7</b>	<b>1</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>17</b>				
7:45 AM	0	1	5	18	24	0	0	1	4	5	0	10	0	0	10				
8:00 AM	0	5	9	10	24	0	0	3	4	7	0	7	0	0	7				
<b>8:15 AM</b>	<b>0</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>				
8:30 AM	0	5	1	13	19	0	0	1	6	7	0	8	0	0	8				
8:45 AM	0	8	2	18	28	0	0	1	6	7	0	10	0	0	10				
9:00 AM	0	3	3	18	24	0	0	1	4	5	0	7	0	0	7				
9:15 AM	0	5	10	37	52	0	0	0	2	2	0	8	0	0	8				
9:30 AM	0	5	10	34	49	0	0	0	1	1	0	3	0	0	3				
9:45 AM	0	4	7	19	30	0	0	0	2	2	0	8	0	0	8				
Count Total	0	57	68	207	332	0	0	10	49	59	1	102	0	0	103				
Peak Hr	0	15	25	43	83	0	0	5	18	23	1	41	0	0	42				

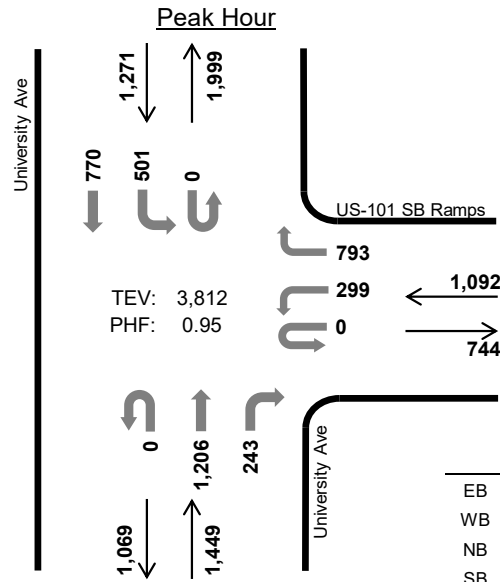
Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				US-101 SB Ramps				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	2	0	5	0	0	4	0	0	4	11	0	26	0
7:15 AM	0	0	0	0	0	2	0	3	0	0	6	0	0	6	4	0	21	0
7:30 AM	0	0	0	0	0	2	0	1	0	0	4	2	0	7	3	0	19	0
7:45 AM	0	0	0	0	0	1	0	0	0	0	5	0	0	7	11	0	24	90
8:00 AM	0	0	0	0	0	3	0	2	0	0	9	0	0	2	8	0	24	88
8:15 AM	0	0	0	0	0	3	0	3	0	0	4	1	0	2	3	0	16	83
8:30 AM	0	0	0	0	0	3	0	2	0	0	1	0	0	9	4	0	19	83
8:45 AM	0	0	0	0	0	5	0	3	0	0	1	1	0	11	7	0	28	87
9:00 AM	0	0	0	0	0	0	0	3	0	0	3	0	0	11	7	0	24	87
9:15 AM	0	0	0	0	0	1	0	4	0	0	6	4	0	21	16	0	52	123
9:30 AM	0	0	0	0	0	1	0	4	0	0	5	5	0	21	13	0	49	153
9:45 AM	0	0	0	0	0	3	0	1	0	0	5	2	0	14	5	0	30	155
Count Total	0	0	0	0	0	26	0	31	0	0	53	15	0	115	92	0	332	0
Peak Hour	0	0	0	0	0	9	0	6	0	0	22	3	0	18	25	0	83	0

Three-Hour Count Summaries - Bikes																	
Interval Start	n/a			US-101 SB Ramps			University Ave			University Ave			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	1	0	0	5	0	6	0			
7:15 AM	0	0	0	0	0	0	0	1	0	0	5	0	6	0			
7:30 AM	0	0	0	0	0	0	0	0	0	0	7	0	7	0			
7:45 AM	0	0	0	0	0	0	0	1	0	0	4	0	5	24			
8:00 AM	0	0	0	0	0	0	0	3	0	0	4	0	7	25			
8:15 AM	0	0	0	0	0	0	0	1	0	0	3	0	4	23			
8:30 AM	0	0	0	0	0	0	0	1	0	0	6	0	7	23			
8:45 AM	0	0	0	0	0	0	0	1	0	0	6	0	7	25			
9:00 AM	0	0	0	0	0	0	0	1	0	0	4	0	5	23			
9:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	21			
9:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1	15			
9:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	2	10			
Count Total	0	0	0	0	0	0	0	10	0	0	49	0	59	0			
Peak Hour	0	0	0	0	0	0	0	5	0	0	18	0	23	0			

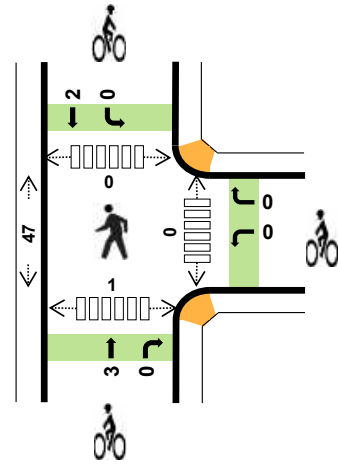
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

# University Ave US-101 SB Ramps



TEV: 3,812  
PHF: 0.95

Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	-	-
WB	1.3%	0.92
NB	1.9%	0.95
SB	1.5%	0.93
TOTAL	1.6%	0.95

### Three-Hour Count Summaries

Interval Start	n/a				US-101 SB Ramps				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	83	0	199	0	0	303	74	0	131	210	0	1,000	0	
4:15 PM	0	0	0	0	0	69	0	182	0	0	295	44	0	135	185	0	910	0	
4:30 PM	0	0	0	0	0	61	0	201	0	0	311	70	0	130	181	0	954	0	
4:45 PM	0	0	0	0	0	86	0	211	0	0	297	55	0	105	194	0	948	3,812	
Peak Hour	All	0	0	0	0	0	299	0	793	0	0	1,206	243	0	501	770	0	3,812	0
	HV	0	0	0	0	0	1	0	13	0	0	26	1	0	10	9	0	60	0
	HV%	-	-	-	-	-	0%	-	2%	-	-	2%	0%	-	2%	1%	-	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	8	10	6	24	0	0	0	0	0	0	18	0	0	18
4:15 PM	0	3	6	4	13	0	0	3	1	4	0	14	0	1	15
4:30 PM	0	2	4	5	11	0	0	0	1	1	0	8	0	0	8
4:45 PM	0	1	7	4	12	0	0	0	0	0	0	7	0	0	7
Peak Hour	0	14	27	19	60	0	0	3	2	5	0	47	0	1	48

Three-Hour Count Summaries														15-min Total	Rolling One Hour				
Interval Start	n/a				US-101 SB Ramps				University Ave				University Ave						
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	83	0	199	0	0	303	74	0	131	210	0	1,000	0	
4:15 PM	0	0	0	0	0	69	0	182	0	0	295	44	0	135	185	0	910	0	
4:30 PM	0	0	0	0	0	61	0	201	0	0	311	70	0	130	181	0	954	0	
4:45 PM	0	0	0	0	0	86	0	211	0	0	297	55	0	105	194	0	948	3,812	
5:00 PM	0	0	0	0	0	58	0	191	1	0	301	75	0	149	183	0	958	3,770	
5:15 PM	0	0	0	0	0	60	0	189	0	0	283	66	0	127	219	0	944	3,804	
5:30 PM	0	0	0	0	0	61	0	147	0	0	287	64	0	139	206	0	904	3,754	
5:45 PM	0	0	0	0	0	76	0	160	0	0	229	56	0	144	209	0	874	3,680	
6:00 PM	0	0	0	0	0	68	0	158	0	0	282	73	0	135	221	0	937	3,659	
6:15 PM	0	0	0	0	0	62	0	168	0	0	270	70	0	137	219	0	926	3,641	
6:30 PM	0	0	0	0	0	81	0	148	0	0	235	74	1	150	199	0	888	3,625	
6:45 PM	0	0	0	0	0	98	0	168	0	0	230	59	0	129	186	0	870	3,621	
Count Total	0	0	0	0	0	863	0	2,122	1	0	3,323	780	1	1,611	2,412	0	11,113	0	
Peak Hour	All	0	0	0	0	0	299	0	793	0	0	1,206	243	0	501	770	0	3,812	0
	HV	0	0	0	0	0	1	0	13	0	0	26	1	0	10	9	0	60	0
	HV%	-	-	-	-	-	0%	-	2%	-	-	2%	0%	-	2%	1%	-	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	8	10	6	24	0	0	0	0	0	0	18	0	0	18
4:15 PM	0	3	6	4	13	0	0	3	1	4	0	14	0	1	15
4:30 PM	0	2	4	5	11	0	0	0	1	1	0	8	0	0	8
4:45 PM	0	1	7	4	12	0	0	0	0	0	0	7	0	0	7
5:00 PM	0	1	7	2	10	0	0	0	0	0	0	4	0	0	4
5:15 PM	0	3	6	5	14	0	0	4	1	5	0	2	0	0	2
5:30 PM	0	1	2	10	13	0	0	5	0	5	0	9	0	0	9
5:45 PM	0	2	7	3	12	0	0	4	0	4	0	10	0	0	10
6:00 PM	0	0	5	2	7	0	0	3	3	6	0	5	0	0	5
6:15 PM	0	2	4	4	10	0	0	1	0	1	0	4	0	0	4
6:30 PM	0	1	3	2	6	0	0	0	2	2	0	7	0	0	7
6:45 PM	0	3	1	3	7	0	0	1	0	1	0	6	0	0	6
Count Total	0	27	62	50	139	0	0	21	8	29	0	94	0	1	95
Peak Hr	0	14	27	19	60	0	0	3	2	5	0	47	0	1	48

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				US-101 SB Ramps				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	1	0	7	0	0	10	0	0	3	3	0	24	0
4:15 PM	0	0	0	0	0	0	0	3	0	0	6	0	0	1	3	0	13	0
4:30 PM	0	0	0	0	0	0	0	2	0	0	3	1	0	4	1	0	11	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	7	0	0	2	2	0	12	60
5:00 PM	0	0	0	0	0	0	0	1	0	0	7	0	0	1	1	0	10	46
5:15 PM	0	0	0	0	0	0	0	3	0	0	5	1	0	2	3	0	14	47
5:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	0	4	6	0	13	49
5:45 PM	0	0	0	0	0	1	0	1	0	0	6	1	0	1	2	0	12	49
6:00 PM	0	0	0	0	0	0	0	0	0	0	4	1	0	1	1	0	7	46
6:15 PM	0	0	0	0	0	1	0	1	0	0	4	0	0	3	1	0	10	42
6:30 PM	0	0	0	0	0	0	0	1	0	0	3	0	0	1	1	0	6	35
6:45 PM	0	0	0	0	0	0	0	3	0	0	1	0	0	0	3	0	7	30
Count Total	0	0	0	0	0	3	0	24	0	0	58	4	0	23	27	0	139	0
Peak Hour	0	0	0	0	0	1	0	13	0	0	26	1	0	10	9	0	60	0

Three-Hour Count Summaries - Bikes																		
Interval Start	n/a			US-101 SB Ramps			University Ave			University Ave			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
5:15 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0	5	6
5:30 PM	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	5	10
5:45 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	14
6:00 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	3	0	0	6	20
6:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	16
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	13
6:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	10
Count Total	0	0	0	0	0	0	0	0	0	21	0	0	0	8	0	0	29	0
Peak Hour	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	0	5	0

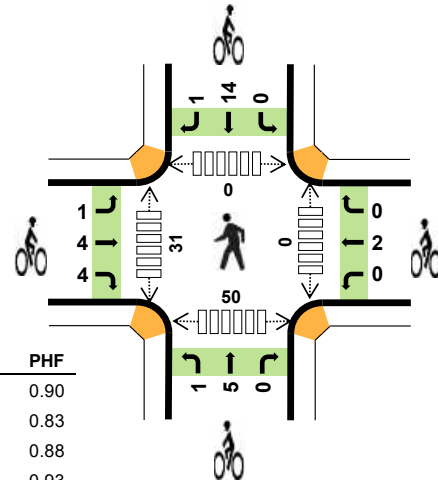
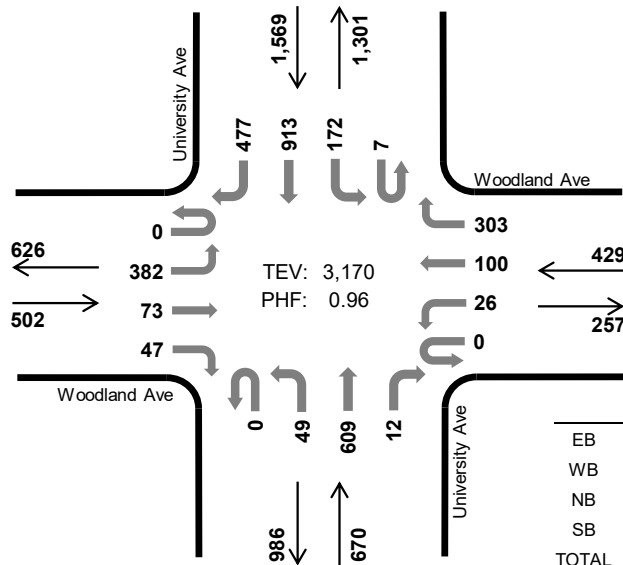
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

## University Ave Woodland Ave



Peak Hour

Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 7:45 AM to 8:45 AM



	HV %:	PHF
EB	2.8%	0.90
WB	1.6%	0.83
NB	1.3%	0.88
SB	2.4%	0.93
TOTAL	2.1%	0.96

### Three-Hour Count Summaries

Interval Start	Woodland Ave				Woodland Ave				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:45 AM	0	112	16	11	0	8	25	96	0	8	122	4	0	43	227	122	794	0	
8:00 AM	0	95	18	15	0	6	24	85	0	19	142	1	4	35	200	114	758	0	
8:15 AM	0	86	17	10	0	5	24	77	0	13	167	3	1	40	243	136	822	0	
8:30 AM	0	89	22	11	0	7	27	45	0	9	178	4	2	54	243	105	796	3,170	
Peak Hour	All	0	382	73	47	0	26	100	303	0	49	609	12	7	172	913	477	3,170	0
	HV	0	7	3	4	0	1	3	3	0	1	8	0	0	7	22	8	67	0
	HV%	-	2%	4%	9%	-	4%	3%	1%	-	2%	1%	0%	0%	4%	2%	2%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:45 AM	2	3	5	10	20	3	0	1	2	6	0	11	0	12	23
8:00 AM	7	3	1	10	21	3	0	2	5	10	0	6	0	14	20
8:15 AM	2	1	2	9	14	1	1	1	3	6	0	8	0	15	23
8:30 AM	3	0	1	8	12	2	1	2	5	10	0	6	0	9	15
Peak Hour	14	7	9	37	67	9	2	6	15	32	0	31	0	50	81

Three-Hour Count Summaries																			
Interval Start	Woodland Ave				Woodland Ave				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	58	14	9	0	4	12	72	0	3	113	2	2	48	203	62	602	0	
7:15 AM	0	107	13	12	0	2	21	105	0	5	81	0	0	55	223	100	724	0	
7:30 AM	0	96	15	10	0	5	22	110	0	5	121	1	0	50	203	108	746	0	
<b>7:45 AM</b>	<b>0</b>	<b>112</b>	<b>16</b>	<b>11</b>	<b>0</b>	<b>8</b>	<b>25</b>	<b>96</b>	<b>0</b>	<b>8</b>	<b>122</b>	<b>4</b>	<b>0</b>	<b>43</b>	<b>227</b>	<b>122</b>	<b>794</b>	2,866	
8:00 AM	0	95	18	15	0	6	24	85	0	19	142	1	4	35	200	114	758	3,022	
<b>8:15 AM</b>	<b>0</b>	<b>86</b>	<b>17</b>	<b>10</b>	<b>0</b>	<b>5</b>	<b>24</b>	<b>77</b>	<b>0</b>	<b>13</b>	<b>167</b>	<b>3</b>	<b>1</b>	<b>40</b>	<b>243</b>	<b>136</b>	<b>822</b>	3,120	
8:30 AM	0	89	22	11	0	7	27	45	0	9	178	4	2	54	243	105	796	3,170	
8:45 AM	0	66	23	15	0	4	25	55	0	13	155	1	2	36	224	103	722	3,098	
9:00 AM	0	69	19	20	0	6	23	54	0	9	157	1	2	37	259	83	739	3,079	
9:15 AM	0	73	21	5	0	2	9	41	0	10	154	2	29	28	238	91	703	2,960	
9:30 AM	0	78	13	12	0	3	12	46	0	12	169	3	4	34	259	77	722	2,886	
9:45 AM	0	75	16	13	1	3	12	46	0	7	146	2	0	41	241	94	697	2,861	
Count Total	0	1,004	207	143	1	55	236	832	0	113	1,705	24	46	501	2,763	1,195	8,825	0	
Peak Hour	All	0	382	73	47	0	26	100	303	0	49	609	12	7	172	913	477	3,170	0
	HV	0	7	3	4	0	1	3	3	0	1	8	0	0	7	22	8	67	0
	HV%	-	2%	4%	9%	-	4%	3%	1%	-	2%	1%	0%	0%	4%	2%	2%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	6	2	2	14	24	0	0	1	5	6	0	9	0	9	18
7:15 AM	2	6	3	7	18	1	0	1	6	8	0	11	0	11	22
7:30 AM	6	2	2	5	15	0	0	0	6	6	0	13	0	13	26
<b>7:45 AM</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>10</b>	<b>20</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>12</b>	<b>23</b>
8:00 AM	7	3	1	10	21	3	0	2	5	10	0	6	0	14	20
<b>8:15 AM</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>9</b>	<b>14</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>15</b>	<b>23</b>
8:30 AM	3	0	1	8	12	2	1	2	5	10	0	6	0	9	15
8:45 AM	2	5	3	13	23	2	1	2	7	12	0	13	0	18	31
9:00 AM	5	2	2	8	17	2	1	1	4	8	1	3	0	8	12
9:15 AM	4	2	5	17	28	1	0	0	4	5	0	7	0	5	12
9:30 AM	2	1	9	16	28	0	4	1	2	7	1	8	0	8	17
9:45 AM	2	2	5	9	18	1	1	0	3	5	0	4	0	7	11
Count Total	43	29	40	126	238	16	9	12	52	89	2	99	0	129	230
Peak Hour	14	7	9	37	67	9	2	6	15	32	0	31	0	50	81

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Woodland Ave				Woodland Ave				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	3	1	0	0	1	1	0	1	1	0	0	4	7	3	24	0
7:15 AM	0	1	0	1	0	0	3	3	0	0	3	0	0	0	3	4	18	0
7:30 AM	0	2	3	1	0	0	0	2	0	0	2	0	0	1	3	1	15	0
7:45 AM	0	1	0	1	0	1	2	0	0	1	4	0	0	3	3	4	20	77
8:00 AM	0	4	2	1	0	0	1	2	0	0	1	0	0	0	9	1	21	74
8:15 AM	0	2	0	0	0	0	0	1	0	0	2	0	0	2	4	3	14	70
8:30 AM	0	0	1	2	0	0	0	0	0	0	1	0	0	2	6	0	12	67
8:45 AM	0	0	2	0	0	1	3	1	0	1	2	0	0	2	7	4	23	70
9:00 AM	0	1	1	3	0	0	1	1	0	0	2	0	0	1	5	2	17	66
9:15 AM	0	3	1	0	0	1	0	1	0	0	5	0	1	2	12	2	28	80
9:30 AM	0	1	1	0	0	1	0	0	0	0	8	1	0	2	9	5	28	96
9:45 AM	0	2	0	0	0	1	0	1	0	1	4	0	0	1	5	3	18	91
Count Total	0	19	14	10	0	5	11	13	0	4	35	1	1	20	73	32	238	0
Peak Hour	0	7	3	4	0	1	3	3	0	1	8	0	0	7	22	8	67	0
Three-Hour Count Summaries - Bikes																		
Interval Start	Woodland Ave			Woodland Ave			University Ave			University Ave			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	5	0	6	0	
7:15 AM	0	1	0	0	0	0	0	0	0	1	0	0	0	5	1	8	0	
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	6	0	
7:45 AM	1	0	2	0	0	0	0	0	1	0	0	0	0	2	0	6	26	
8:00 AM	0	3	0	0	0	0	0	0	0	2	0	0	0	5	0	10	30	
8:15 AM	0	0	1	0	1	0	0	0	0	1	0	0	0	3	0	6	28	
8:30 AM	0	1	1	0	1	0	0	0	0	2	0	0	0	4	1	10	32	
8:45 AM	0	1	1	0	1	0	0	0	1	0	1	0	0	5	2	12	38	
9:00 AM	1	0	1	1	0	0	0	0	1	0	0	0	0	4	0	8	36	
9:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	3	1	5	35	
9:30 AM	0	0	0	4	0	0	0	0	1	0	0	0	0	2	0	7	32	
9:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	3	0	5	25	
Count Total	2	8	6	5	4	0	0	0	4	7	1	0	1	46	5	89	0	
Peak Hour	1	4	4	0	2	0	0	0	1	5	0	0	0	14	1	32	0	
Note: U-Turn volumes for bikes are included in Left-Turn, if any.																		

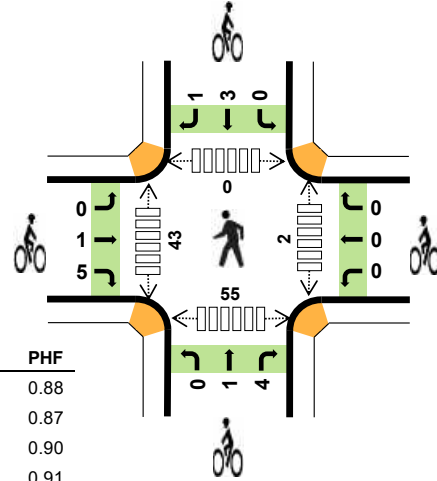
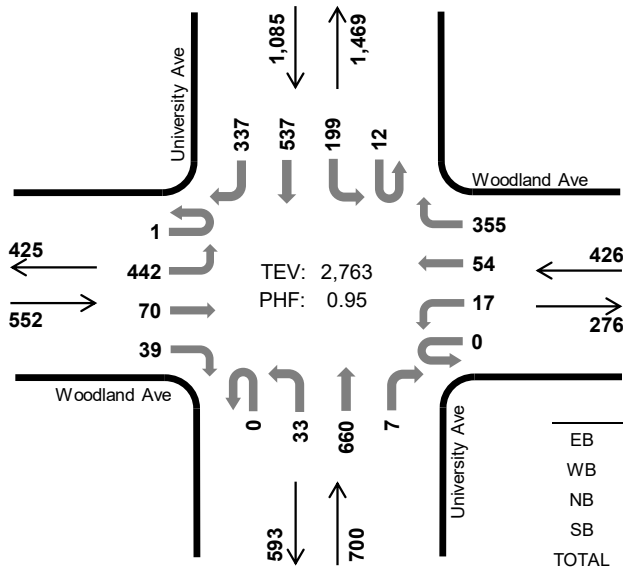


# University Ave Woodland Ave



Peak Hour

Date: 04-25-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	2.2%	0.88
WB	3.3%	0.87
NB	1.7%	0.90
SB	1.3%	0.91
TOTAL	1.9%	0.95

### Three-Hour Count Summaries

Interval Start	Woodland Ave				Woodland Ave				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	129	22	6	0	6	11	66	0	8	181	2	6	53	143	95	728	0	
4:15 PM	0	97	16	13	0	3	15	94	0	5	153	3	2	45	130	89	665	0	
4:30 PM	0	109	14	10	0	4	10	95	0	10	184	1	2	45	123	64	671	0	
4:45 PM	1	107	18	10	0	4	18	100	0	10	142	1	2	56	141	89	699	2,763	
Peak Hour	All	1	442	70	39	0	17	54	355	0	33	660	7	12	199	537	337	2,763	0
	HV	0	6	3	3	0	1	2	11	0	2	10	0	0	3	8	3	52	0
	HV%	0%	1%	4%	8%	-	6%	4%	3%	-	6%	2%	0%	0%	2%	1%	1%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	6	5	7	22	1	0	0	1	2	0	18	0	24	42
4:15 PM	4	4	1	4	13	4	0	2	0	6	0	5	0	8	13
4:30 PM	3	1	1	1	6	1	0	2	0	3	1	11	0	14	26
4:45 PM	1	3	5	2	11	0	0	1	3	4	1	9	0	9	19
Peak Hour	12	14	12	14	52	6	0	5	4	15	2	43	0	55	100

Three-Hour Count Summaries																			
Interval Start	Woodland Ave				Woodland Ave				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	129	22	6	0	6	11	66	0	8	181	2	6	53	143	95	728	0	
4:15 PM	0	97	16	13	0	3	15	94	0	5	153	3	2	45	130	89	665	0	
4:30 PM	0	109	14	10	0	4	10	95	0	10	184	1	2	45	123	64	671	0	
4:45 PM	1	107	18	10	0	4	18	100	0	10	142	1	2	56	141	89	699	2,763	
5:00 PM	0	126	22	13	0	3	19	92	0	8	152	5	4	44	112	90	690	2,725	
5:15 PM	0	105	15	11	0	2	16	68	0	10	170	5	0	52	136	94	684	2,744	
5:30 PM	0	109	15	12	0	3	15	84	0	7	161	6	1	57	138	80	688	2,761	
5:45 PM	0	104	16	10	0	4	17	66	0	8	111	6	1	56	140	90	629	2,691	
6:00 PM	0	104	12	19	0	4	11	73	0	4	172	1	2	58	149	84	693	2,694	
6:15 PM	0	93	13	17	0	2	9	66	0	12	184	6	6	48	167	74	697	2,707	
6:30 PM	0	80	11	12	0	4	7	42	0	3	176	2	2	57	165	59	620	2,639	
6:45 PM	0	80	14	9	0	2	12	42	0	11	154	2	6	60	163	74	629	2,639	
Count Total	1	1,243	188	142	0	41	160	888	0	96	1,940	40	34	631	1,707	982	8,093	0	
Peak Hour	All	1	442	70	39	0	17	54	355	0	33	660	7	12	199	537	337	2,763	0
	HV	0	6	3	3	0	1	2	11	0	2	10	0	0	3	8	3	52	0
	HV%	0%	1%	4%	8%	-	6%	4%	3%	-	6%	2%	0%	0%	2%	1%	1%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

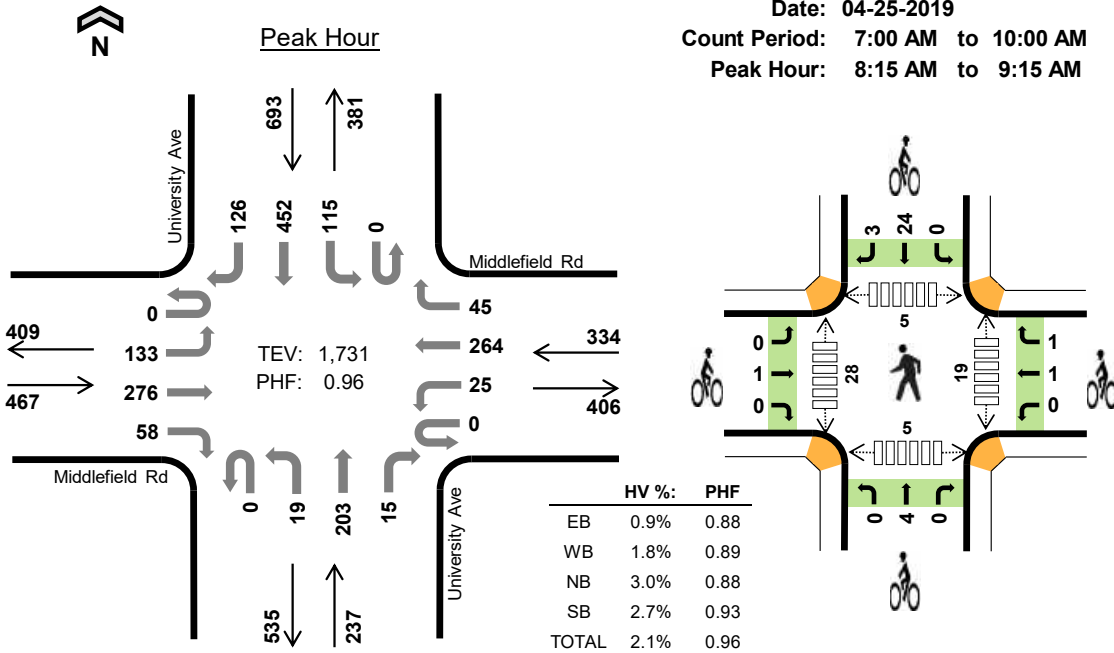
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	4	6	5	7	22	1	0	0	1	2	0	18	0	24	42
4:15 PM	4	4	1	4	13	4	0	2	0	6	0	5	0	8	13
4:30 PM	3	1	1	1	6	1	0	2	0	3	1	11	0	14	26
4:45 PM	1	3	5	2	11	0	0	1	3	4	1	9	0	9	19
5:00 PM	6	5	4	1	16	1	0	0	2	3	0	7	0	15	22
5:15 PM	4	0	4	3	11	1	0	4	4	9	1	5	0	12	18
5:30 PM	1	0	1	6	8	2	1	5	3	11	0	9	0	7	16
5:45 PM	2	3	3	3	11	1	0	4	0	5	1	13	0	10	24
6:00 PM	4	0	5	1	10	1	0	2	4	7	0	9	0	10	19
6:15 PM	0	1	4	2	7	1	1	0	0	2	0	7	0	6	13
6:30 PM	0	1	3	1	5	1	1	0	3	5	0	15	0	12	27
6:45 PM	0	0	1	3	4	2	1	2	0	5	0	9	0	9	18
Count Total	29	24	37	34	124	16	4	22	20	62	4	117	0	136	257
Peak Hour	12	14	12	14	52	6	0	5	4	15	2	43	0	55	100

<b>Three-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	Woodland Ave				Woodland Ave				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	1	3	0	0	0	0	6	0	1	4	0	0	2	3	2	22	0
4:15 PM	0	2	0	2	0	1	1	2	0	0	1	0	0	0	3	1	13	0
4:30 PM	0	2	0	1	0	0	0	1	0	0	1	0	0	0	1	0	6	0
4:45 PM	0	1	0	0	0	0	1	2	0	1	4	0	0	1	1	0	11	52
5:00 PM	0	2	2	2	0	0	2	3	0	2	2	0	0	0	1	0	16	46
5:15 PM	0	4	0	0	0	0	0	0	0	1	3	0	0	0	2	1	11	44
5:30 PM	0	1	0	0	0	0	0	0	0	0	1	0	0	3	2	1	8	46
5:45 PM	0	2	0	0	0	0	1	2	0	0	3	0	0	1	1	1	11	46
6:00 PM	0	2	1	1	0	0	0	0	0	1	4	0	0	0	1	0	10	40
6:15 PM	0	0	0	0	0	0	0	1	0	1	3	0	0	0	2	0	7	36
6:30 PM	0	0	0	0	0	0	0	1	0	0	3	0	0	0	1	0	5	33
6:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	4	26
Count Total	0	17	6	6	0	1	5	18	0	8	29	0	0	8	19	7	124	0
Peak Hour	0	6	3	3	0	1	2	11	0	2	10	0	0	3	8	3	52	0
<b>Three-Hour Count Summaries - Bikes</b>																		
Interval Start	Woodland Ave			Woodland Ave			University Ave			University Ave			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	1	2	0				
4:15 PM	0	1	3	0	0	0	0	1	1	0	0	0	6	0				
4:30 PM	0	0	1	0	0	0	0	0	2	0	0	0	3	0				
4:45 PM	0	0	0	0	0	0	0	0	1	0	3	0	4	15				
5:00 PM	0	1	0	0	0	0	0	0	0	0	1	1	3	16				
5:15 PM	0	1	0	0	0	0	0	0	4	0	0	0	9	19				
5:30 PM	0	1	1	0	0	1	0	5	0	0	2	1	11	27				
5:45 PM	0	0	1	0	0	0	0	0	4	0	0	0	5	28				
6:00 PM	0	1	0	0	0	0	0	0	2	0	0	4	7	32				
6:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	2	25				
6:30 PM	0	0	1	0	1	0	0	0	0	0	0	3	5	19				
6:45 PM	1	1	0	0	1	0	0	1	1	0	0	0	5	19				
Count Total	1	6	9	0	3	1	0	17	5	0	13	7	62	0				
Peak Hour	0	1	5	0	0	0	0	1	4	0	3	1	15	0				
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																		

# University Ave Middlefield Rd



Date: 04-25-2019  
 Count Period: 7:00 AM to 10:00 AM  
 Peak Hour: 8:15 AM to 9:15 AM



### Three-Hour Count Summaries

Interval Start	Middlefield Rd				Middlefield Rd				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:15 AM	0	39	68	11	0	5	68	10	0	3	62	2	0	23	131	30	452	0	
8:30 AM	0	35	75	22	0	7	51	12	0	5	50	5	0	27	116	43	448	0	
8:45 AM	0	26	77	13	0	10	78	6	0	7	46	2	0	39	98	35	437	0	
9:00 AM	0	33	56	12	0	3	67	17	0	4	45	6	0	26	107	18	394	1,731	
Peak Hour	All	0	133	276	58	0	25	264	45	0	19	203	15	0	115	452	126	1,731	0
	HV	0	1	1	2	0	1	5	0	0	0	6	1	0	1	16	2	36	0
	HV%	-	1%	0%	3%	-	4%	2%	0%	-	0%	3%	7%	-	1%	4%	2%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:15 AM	0	1	1	6	8	0	0	1	5	6	10	6	3	3	22
8:30 AM	0	1	1	2	4	0	1	1	5	7	0	11	1	2	14
8:45 AM	3	3	3	6	15	1	1	2	10	14	4	7	0	0	11
9:00 AM	1	1	2	5	9	0	0	0	7	7	5	4	1	0	10
Peak Hour	4	6	7	19	36	1	2	4	27	34	19	28	5	5	57

Three-Hour Count Summaries																			
Interval Start	Middlefield Rd				Middlefield Rd				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	15	38	9	0	2	12	8	0	2	30	0	0	24	84	20	244	0	
7:15 AM	0	12	43	6	0	2	37	5	0	4	38	4	0	24	108	26	309	0	
7:30 AM	0	16	57	7	0	4	47	9	0	4	46	5	0	22	97	29	343	0	
7:45 AM	0	19	75	5	0	1	50	11	0	7	50	2	0	19	109	37	385	1,281	
8:00 AM	0	28	59	8	0	9	66	13	0	5	46	1	0	31	89	35	390	1,427	
<b>8:15 AM</b>	<b>0</b>	<b>39</b>	<b>68</b>	<b>11</b>	<b>0</b>	<b>5</b>	<b>68</b>	<b>10</b>	<b>0</b>	<b>3</b>	<b>62</b>	<b>2</b>	<b>0</b>	<b>23</b>	<b>131</b>	<b>30</b>	<b>452</b>	<b>1,570</b>	
8:30 AM	0	35	75	22	0	7	51	12	0	5	50	5	0	27	116	43	448	1,675	
8:45 AM	0	26	77	13	0	10	78	6	0	7	46	2	0	39	98	35	437	1,727	
9:00 AM	0	33	56	12	0	3	67	17	0	4	45	6	0	26	107	18	394	1,731	
9:15 AM	0	33	63	14	0	15	60	12	0	3	42	5	0	37	108	45	437	1,716	
9:30 AM	0	28	62	13	0	12	61	18	0	3	48	2	0	26	109	28	410	1,678	
9:45 AM	0	25	48	14	0	10	56	15	0	5	61	4	0	34	129	49	450	1,691	
Count Total	0	309	721	134	0	80	653	136	0	52	564	38	0	332	1,285	395	4,699	0	
Peak Hour	All	0	133	276	58	0	25	264	45	0	19	203	15	0	115	452	126	1,731	0
	HV	0	1	1	2	0	1	5	0	0	0	6	1	0	1	16	2	36	0
	HV%	-	1%	0%	3%	-	4%	2%	0%	-	0%	3%	7%	-	1%	4%	2%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

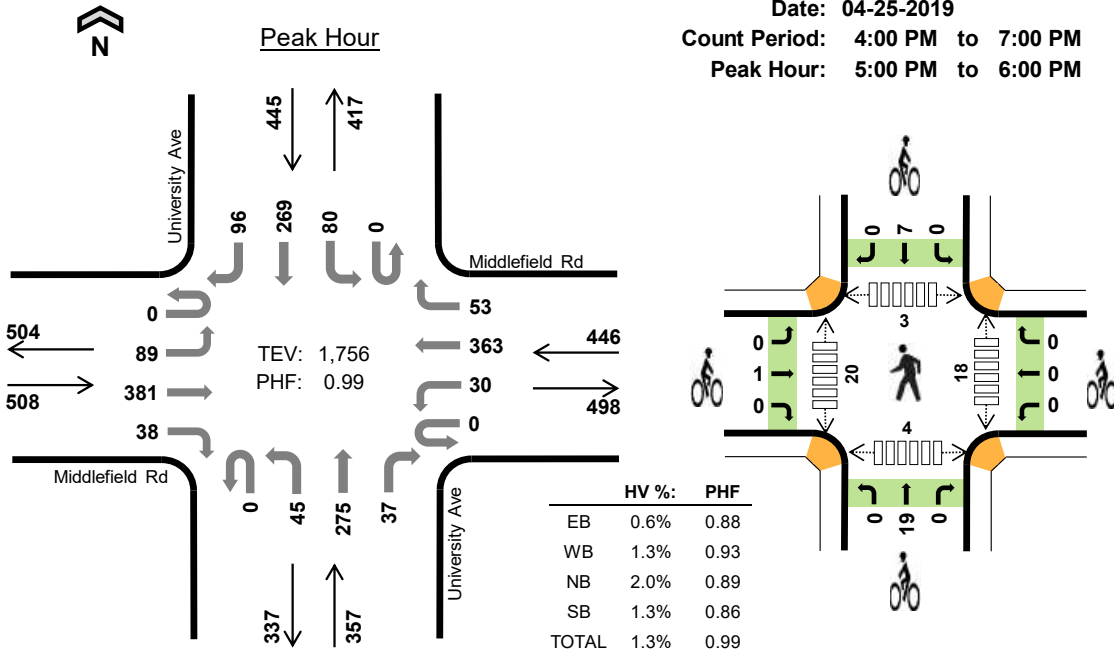
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	3	1	1	7	12	1	1	0	4	6	4	7	2	1	14
7:15 AM	1	1	1	4	7	0	0	0	5	5	1	7	0	1	9
7:30 AM	0	2	2	5	9	0	2	1	4	7	1	2	0	0	3
7:45 AM	2	4	2	2	10	0	0	0	7	7	2	7	1	3	13
8:00 AM	1	3	3	6	13	1	0	0	2	3	3	8	2	3	16
<b>8:15 AM</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>6</b>	<b>10</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>22</b>
8:30 AM	0	1	1	2	4	0	1	1	5	7	0	11	1	2	14
8:45 AM	3	3	3	6	15	1	1	2	10	14	4	7	0	0	11
9:00 AM	1	1	2	5	9	0	0	0	7	7	5	4	1	0	10
9:15 AM	2	2	4	10	18	0	0	1	2	3	4	6	2	1	13
9:30 AM	2	2	6	6	16	0	0	0	8	8	1	2	0	0	3
9:45 AM	3	2	4	8	17	0	1	0	4	5	4	4	0	0	8
Count Total	18	23	30	67	138	3	6	6	63	78	39	71	12	14	136
Peak Hour	4	6	7	19	36	1	2	4	27	34	19	28	5	5	57

<b>Three-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	Middlefield Rd				Middlefield Rd				University Ave				University Ave				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	1	2	0	0	0	1	0	0	1	0	0	0	4	3	12	0
7:15 AM	0	0	1	0	0	0	1	0	0	0	1	0	0	2	1	1	7	0
7:30 AM	0	0	0	0	0	0	2	0	0	0	2	0	0	2	3	0	9	0
7:45 AM	0	2	0	0	0	0	3	1	0	0	2	0	0	0	2	0	10	38
8:00 AM	0	0	0	1	0	1	2	0	0	1	2	0	0	0	4	2	13	39
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>8</b>	<b>40</b>
8:30 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2	0	4	35
8:45 AM	0	0	1	2	0	0	3	0	0	0	3	0	0	0	5	1	15	40
9:00 AM	0	1	0	0	0	1	0	0	0	0	1	1	0	1	4	0	9	36
9:15 AM	0	0	1	1	0	0	1	1	0	0	4	0	0	0	7	3	18	46
9:30 AM	0	0	0	2	0	0	2	0	0	0	6	0	0	2	3	1	16	58
9:45 AM	0	1	0	2	0	0	1	1	0	1	3	0	0	1	5	2	17	60
Count Total	0	4	4	10	0	2	17	4	0	2	27	1	0	8	45	14	138	0
Peak Hour	0	1	1	2	0	1	5	0	0	0	6	1	0	1	16	2	36	0
<b>Three-Hour Count Summaries - Bikes</b>																		
Interval Start	Middlefield Rd			Middlefield Rd			University Ave			University Ave			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	1	0	0	1	0	0	0	0	0	3	1	6	0				
7:15 AM	0	0	0	0	0	0	0	0	0	0	5	0	5	0				
7:30 AM	0	0	0	0	2	0	0	1	0	0	1	3	7	0				
7:45 AM	0	0	0	0	0	0	0	0	0	0	6	1	7	25				
8:00 AM	0	1	0	0	0	0	0	0	0	0	2	0	3	22				
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>6</b>	<b>23</b>			
8:30 AM	0	0	0	0	1	0	0	1	0	0	5	0	7	23				
8:45 AM	0	1	0	0	0	1	0	2	0	0	8	2	14	30				
9:00 AM	0	0	0	0	0	0	0	0	0	0	6	1	7	34				
9:15 AM	0	0	0	0	0	0	0	0	1	0	2	0	3	31				
9:30 AM	0	0	0	0	0	0	0	0	0	0	8	0	8	32				
9:45 AM	0	0	0	0	1	0	0	0	0	0	4	0	5	23				
Count Total	0	3	0	0	5	1	0	5	1	1	57	5	78	0				
Peak Hour	0	1	0	0	1	1	0	4	0	0	24	3	34	0				
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																		

# University Ave Middlefield Rd



Date: 04-25-2019  
 Count Period: 4:00 PM to 7:00 PM  
 Peak Hour: 5:00 PM to 6:00 PM



### Three-Hour Count Summaries

Interval Start	Middlefield Rd				Middlefield Rd				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		Northbound		Southbound		Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
5:00 PM	0	25	96	11	0	7	83	10	0	15	74	11	0	19	70	16	437	0	
5:15 PM	0	22	110	13	0	4	88	17	0	9	61	11	0	20	56	22	433	0	
5:30 PM	0	22	90	8	0	10	97	10	0	8	63	8	0	19	74	36	445	0	
5:45 PM	0	20	85	6	0	9	95	16	0	13	77	7	0	22	69	22	441	1,756	
Peak Hour	All	0	89	381	38	0	30	363	53	0	45	275	37	0	80	269	96	1,756	0
	HV	0	1	0	2	0	1	4	1	0	0	7	0	0	0	6	0	22	0
	HV%	-	1%	0%	5%	-	3%	1%	2%	-	0%	3%	0%	-	0%	2%	0%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:00 PM	0	2	2	2	6	0	0	0	2	2	0	5	0	1	6
5:15 PM	2	1	2	1	6	0	0	8	0	8	6	11	2	1	20
5:30 PM	0	1	2	1	4	0	0	7	3	10	6	2	0	0	8
5:45 PM	1	2	1	2	6	1	0	4	2	7	6	2	1	2	11
Peak Hour	3	6	7	6	22	1	0	19	7	27	18	20	3	4	45

Three-Hour Count Summaries																			
Interval Start	Middlefield Rd				Middlefield Rd				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	17	116	8	0	9	71	14	0	8	59	6	0	17	56	20	401	0	
4:15 PM	0	26	82	15	0	10	75	8	0	8	84	9	0	18	55	29	419	0	
4:30 PM	0	14	94	17	0	9	83	13	0	15	56	11	0	16	55	25	408	0	
4:45 PM	0	16	111	10	0	5	68	14	0	22	64	8	0	19	55	18	410	1,638	
<b>5:00 PM</b>	<b>0</b>	<b>25</b>	<b>96</b>	<b>11</b>	<b>0</b>	<b>7</b>	<b>83</b>	<b>10</b>	<b>0</b>	<b>15</b>	<b>74</b>	<b>11</b>	<b>0</b>	<b>19</b>	<b>70</b>	<b>16</b>	<b>437</b>	<b>1,674</b>	
<b>5:15 PM</b>	<b>0</b>	<b>22</b>	<b>110</b>	<b>13</b>	<b>0</b>	<b>4</b>	<b>88</b>	<b>17</b>	<b>0</b>	<b>9</b>	<b>61</b>	<b>11</b>	<b>0</b>	<b>20</b>	<b>56</b>	<b>22</b>	<b>433</b>	<b>1,688</b>	
<b>5:30 PM</b>	<b>0</b>	<b>22</b>	<b>90</b>	<b>8</b>	<b>0</b>	<b>10</b>	<b>97</b>	<b>10</b>	<b>0</b>	<b>8</b>	<b>63</b>	<b>8</b>	<b>0</b>	<b>19</b>	<b>74</b>	<b>36</b>	<b>445</b>	<b>1,725</b>	
<b>5:45 PM</b>	<b>0</b>	<b>20</b>	<b>85</b>	<b>6</b>	<b>0</b>	<b>9</b>	<b>95</b>	<b>16</b>	<b>0</b>	<b>13</b>	<b>77</b>	<b>7</b>	<b>0</b>	<b>22</b>	<b>69</b>	<b>22</b>	<b>441</b>	<b>1,756</b>	
6:00 PM	0	19	89	10	0	9	75	26	0	13	69	13	0	23	64	20	430	1,749	
6:15 PM	0	22	78	13	0	4	75	17	0	7	62	11	0	18	96	21	424	1,740	
6:30 PM	0	28	67	14	0	5	59	12	0	5	68	8	0	8	81	21	376	1,671	
6:45 PM	0	19	65	10	0	4	60	17	0	12	65	3	0	14	74	25	368	1,598	
Count Total	0	250	1,083	135	0	85	929	174	0	135	802	106	0	213	805	275	4,992	0	
Peak Hour	All	0	89	381	38	0	30	363	53	0	45	275	37	0	80	269	96	1,756	0
	HV	0	1	0	2	0	1	4	1	0	0	7	0	0	0	6	0	22	0
	HV%	-	1%	0%	5%	-	3%	1%	2%	-	0%	3%	0%	-	0%	2%	0%	1%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	1	1	3	6	1	0	2	2	5	4	2	2	1	9
4:15 PM	1	0	2	3	6	1	0	2	4	7	2	4	0	5	11
4:30 PM	1	2	2	2	7	1	0	2	1	4	7	7	2	1	17
4:45 PM	0	2	5	1	8	0	0	0	3	3	5	2	1	2	10
<b>5:00 PM</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>6</b>
<b>5:15 PM</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>8</b>	<b>6</b>	<b>11</b>	<b>2</b>	<b>1</b>	<b>20</b>
<b>5:30 PM</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>3</b>	<b>10</b>	<b>6</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>8</b>
<b>5:45 PM</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>7</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>11</b>
6:00 PM	2	2	3	2	9	1	0	3	1	5	11	6	2	1	20
6:15 PM	1	1	1	2	5	1	0	0	2	3	4	6	2	2	14
6:30 PM	0	0	2	1	3	0	2	0	2	4	14	3	3	7	27
6:45 PM	1	1	2	0	4	2	1	2	1	6	4	7	1	1	13
Count Total	10	15	25	20	70	8	3	30	23	64	69	57	16	24	166
Peak Hour	3	6	7	6	22	1	0	19	7	27	18	20	3	4	45



<b>Three-Hour Count Summaries - Heavy Vehicles</b>																			
Interval Start	Middlefield Rd				Middlefield Rd				University Ave				University Ave				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	1	0	0	0	1	0	0	0	0	1	0	0	0	2	1	6	0	
4:15 PM	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	2	1	6	0
4:30 PM	0	0	0	1	0	0	2	0	0	0	1	1	0	0	1	1	7	0	
4:45 PM	0	0	0	0	0	0	1	1	0	1	4	0	0	0	1	0	8	27	
5:00 PM	0	0	0	0	0	0	1	1	0	0	2	0	0	0	2	0	6	27	
5:15 PM	0	1	0	1	0	0	1	0	0	0	2	0	0	0	1	0	6	27	
5:30 PM	0	0	0	0	0	0	1	0	0	0	2	0	0	0	1	0	4	24	
5:45 PM	0	0	0	1	0	1	1	0	0	0	1	0	0	0	2	0	6	22	
6:00 PM	0	0	2	0	0	0	1	1	0	1	2	0	0	0	2	0	9	25	
6:15 PM	0	0	0	1	0	0	0	1	0	0	1	0	0	0	2	0	5	24	
6:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	23	
6:45 PM	0	0	0	1	0	0	1	0	0	0	2	0	0	0	0	0	4	21	
Count Total	0	2	2	6	0	2	9	4	0	3	21	1	0	0	17	3	70	0	
Peak Hour	0	1	0	2	0	1	4	1	0	0	7	0	0	0	6	0	22	0	

<b>Three-Hour Count Summaries - Bikes</b>																	
Interval Start	Middlefield Rd			Middlefield Rd			University Ave			University Ave			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	1	0	0	0	0	0	2	0	0	2	0	5	0			
4:15 PM	0	1	0	0	0	0	0	0	2	0	0	4	0	7	0		
4:30 PM	1	0	0	0	0	0	0	0	2	0	0	1	0	4	0		
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	3	19		
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	16		
5:15 PM	0	0	0	0	0	0	0	0	8	0	0	0	0	8	17		
5:30 PM	0	0	0	0	0	0	0	0	7	0	0	3	0	10	23		
5:45 PM	0	1	0	0	0	0	0	0	4	0	0	2	0	7	27		
6:00 PM	0	1	0	0	0	0	0	0	3	0	0	1	0	5	30		
6:15 PM	0	1	0	0	0	0	0	0	0	0	0	1	1	3	25		
6:30 PM	0	0	0	0	2	0	0	0	0	0	0	1	1	4	19		
6:45 PM	1	1	0	0	0	1	0	0	2	0	0	0	1	6	18		
Count Total	2	6	0	0	2	1	0	30	0	0	20	3	64	0			
Peak Hour	0	1	0	0	0	0	0	19	0	0	7	0	27	0			

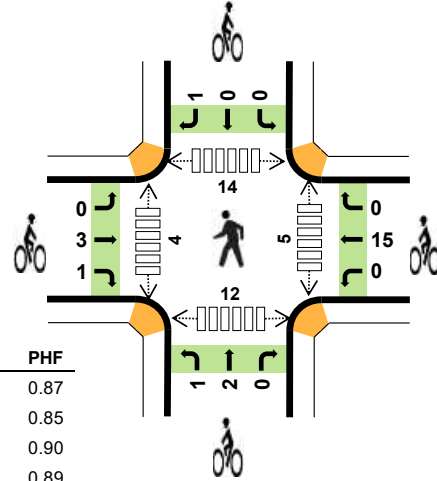
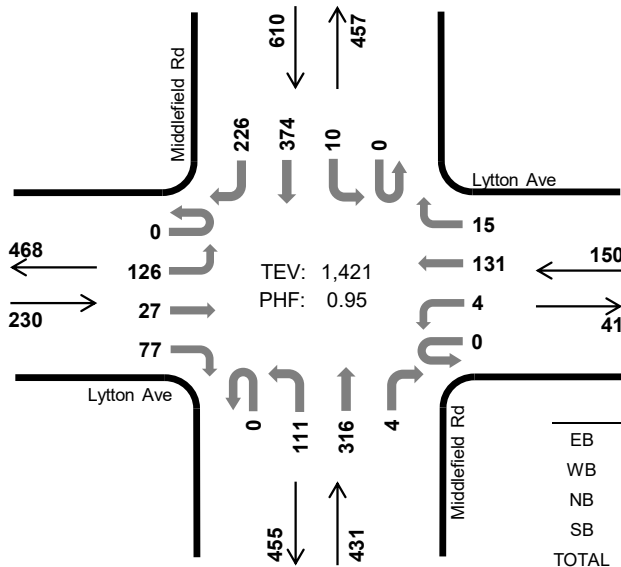
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### Middlefield Rd Lytton Ave



Peak Hour

Date: 04-25-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 8:00 AM to 9:00 AM



#### Three-Hour Count Summaries

Interval Start	Lytton Ave Eastbound				Lytton Ave Westbound				Middlefield Rd Northbound				Middlefield Rd Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:00 AM	0	30	7	18	0	1	37	4	0	34	77	1	0	2	77	50	338	0	
8:15 AM	0	28	5	11	0	3	36	5	0	29	72	0	0	2	100	54	345	0	
8:30 AM	0	31	8	27	0	0	34	2	0	27	70	1	0	2	105	65	372	0	
8:45 AM	0	37	7	21	0	0	24	4	0	21	97	2	0	4	92	57	366	1,421	
Peak Hour	All	0	126	27	77	0	4	131	15	0	111	316	4	0	10	374	226	1,421	0
	HV	0	1	1	2	0	0	1	1	0	3	9	0	0	0	1	5	24	0
	HV%	-	1%	4%	3%	-	0%	1%	7%	-	3%	3%	0%	-	0%	0%	2%	2%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	1	0	6	1	8	1	1	0	0	2	2	1	2	4	9
8:15 AM	0	2	1	3	6	0	5	1	0	6	1	2	5	2	10
8:30 AM	0	0	1	1	2	1	4	1	0	6	1	0	4	1	6
8:45 AM	3	0	4	1	8	2	5	1	1	9	1	1	3	5	10
Peak Hour	4	2	12	6	24	4	15	3	1	23	5	4	14	12	35

Three-Hour Count Summaries																			
Interval Start	Lytton Ave				Lytton Ave				Middlefield Rd				Middlefield Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	25	2	8	0	0	17	1	0	17	21	0	0	0	54	75	220	0	
7:15 AM	0	29	2	9	0	0	23	2	0	23	44	0	0	0	52	78	262	0	
7:30 AM	0	34	4	6	0	1	28	1	0	16	65	0	0	2	74	64	295	0	
7:45 AM	0	33	4	21	0	0	19	3	0	16	66	1	0	1	84	52	300	1,077	
8:00 AM	0	30	7	18	0	1	37	4	0	34	77	1	0	2	77	50	338	1,195	
8:15 AM	0	28	5	11	0	3	36	5	0	29	72	0	0	2	100	54	345	1,278	
8:30 AM	0	31	8	27	0	0	34	2	0	27	70	1	0	2	105	65	372	1,355	
8:45 AM	0	37	7	21	0	0	24	4	0	21	97	2	0	4	92	57	366	1,421	
9:00 AM	0	35	7	13	0	1	34	2	0	16	74	0	0	0	86	57	325	1,408	
9:15 AM	0	39	7	18	0	0	17	1	0	28	72	0	0	2	93	71	348	1,411	
9:30 AM	0	32	8	17	0	0	34	3	0	21	67	0	0	1	81	65	329	1,368	
9:45 AM	0	45	8	19	0	0	27	5	0	37	72	1	0	3	77	50	344	1,346	
Count Total	0	398	69	188	0	6	330	33	0	285	797	6	0	19	975	738	3,844	0	
Peak Hour	All	0	126	27	77	0	4	131	15	0	111	316	4	0	10	374	226	1,421	0
	HV	0	1	1	2	0	0	1	1	0	3	9	0	0	0	1	5	24	0
	HV%	-	1%	4%	3%	-	0%	1%	7%	-	3%	3%	0%	-	0%	0%	2%	2%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

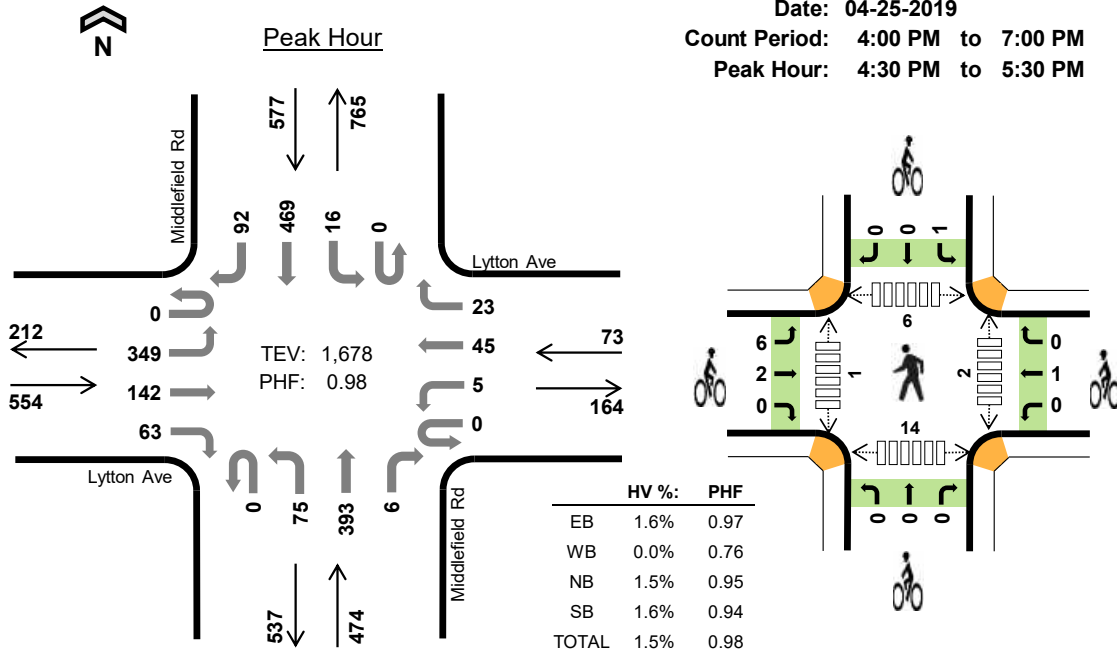
Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	3	4	7	1	1	2	1	5	1	1	0	1	3
7:15 AM	1	0	2	2	5	2	2	0	0	4	0	2	2	2	6
7:30 AM	1	0	2	0	3	1	1	3	0	5	0	0	0	1	1
7:45 AM	2	0	2	0	4	0	2	1	1	4	2	4	4	1	11
8:00 AM	1	0	6	1	8	1	1	0	0	2	2	1	2	4	9
8:15 AM	0	2	1	3	6	0	5	1	0	6	1	2	5	2	10
8:30 AM	0	0	1	1	2	1	4	1	0	6	1	0	4	1	6
8:45 AM	3	0	4	1	8	2	5	1	1	9	1	1	3	5	10
9:00 AM	2	0	0	1	3	2	6	2	1	11	3	1	4	3	11
9:15 AM	0	1	4	3	8	0	6	0	0	6	0	0	3	1	4
9:30 AM	1	2	2	2	7	1	1	0	0	2	0	0	0	0	0
9:45 AM	5	1	2	3	11	4	1	1	0	6	2	0	0	6	8
Count Total	16	6	29	21	72	15	35	12	4	66	13	12	27	27	79
Peak Hour	4	2	12	6	24	4	15	3	1	23	5	4	14	12	35

<b>Three-Hour Count Summaries - Heavy Vehicles</b>																			
Interval Start	Lytton Ave				Lytton Ave				Middlefield Rd				Middlefield Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	1	7	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	5	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	0
7:45 AM	0	0	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	4	19
8:00 AM	0	0	1	0	0	0	0	0	0	2	4	0	0	0	1	0	0	8	20
8:15 AM	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	3	6	21	
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2	20	
8:45 AM	0	1	0	2	0	0	0	0	0	1	3	0	0	0	0	1	8	24	
9:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	19	
9:15 AM	0	0	0	0	0	0	1	0	0	3	1	0	0	0	2	1	8	21	
9:30 AM	0	1	0	0	0	0	1	1	0	0	2	0	0	0	1	1	7	26	
9:45 AM	0	4	1	0	0	0	1	0	0	0	2	0	0	0	2	1	11	29	
Count Total	0	10	2	4	0	0	4	2	0	9	20	0	0	0	10	11	72	0	
Peak Hour	0	1	1	2	0	0	1	1	0	3	9	0	0	0	1	5	24	0	
<b>Three-Hour Count Summaries - Bikes</b>																			
Interval Start	Lytton Ave			Lytton Ave			Middlefield Rd			Middlefield Rd			15-min Total	Rolling One Hour					
	Eastbound			Westbound			Northbound			Southbound									
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT							
7:00 AM	0	1	0	0	1	0	1	1	0	0	1	0	5	0					
7:15 AM	1	1	0	0	2	0	0	0	0	0	0	0	4	0					
7:30 AM	1	0	0	0	1	0	1	2	0	0	0	0	5	0					
7:45 AM	0	0	0	0	1	1	1	0	0	0	1	0	4	18					
8:00 AM	0	1	0	0	1	0	0	0	0	0	0	0	2	15					
8:15 AM	0	0	0	0	5	0	0	1	0	0	0	0	6	17					
8:30 AM	0	1	0	0	4	0	0	1	0	0	0	0	6	18					
8:45 AM	0	1	1	0	5	0	1	0	0	0	0	1	9	23					
9:00 AM	2	0	0	0	6	0	2	0	0	1	0	0	11	32					
9:15 AM	0	0	0	0	5	1	0	0	0	0	0	0	6	32					
9:30 AM	1	0	0	0	1	0	0	0	0	0	0	0	2	28					
9:45 AM	4	0	0	0	1	0	0	1	0	0	0	0	6	25					
Count Total	9	5	1	0	33	2	6	6	0	1	2	1	66	0					
Peak Hour	0	3	1	0	15	0	1	2	0	0	0	1	23	0					
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																			

### Middlefield Rd Lytton Ave



Date: 04-25-2019  
 Count Period: 4:00 PM to 7:00 PM  
 Peak Hour: 4:30 PM to 5:30 PM



#### Three-Hour Count Summaries

Interval Start	Lytton Ave Eastbound				Lytton Ave Westbound				Middlefield Rd Northbound				Middlefield Rd Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:30 PM	0	89	35	16	0	2	12	4	0	22	102	0	0	4	107	29	422	0	
4:45 PM	0	91	39	13	0	1	9	2	0	18	88	1	0	4	121	18	405	0	
5:00 PM	0	84	36	17	0	1	10	8	0	16	107	2	0	5	115	20	421	0	
5:15 PM	0	85	32	17	0	1	14	9	0	19	96	3	0	3	126	25	430	1,678	
Peak Hour	All	0	349	142	63	0	5	45	23	0	75	393	6	0	16	469	92	1,678	0
	HV	0	7	1	1	0	0	0	0	0	7	0	0	0	2	7	25	0	0
	HV%	-	2%	1%	2%	-	0%	0%	0%	-	0%	2%	0%	-	0%	0%	8%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:30 PM	2	0	3	3	8	1	1	0	0	2	0	1	2	4	7
4:45 PM	2	0	2	1	5	3	0	0	0	3	2	0	4	4	10
5:00 PM	2	0	1	2	5	2	0	0	1	3	0	0	0	6	6
5:15 PM	3	0	1	3	7	2	0	0	0	2	0	0	0	0	0
Peak Hour	9	0	7	9	25	8	1	0	1	10	2	1	6	14	23

Three-Hour Count Summaries																			
Interval Start	Lytton Ave				Lytton Ave				Middlefield Rd				Middlefield Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	58	35	17	0	0	13	8	0	16	83	4	0	3	109	19	365	0	
4:15 PM	0	98	33	22	0	1	10	4	0	24	71	4	0	5	98	22	392	0	
<b>4:30 PM</b>	<b>0</b>	<b>89</b>	<b>35</b>	<b>16</b>	<b>0</b>	<b>2</b>	<b>12</b>	<b>4</b>	<b>0</b>	<b>22</b>	<b>102</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>107</b>	<b>29</b>	<b>422</b>	<b>0</b>	
4:45 PM	0	91	39	13	0	1	9	2	0	18	88	1	0	4	121	18	405	1,584	
5:00 PM	0	84	36	17	0	1	10	8	0	16	107	2	0	5	115	20	421	1,640	
<b>5:15 PM</b>	<b>0</b>	<b>85</b>	<b>32</b>	<b>17</b>	<b>0</b>	<b>1</b>	<b>14</b>	<b>9</b>	<b>0</b>	<b>19</b>	<b>96</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>126</b>	<b>25</b>	<b>430</b>	<b>1,678</b>	
5:30 PM	0	74	24	12	0	0	13	3	0	22	111	1	0	7	91	30	388	1,644	
5:45 PM	0	75	23	18	0	1	13	5	0	22	104	3	0	6	92	25	387	1,626	
6:00 PM	0	80	28	23	0	0	14	2	0	22	93	1	0	3	95	32	393	1,598	
6:15 PM	0	74	30	16	0	0	14	1	0	16	81	3	0	3	92	33	363	1,531	
6:30 PM	0	69	24	33	0	1	6	2	0	9	82	0	0	2	73	25	326	1,469	
6:45 PM	0	83	16	15	0	0	10	1	0	19	82	1	0	4	75	24	330	1,412	
Count Total	0	960	355	219	0	8	138	49	0	225	1,100	23	0	49	1,194	302	4,622	0	
Peak Hour	All	0	349	142	63	0	5	45	23	0	75	393	6	0	16	469	92	1,678	0
	HV	0	7	1	1	0	0	0	0	0	0	7	0	0	0	2	7	25	0
	HV%	-	2%	1%	2%	-	0%	0%	0%	-	0%	2%	0%	-	0%	0%	8%	1%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	2	0	1	1	4	1	1	0	1	3	0	1	2	2	5
4:15 PM	2	0	2	2	6	2	0	0	0	2	0	0	5	1	6
<b>4:30 PM</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>7</b>
4:45 PM	2	0	2	1	5	3	0	0	0	3	2	0	4	4	10
5:00 PM	2	0	1	2	5	2	0	0	1	3	0	0	0	6	6
<b>5:15 PM</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>7</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
5:30 PM	2	0	0	0	2	2	3	0	0	5	1	0	2	3	6
5:45 PM	1	0	1	3	5	3	0	0	1	4	5	1	5	5	16
6:00 PM	2	0	3	3	8	2	0	1	1	4	2	0	2	5	9
6:15 PM	1	0	0	3	4	4	3	1	1	9	1	3	1	5	10
6:30 PM	1	0	0	1	2	1	0	2	0	3	1	3	2	3	9
6:45 PM	0	0	1	0	1	4	1	0	2	7	1	0	0	7	8
Count Total	20	0	15	22	57	27	9	4	7	47	13	9	25	45	92
Peak Hour	9	0	7	9	25	8	1	0	1	10	2	1	6	14	23

Three-Hour Count Summaries - Heavy Vehicles																			
Interval Start	Lytton Ave				Lytton Ave				Middlefield Rd				Middlefield Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	4	0
4:15 PM	0	2	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	6	0
4:30 PM	0	1	1	0	0	0	0	0	0	0	0	3	0	0	0	1	2	8	0
4:45 PM	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	5	23
5:00 PM	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	5	24
5:15 PM	0	2	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2	7	25
5:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	19
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	2	5	19
6:00 PM	0	2	0	0	0	0	0	0	0	0	0	3	0	0	0	2	1	8	22
6:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	4	19
6:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	19
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	15
Count Total	0	16	2	2	0	0	0	0	0	0	2	13	0	0	0	7	15	57	0
Peak Hour	0	7	1	1	0	0	0	0	0	0	0	7	0	0	0	2	7	25	0
Three-Hour Count Summaries - Bikes																			
Interval Start	Lytton Ave			Lytton Ave			Middlefield Rd			Middlefield Rd			15-min Total	Rolling One Hour					
	Eastbound			Westbound			Northbound			Southbound									
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT							
4:00 PM	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	3	0		
4:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0		
4:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0		
4:45 PM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3	10		
5:00 PM	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	3	10		
5:15 PM	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	10		
5:30 PM	2	0	0	0	2	1	0	0	0	0	0	0	0	0	0	5	13		
5:45 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	4	14		
6:00 PM	2	0	0	0	0	0	0	0	0	1	0	0	0	1	0	4	15		
6:15 PM	1	3	0	0	2	1	0	0	0	1	0	0	0	1	0	9	22		
6:30 PM	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3	20		
6:45 PM	0	3	1	0	1	0	0	0	0	0	0	0	0	1	1	7	23		
Count Total	15	11	1	0	6	3	1	1	2	2	4	1	47	0					
Peak Hour	6	2	0	0	1	0	0	0	0	1	0	0	10	0					
Note: U-Turn volumes for bikes are included in Left-Turn, if any.																			



Location: 7 E BAYSHORE RD & DONOHOE ST AM

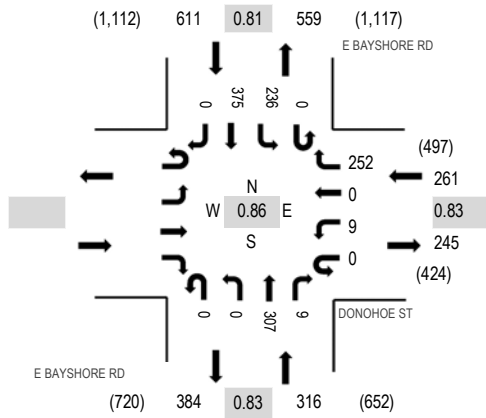
Date: Tuesday, May 21, 2019

Peak Hour: 07:00 AM - 08:00 AM

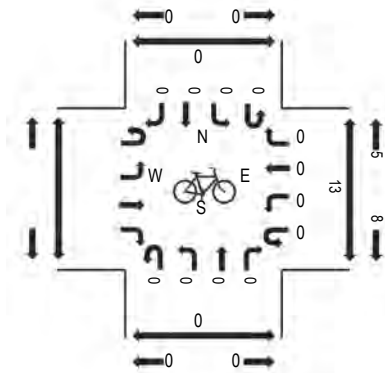
Peak 15-Minutes: 07:15 AM - 07:30 AM

(303) 216-2439  
www.alltrafficdata.net

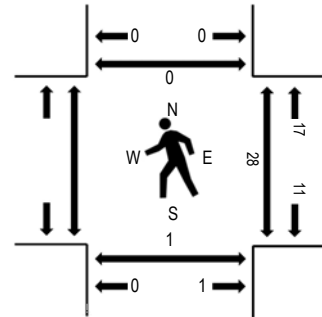
**Peak Hour - All Vehicles**



**Peak Hour - Bicycles**



**Peak Hour - Pedestrians**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	DONOHOE ST				E BAYSHORE RD				E BAYSHORE RD				Total	Rolling Hour	Pedestrian Crossings						
	Eastbound		Westbound		Northbound				Southbound						West	East	South	North			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right					
7:00 AM					0	3	0	62	0	0	91	3	0	46	104	0	309	1,188	9	0	0
7:15 AM					0	0	0	79	0	0	76	1	0	82	106	0	344	1,120	7	0	0
7:30 AM					0	4	0	64	0	0	74	1	0	59	87	0	289	1,038	4	0	0
7:45 AM					0	2	0	47	0	0	66	4	0	49	78	0	246	1,040	8	1	0
8:00 AM					0	3	0	44	0	0	67	2	0	47	78	0	241	1,073	4	0	0
8:15 AM					0	4	0	50	0	0	78	1	1	41	87	0	262		4	1	0
8:30 AM					0	0	0	68	0	0	100	1	0	44	78	0	291		2	0	0
8:45 AM					0	1	0	66	0	0	84	3	0	40	85	0	279		1	0	0

**Peak Rolling Hour Flow Rates**

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks					0	0	0	0	0	0	5	0	0	1	4	0	10
Bicycles on Road					0	0	0	0	0	0	0	0	0	0	0	0	0
Lights					0	9	0	246	0	0	292	6	0	226	353	0	1,132
Mediums					0	0	0	6	0	0	10	3	0	9	18	0	46
Total					0	9	0	252	0	0	307	9	0	236	375	0	1,188





Location: 7 E BAYSHORE RD & DONOHOE ST PM

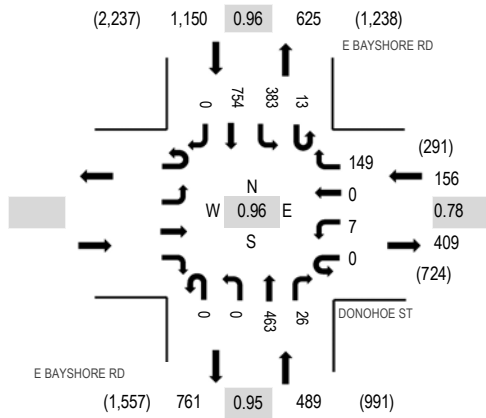
Date: Tuesday, May 21, 2019

Peak Hour: 04:45 PM - 05:45 PM

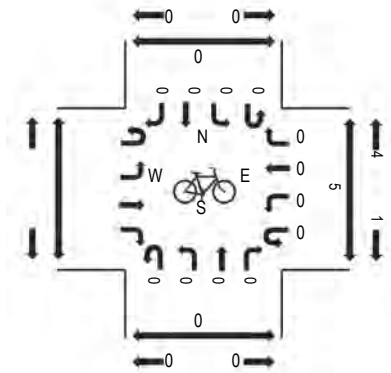
Peak 15-Minutes: 05:00 PM - 05:15 PM

(303) 216-2439  
www.alltrafficdata.net

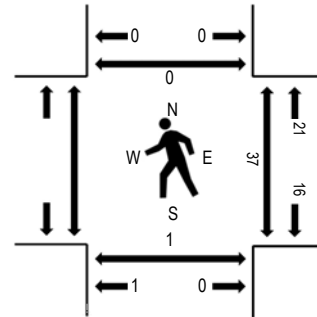
**Peak Hour - All Vehicles**



**Peak Hour - Bicycles**



**Peak Hour - Pedestrians**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	DONOHOE ST				E BAYSHORE RD				E BAYSHORE RD				Total	Rolling Hour	Pedestrian Crossings						
	Eastbound		Westbound		Northbound		Southbound		Northbound		Southbound				West	East	South	North			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right					
4:00 PM					0	2	0	29	0	0	134	8	3	71	198	0	445	1,742	7	0	0
4:15 PM					0	3	0	35	0	0	136	5	0	70	188	0	437	1,765	8	1	0
4:30 PM					0	0	0	35	0	0	120	7	1	73	187	0	423	1,768	17	0	0
4:45 PM					0	0	0	35	0	0	120	7	3	107	165	0	437	1,795	9	0	0
5:00 PM					0	1	0	38	0	0	118	5	3	95	208	0	468	1,777	11	0	0
5:15 PM					0	3	0	29	0	0	104	9	2	105	188	0	440		10	0	0
5:30 PM					0	3	0	47	0	0	121	5	5	76	193	0	450		7	1	0
5:45 PM					1	1	0	29	0	0	89	3	2	77	217	0	419		17	0	0

**Peak Rolling Hour Flow Rates**

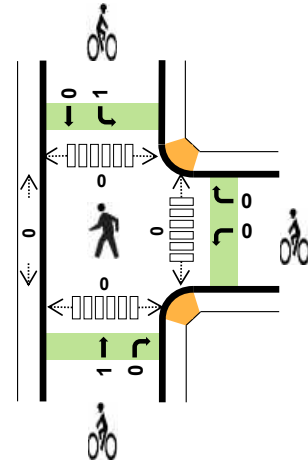
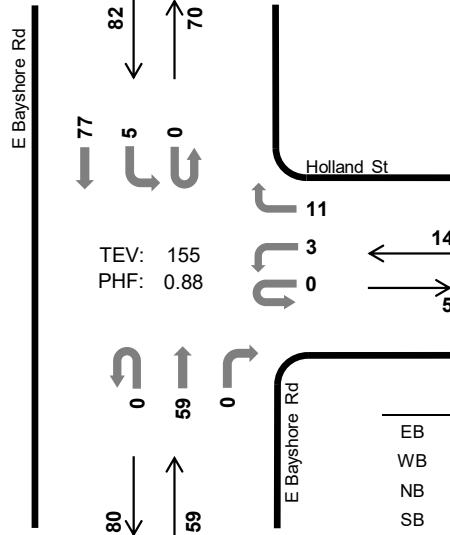
Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks					0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles on Road					0	0	0	0	0	0	0	0	0	0	0	0	0
Lights					0	7	0	147	0	0	461	23	12	379	753	0	1,782
Mediums					0	0	0	2	0	0	2	3	1	4	1	0	13
Total					0	7	0	149	0	0	463	26	13	383	754	0	1,795

### E Bayshore Rd Holland St



Peak Hour

Date: 06-05-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 8:00 AM to 9:00 AM



	HV %:	PHF
EB	-	-
WB	0.0%	0.70
NB	0.0%	0.78
SB	1.2%	0.85
TOTAL	0.6%	0.88

#### Three-Hour Count Summaries

Interval Start	n/a				Holland St				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
8:00 AM	0	0	0	0	0	1	0	3	0	0	16	0	0	3	21	0	44	0	
8:15 AM	0	0	0	0	0	0	0	3	0	0	19	0	0	0	21	0	43	0	
8:30 AM	0	0	0	0	0	1	0	1	0	0	12	0	0	1	16	0	31	0	
8:45 AM	0	0	0	0	0	1	0	4	0	0	12	0	0	1	19	0	37	155	
Peak Hour	All	0	0	0	0	0	3	0	11	0	0	59	0	0	5	77	0	155	0
	HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
	HV%	-	-	-	-	-	0%	-	0%	-	-	0%	-	-	0%	1%	-	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
8:00 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0
Peak Hour	0	0	0	1	1	0	0	1	1	2	0	0	0	0	0

Three-Hour Count Summaries																			
Interval Start	n/a				Holland St				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	0	0	3	0	0	8	0	0	2	20	0	33	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	17	0	0	0	18	0	35	0	
7:30 AM	0	0	0	0	0	0	0	9	0	0	7	0	0	0	17	0	33	0	
7:45 AM	0	0	0	0	0	1	0	6	1	0	15	0	0	0	5	0	28	129	
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>21</b>	<b>0</b>	<b>44</b>	<b>140</b>	
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>21</b>	<b>0</b>	<b>43</b>	<b>148</b>	
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>16</b>	<b>0</b>	<b>31</b>	<b>146</b>	
<b>8:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>19</b>	<b>0</b>	<b>37</b>	<b>155</b>	
9:00 AM	0	0	0	0	0	0	0	2	0	0	8	1	0	1	14	0	26	137	
9:15 AM	0	0	0	0	0	0	0	2	0	0	9	0	0	2	23	0	36	130	
9:30 AM	0	0	0	0	0	0	0	0	0	0	13	0	0	2	14	0	29	128	
9:45 AM	0	0	0	0	0	0	0	0	0	0	10	0	0	4	9	0	23	114	
Count Total	0	0	0	0	0	4	0	33	1	0	146	1	0	16	197	0	398	0	
Peak Hour	All	0	0	0	0	0	3	0	11	0	0	59	0	0	5	77	0	155	0
	HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
	HV%	-	-	-	-	-	0%	-	0%	-	-	0%	-	-	0%	1%	-	1%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	1	0	1	0	0	2	0	2	2	0	0	0	2
7:15 AM	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>8:30 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>8:45 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
9:00 AM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
9:30 AM	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0
9:45 AM	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0
Count Total	0	1	4	5	10	0	2	5	2	9	2	0	0	0	2
Peak Hr	0	0	0	1	1	0	0	1	1	2	0	0	0	0	0

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Holland St				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	2	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	7
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>7</b>
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
9:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2
Count Total	0	0	0	0	0	0	0	1	0	0	4	0	0	0	5	0	10	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0

Three-Hour Count Summaries - Bikes																	
Interval Start	n/a			Holland St			E Bayshore Rd			E Bayshore Rd			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<b>8:00 AM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	2	2
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	3
9:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	4	4
9:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	5	5
9:45 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	5	5
Count Total	0	0	0	0	0	0	2	0	5	0	1	1	0	9	9	0	0
Peak Hour	0	0	0	0	0	0	0	0	1	0	1	0	0	2	2	0	0

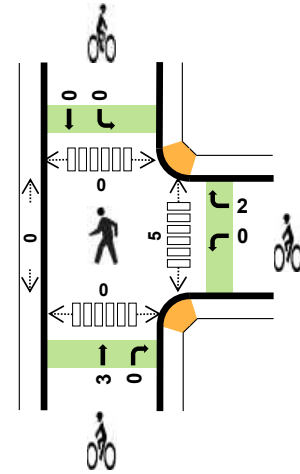
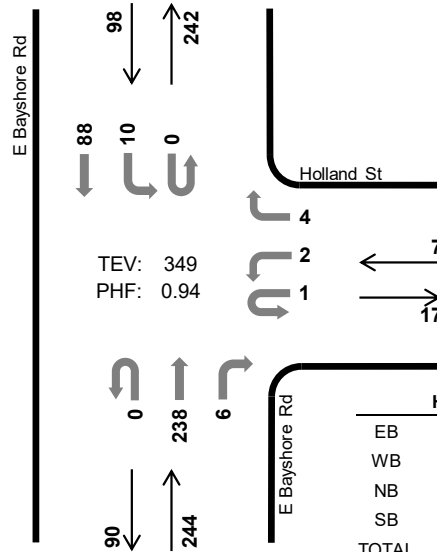
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### E Bayshore Rd Holland St



Peak Hour

Date: 06-05-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 5:30 PM to 6:30 PM



	HV %:	PHF
EB	-	-
WB	0.0%	0.44
NB	0.0%	0.92
SB	1.0%	0.74
TOTAL	0.3%	0.94

#### Three-Hour Count Summaries

Interval Start	n/a				Holland St				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
5:30 PM	0	0	0	0	0	0	0	1	0	0	61	2	0	2	23	0	89	0	
5:45 PM	0	0	0	0	0	0	0	0	0	0	57	2	0	3	14	0	76	0	
6:00 PM	0	0	0	0	0	0	0	2	0	0	64	2	0	3	20	0	91	0	
6:15 PM	0	0	0	0	1	2	0	1	0	0	56	0	0	2	31	0	93	349	
Peak Hour	All	0	0	0	0	1	2	0	4	0	0	238	6	0	10	88	0	349	0
	HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
	HV%	-	-	-	-	0%	0%	-	0%	-	-	0%	0%	-	0%	1%	-	0%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
5:30 PM	0	0	0	0	0	0	1	1	0	2	3	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1
6:15 PM	0	0	0	1	1	0	0	1	0	1	1	0	0	0	1
Peak Hour	0	0	0	1	1	0	2	3	0	5	5	0	0	0	5

Three-Hour Count Summaries																			
Interval Start	n/a				Holland St				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	1	0	0	2	0	0	24	3	0	5	20	0	55	0	
4:15 PM	0	0	0	0	0	0	0	2	0	0	37	7	0	3	20	0	69	0	
4:30 PM	0	0	0	0	0	0	0	2	0	0	49	3	1	6	28	0	89	0	
4:45 PM	0	0	0	0	0	0	0	2	0	0	51	0	0	0	17	0	70	283	
5:00 PM	0	0	0	0	0	1	0	4	0	0	58	0	0	0	12	0	75	303	
5:15 PM	0	0	0	0	0	0	0	3	0	0	52	0	0	1	14	0	70	304	
5:30 PM	0	0	0	0	0	0	0	1	0	0	61	2	0	2	23	0	89	304	
5:45 PM	0	0	0	0	0	0	0	0	0	0	57	2	0	3	14	0	76	310	
6:00 PM	0	0	0	0	0	0	0	2	0	0	64	2	0	3	20	0	91	326	
6:15 PM	0	0	0	0	1	2	0	1	0	0	56	0	0	2	31	0	93	349	
6:30 PM	0	0	0	0	0	0	0	0	0	0	39	1	0	3	26	0	69	329	
6:45 PM	0	0	0	0	0	0	0	5	0	0	44	0	0	3	21	0	73	326	
Count Total	0	0	0	0	2	3	0	24	0	0	592	20	1	31	246	0	919	0	
Peak Hour	All	0	0	0	0	1	2	0	4	0	0	238	6	0	10	88	0	349	0
	HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
	HV%	-	-	-	-	0%	0%	-	0%	-	-	0%	0%	-	0%	1%	-	0%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	1	1	0	2	3	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1
6:15 PM	0	0	0	1	1	0	0	1	0	1	1	0	0	0	1
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Count Total	0	0	0	1	1	0	3	3	5	11	5	0	0	0	5
Peak Hr	0	0	0	1	1	0	2	3	0	5	5	0	0	0	5

<b>Three-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	n/a				Holland St				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	

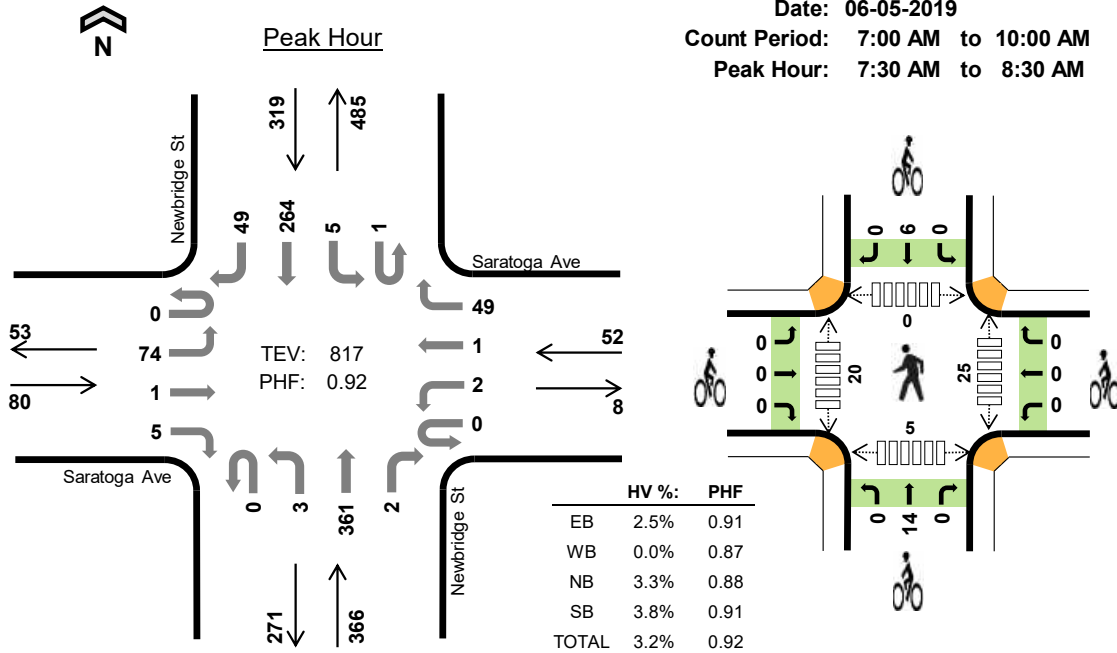
<b>Three-Hour Count Summaries - Bikes</b>																	
Interval Start	n/a			Holland St			E Bayshore Rd			E Bayshore Rd			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:30 PM	0	0	0	0	0	0	0	0	0	1	2	0	3	0	0	0	
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	4	0	4	
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	5	0	5	
<b>5:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>4</b>	
<b>5:45 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>0</b>	<b>4</b>	
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>5</b>	
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>0</b>	<b>5</b>	
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	
6:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	3	0	3	
Count Total	0	0	0	0	0	3	0	3	0	1	4	0	11	0	0	0	
Peak Hour	0	0	0	0	0	2	0	3	0	0	0	0	5	0	0	0	

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### Newbridge St Saratoga Ave



Date: 06-05-2019  
 Count Period: 7:00 AM to 10:00 AM  
 Peak Hour: 7:30 AM to 8:30 AM



#### Three-Hour Count Summaries

Interval Start	Saratoga Ave Eastbound				Saratoga Ave Westbound				Newbridge St Northbound				Newbridge St Southbound				15-min Total	Rolling One Hour	
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:30 AM	0	19	1	2	0	1	0	11	0	0	89	0	1	0	60	10	194	0	
7:45 AM	0	18	0	1	0	1	0	14	0	2	89	1	0	2	66	7	201	0	
8:00 AM	0	19	0	1	0	0	0	11	0	0	81	0	0	2	68	18	200	0	
8:15 AM	0	18	0	1	0	0	1	13	0	1	102	1	0	1	70	14	222	817	
Peak Hour	All	0	74	1	5	0	2	1	49	0	3	361	2	1	5	264	49	817	0
	HV	0	2	0	0	0	0	0	0	0	0	12	0	0	0	10	2	26	0
	HV%	-	3%	0%	0%	-	0%	0%	0%	-	0%	3%	0%	0%	0%	4%	4%	3%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:30 AM	1	0	3	5	9	0	0	3	2	5	3	1	0	0	4
7:45 AM	0	0	4	4	8	0	0	3	1	4	8	8	0	0	16
8:00 AM	1	0	2	3	6	0	0	3	0	3	3	7	0	2	12
8:15 AM	0	0	3	0	3	0	0	5	3	8	11	4	0	3	18
Peak Hour	2	0	12	12	26	0	0	14	6	20	25	20	0	5	50



Three-Hour Count Summaries																			
Interval Start	Saratoga Ave				Saratoga Ave				Newbridge St				Newbridge St				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	10	0	0	0	0	0	4	0	0	88	0	0	2	49	17	170	0	
7:15 AM	0	20	0	3	0	0	2	12	0	0	89	1	0	1	45	7	180	0	
<b>7:30 AM</b>	<b>0</b>	<b>19</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>89</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>60</b>	<b>10</b>	<b>194</b>	<b>0</b>	
7:45 AM	0	18	0	1	0	1	0	14	0	2	89	1	0	2	66	7	201	745	
8:00 AM	0	19	0	1	0	0	0	11	0	0	81	0	0	2	68	18	200	775	
<b>8:15 AM</b>	<b>0</b>	<b>18</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>13</b>	<b>0</b>	<b>1</b>	<b>102</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>70</b>	<b>14</b>	<b>222</b>	<b>817</b>	
8:30 AM	0	27	1	2	0	0	1	6	0	0	76	2	0	3	58	14	190	813	
8:45 AM	0	15	1	0	0	0	0	3	0	1	81	1	0	3	61	10	176	788	
9:00 AM	0	13	0	0	0	0	0	7	0	0	62	2	0	2	67	14	167	755	
9:15 AM	0	11	1	0	0	0	2	5	0	1	51	1	0	0	63	18	153	686	
9:30 AM	0	6	0	1	0	1	0	1	0	1	51	0	0	2	41	13	117	613	
9:45 AM	0	12	1	0	0	1	0	2	0	0	53	3	1	1	56	12	142	579	
Count Total	0	188	5	11	0	4	6	89	0	6	912	12	2	19	704	154	2,112	0	
Peak Hour	All	0	74	1	5	0	2	1	49	0	3	361	2	1	5	264	49	817	0
	HV	0	2	0	0	0	0	0	0	0	0	12	0	0	0	10	2	26	0
	HV%	-	3%	0%	0%	-	0%	0%	0%	-	0%	3%	0%	0%	0%	4%	4%	3%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	1	0	6	3	10	0	0	2	1	3	5	2	0	0	7
7:15 AM	1	0	5	4	10	0	0	0	0	0	9	3	0	2	14
<b>7:30 AM</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>5</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	
7:45 AM	0	0	4	4	8	0	0	3	1	4	8	8	0	0	16
8:00 AM	1	0	2	3	6	0	0	3	0	3	3	7	0	2	12
<b>8:15 AM</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>8</b>	<b>11</b>	<b>4</b>	<b>0</b>	<b>3</b>	<b>18</b>
8:30 AM	0	0	2	2	4	1	0	8	0	9	3	3	0	0	6
8:45 AM	0	0	2	2	4	0	0	3	4	7	6	0	0	0	6
9:00 AM	0	0	2	2	4	1	0	6	2	9	8	1	0	1	10
9:15 AM	0	0	4	4	8	2	0	4	1	7	2	2	0	0	4
9:30 AM	1	0	1	2	4	0	0	1	1	2	9	0	0	0	9
9:45 AM	1	1	1	1	4	0	0	2	0	2	6	3	0	1	10
Count Total	6	1	35	32	74	4	0	40	15	59	73	34	0	9	116
Peak Hour	2	0	12	12	26	0	0	14	6	20	25	20	0	5	50

<b>Three-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	Saratoga Ave				Saratoga Ave				Newbridge St				Newbridge St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	1	0	0	0	0	0	0	0	0	6	0	0	0	3	0	10	0
7:15 AM	0	1	0	0	0	0	0	0	0	0	5	0	0	0	4	0	10	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	3	0	0	0	5	0	9	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	3	1	8	37
8:00 AM	0	1	0	0	0	0	0	0	0	0	2	0	0	0	2	1	6	33
8:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	26
8:30 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	21
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	17
9:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	15
9:15 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	8	20
9:30 AM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	1	4	20
9:45 AM	0	1	0	0	0	1	0	0	0	0	1	0	0	0	1	0	4	20
Count Total	0	5	0	1	0	1	0	0	0	0	35	0	0	0	29	3	74	0
Peak Hour	0	2	0	0	0	0	0	0	0	0	12	0	0	0	10	2	26	0

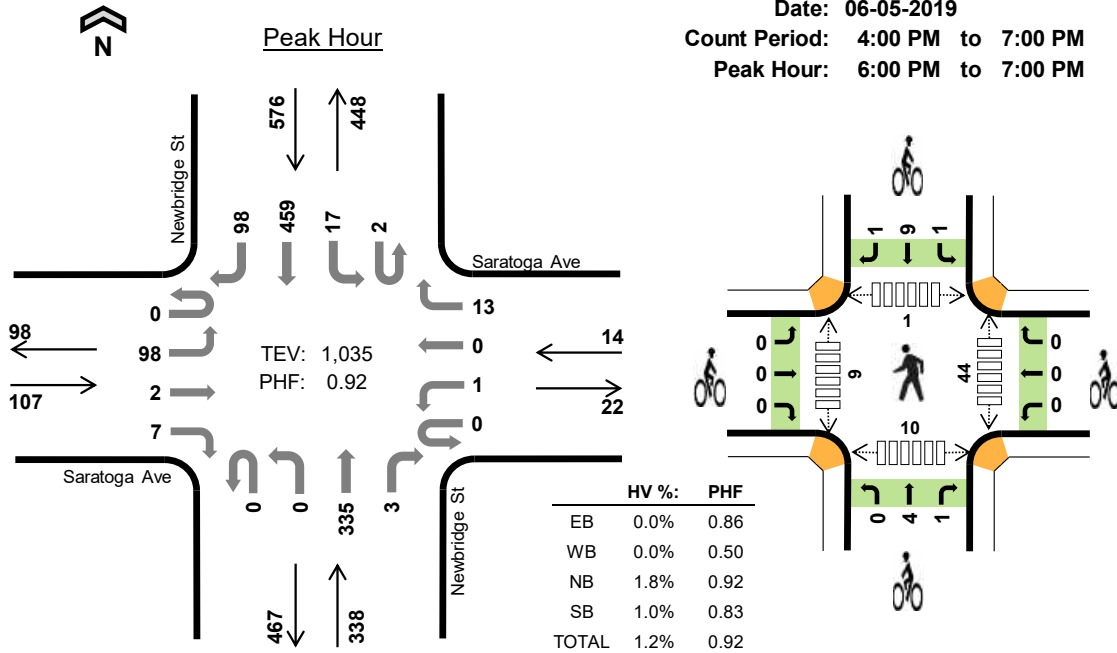
<b>Three-Hour Count Summaries - Bikes</b>																	
Interval Start	Saratoga Ave			Saratoga Ave			Newbridge St			Newbridge St			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
7:00 AM	0	0	0	0	0	0	0	2	0	0	1	0	3	0			
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
7:30 AM	0	0	0	0	0	0	0	3	0	0	2	0	5	0			
7:45 AM	0	0	0	0	0	0	0	3	0	0	1	0	4	12			
8:00 AM	0	0	0	0	0	0	0	3	0	0	0	0	3	12			
8:15 AM	0	0	0	0	0	0	0	5	0	0	3	0	8	20			
8:30 AM	1	0	0	0	0	0	0	8	0	0	0	0	9	24			
8:45 AM	0	0	0	0	0	0	0	3	0	0	4	0	7	27			
9:00 AM	0	0	1	0	0	0	0	6	0	0	1	1	9	33			
9:15 AM	2	0	0	0	0	0	0	4	0	0	1	0	7	32			
9:30 AM	0	0	0	0	0	0	0	1	0	0	0	1	2	25			
9:45 AM	0	0	0	0	0	0	0	2	0	0	0	0	2	20			
Count Total	3	0	1	0	0	0	0	40	0	0	13	2	59	0			
Peak Hour	0	0	0	0	0	0	0	14	0	0	6	0	20	0			

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### Newbridge St Saratoga Ave



Date: 06-05-2019  
 Count Period: 4:00 PM to 7:00 PM  
 Peak Hour: 6:00 PM to 7:00 PM



#### Three-Hour Count Summaries

Interval Start	Saratoga Ave				Saratoga Ave				Newbridge St				Newbridge St				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
6:00 PM	0	23	0	2	0	0	0	1	0	0	90	2	0	3	93	19	233	0	
6:15 PM	0	25	1	1	0	0	0	3	0	0	89	0	1	4	112	27	263	0	
6:30 PM	0	30	1	0	0	0	0	3	0	0	73	0	1	5	143	24	280	0	
6:45 PM	0	20	0	4	0	1	0	6	0	0	83	1	0	5	111	28	259	1,035	
Peak Hour	All	0	98	2	7	0	1	0	13	0	0	335	3	2	17	459	98	1,035	0
	HV	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	0	12	0
	HV%	-	0%	0%	0%	-	0%	-	0%	-	-	2%	0%	0%	0%	1%	0%	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
6:00 PM	0	0	1	2	3	0	0	1	3	4	13	3	0	5	21
6:15 PM	0	0	2	2	4	0	0	2	2	4	11	1	0	3	15
6:30 PM	0	0	1	0	1	0	0	0	4	4	5	5	1	1	12
6:45 PM	0	0	2	2	4	0	0	2	2	4	15	0	0	1	16
Peak Hour	0	0	6	6	12	0	0	5	11	16	44	9	1	10	64

Three-Hour Count Summaries																			
Interval Start	Saratoga Ave				Saratoga Ave				Newbridge St				Newbridge St				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	13	3	1	0	1	1	1	0	0	65	0	0	2	105	21	213	0	
4:15 PM	0	20	3	0	0	1	0	2	0	2	79	3	1	2	92	22	227	0	
4:30 PM	0	27	2	1	0	0	1	0	0	0	96	1	1	0	81	25	235	0	
4:45 PM	0	24	0	1	0	1	2	0	0	0	100	1	0	1	70	13	213	888	
5:00 PM	0	28	1	3	0	1	1	4	0	1	99	4	0	2	49	10	203	878	
5:15 PM	0	24	2	3	0	0	1	6	0	0	111	2	0	0	83	18	250	901	
5:30 PM	0	17	3	4	0	0	0	6	0	2	91	2	0	4	96	22	247	913	
5:45 PM	0	27	1	1	0	0	0	5	0	0	107	5	0	0	88	13	247	947	
<b>6:00 PM</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>90</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>93</b>	<b>19</b>	<b>233</b>	<b>977</b>	
<b>6:15 PM</b>	<b>0</b>	<b>25</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>89</b>	<b>0</b>	<b>1</b>	<b>4</b>	<b>112</b>	<b>27</b>	<b>263</b>	<b>990</b>	
<b>6:30 PM</b>	<b>0</b>	<b>30</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>73</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>143</b>	<b>24</b>	<b>280</b>	<b>1,023</b>	
<b>6:45 PM</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>83</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>111</b>	<b>28</b>	<b>259</b>	<b>1,035</b>	
Count Total	0	278	17	21	0	5	6	37	0	5	1,083	21	4	28	1,123	242	2,870	0	
Peak Hour	All	0	98	2	7	0	1	0	13	0	0	335	3	2	17	459	98	1,035	0
	HV	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	0	12	0
	HV%	-	0%	0%	0%	-	0%	-	0%	-	-	2%	0%	0%	0%	1%	0%	1%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	3	1	4	0	0	4	1	5	8	1	0	3	12
4:15 PM	0	0	3	5	8	0	0	3	1	4	11	7	0	7	25
4:30 PM	0	0	2	2	4	0	1	0	2	3	8	0	0	0	8
4:45 PM	0	0	3	1	4	0	0	0	2	2	4	3	0	1	8
5:00 PM	0	0	2	1	3	0	0	1	0	1	12	8	0	5	25
5:15 PM	0	0	3	2	5	0	0	3	7	10	11	6	0	7	24
5:30 PM	0	0	5	5	10	1	0	2	1	4	6	5	0	2	13
5:45 PM	0	0	2	2	4	1	0	3	4	8	10	1	0	1	12
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>13</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>21</b>
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>11</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>15</b>
<b>6:30 PM</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>12</b>
<b>6:45 PM</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>16</b>
Count Total	0	0	29	25	54	2	1	21	29	53	114	40	1	36	191
Peak Hour	0	0	6	6	12	0	0	5	11	16	44	9	1	10	64

<b>Three-Hour Count Summaries - Heavy Vehicles</b>																		
Interval Start	Saratoga Ave				Saratoga Ave				Newbridge St				Newbridge St				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	4	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	5	0	8	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	4	20
5:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	19
5:15 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	2	0	5	16
5:30 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0	10	22
5:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	22
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>22</b>
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>21</b>
<b>6:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>12</b>
<b>6:45 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>12</b>
Count Total	0	0	0	0	0	0	0	0	0	0	29	0	0	0	25	0	54	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	0	12	0
<b>Three-Hour Count Summaries - Bikes</b>																		
Interval Start	Saratoga Ave			Saratoga Ave			Newbridge St			Newbridge St			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	4	0	0	1	0	5	0				
4:15 PM	0	0	0	0	0	0	0	2	1	0	1	0	4	0				
4:30 PM	0	0	0	1	0	0	0	0	0	0	2	0	3	0				
4:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	2	14				
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	10				
5:15 PM	0	0	0	0	0	0	0	3	0	0	6	1	10	16				
5:30 PM	1	0	0	0	0	0	0	2	0	1	0	0	4	17				
5:45 PM	1	0	0	0	0	0	0	3	0	0	4	0	8	23				
<b>6:00 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>26</b>				
<b>6:15 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>20</b>				
<b>6:30 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>20</b>				
<b>6:45 PM</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>16</b>				
Count Total	2	0	0	1	0	0	0	0	19	2	2	25	2	53	0			
Peak Hour	0	0	0	0	0	0	0	0	4	1	1	9	1	16	0			
<i>Note: U-Turn volumes for bikes are included in Left-Turn, if any.</i>																		



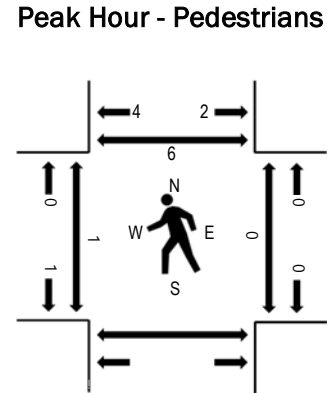
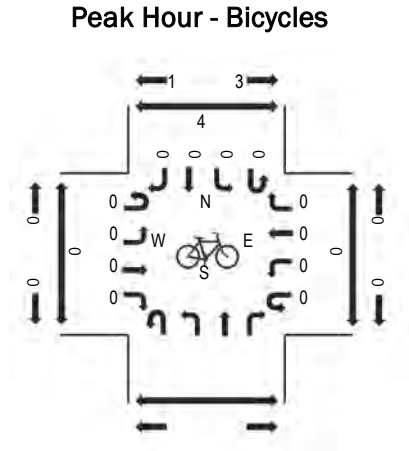
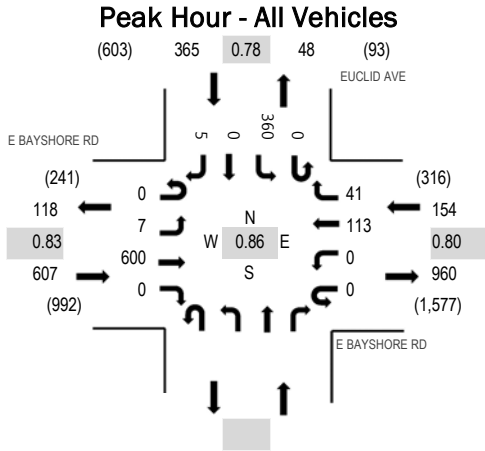
(303) 216-2439  
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Location: 5 EUCLID AVE & E BAYSHORE RD AM

Date: Tuesday, May 21, 2019

Peak Hour: 07:00 AM - 08:00 AM

Peak 15-Minutes: 07:15 AM - 07:30 AM



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	E BAYSHORE RD Eastbound				E BAYSHORE RD Westbound				EUCLID AVE Northbound				EUCLID AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
7:00 AM	0	1	124	0	0	0	29	13	0	90	0	2	259	1,126	1	0	2					
7:15 AM	0	5	165	0	0	0	37	4	0	115	0	2	328	1,051	0	0	3					
7:30 AM	0	0	183	0	0	0	20	12	0	101	0	0	316	924	0	0	1					
7:45 AM	0	1	128	0	0	0	27	12	0	54	0	1	223	802	0	0	0					
8:00 AM	0	2	95	0	0	0	34	17	0	35	0	1	184	785	0	0	4					
8:15 AM	0	0	103	0	0	0	32	10	0	55	0	1	201		0	0	0					
8:30 AM	0	0	95	0	0	0	21	8	0	70	0	0	194		0	0	2					
8:45 AM	0	0	90	0	0	0	32	8	0	74	0	2	206		0	0	0					

**Peak Rolling Hour Flow Rates**

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	0	0	0	1	0	0	0	1			
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Lights	0	7	589	0	0	0	110	37	0	348	0	5	1,096				
Mediums	0	0	11	0	0	0	3	4	0	11	0	0	29				
Total	0	7	600	0	0	0	113	41	0	360	0	5	1,126				



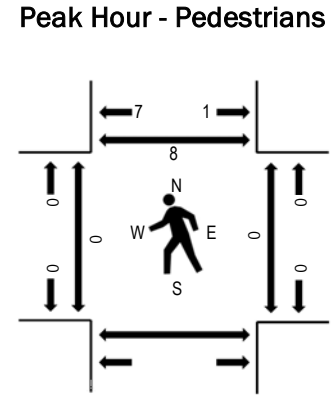
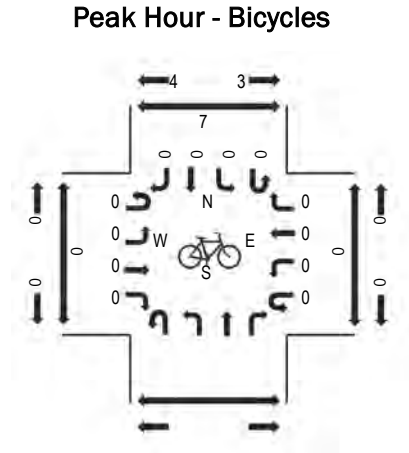
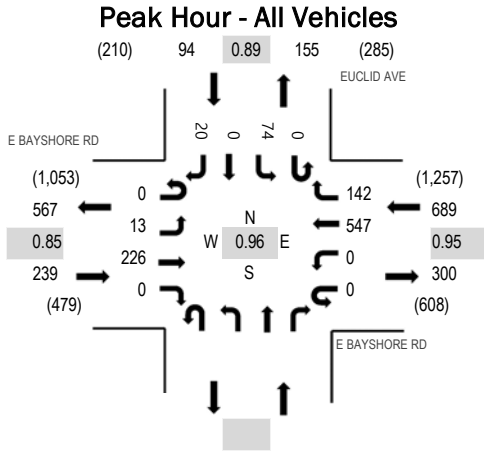
(303) 216-2439  
www.alltrafficdata.net

Location: 5 EUCLID AVE & E BAYSHORE RD PM

Date: Tuesday, May 21, 2019

Peak Hour: 04:45 PM - 05:45 PM

Peak 15-Minutes: 05:15 PM - 05:30 PM



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	E BAYSHORE RD Eastbound				E BAYSHORE RD Westbound				EUCLID AVE Northbound				EUCLID AVE Southbound				Total	Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right			West	East	South	North
4:00 PM	0	5	52	0	0	0	110	22					0	23	0	4	216	924	0	0	1	
4:15 PM	0	5	57	0	0	0	108	31					0	22	0	10	233	963	0	0	1	
4:30 PM	0	3	45	0	0	0	118	31					0	25	0	6	228	995	0	0	2	
4:45 PM	0	5	58	0	0	0	128	32					0	19	0	5	247	1,022	0	0	2	
5:00 PM	0	2	49	0	0	0	138	39					0	17	0	10	255	1,022	0	0	4	
5:15 PM	0	5	59	0	0	0	146	35					0	18	0	2	265		0	0	2	
5:30 PM	0	1	60	0	0	0	135	36					0	20	0	3	255		0	0	0	
5:45 PM	0	9	64	0	0	0	124	24					0	20	0	6	247		0	0	3	

**Peak Rolling Hour Flow Rates**

Vehicle Type	Eastbound				Westbound				Northbound				Southbound				Total
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	
Articulated Trucks	0	0	0	0	0	0	1	0					0	0	0	0	1
Bicycles on Road	0	0	0	0	0	0	0	0					0	0	0	0	0
Lights	0	13	224	0	0	0	540	137					0	73	0	20	1,007
Mediums	0	0	2	0	0	0	6	5					0	1	0	0	14
Total	0	13	226	0	0	0	547	142					0	74	0	20	1,022



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Location: 1 E BAYSHORE RD & CLARKE AVE AM

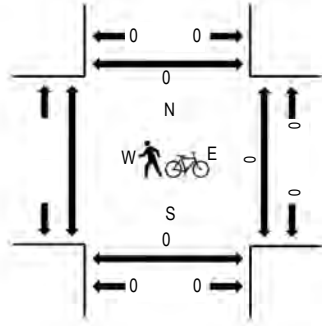
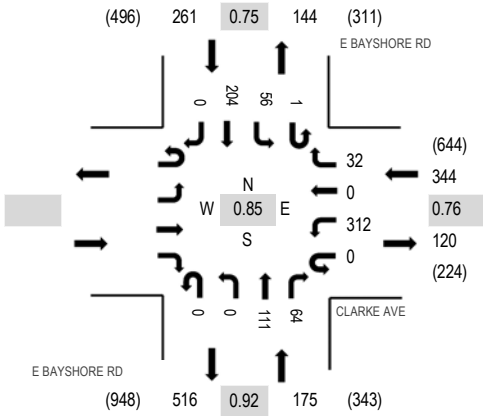
Date: Tuesday, September 25, 2018

Peak Hour: 07:15 AM - 08:15 AM

Peak 15-Minutes: 07:15 AM - 07:30 AM

**Peak Hour - All Vehicles**

**Peak Hour - Pedestrians/Bicycles on Crosswalk**



Note: Total study counts contained in parentheses.

**Traffic Counts**

Interval Start Time	CLARKE AVE				E BAYSHORE RD				E BAYSHORE RD				Total	Rolling Hour	Pedestrian Crossings						
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right			West	East	South	North			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right					U-Turn	Left					Thru	Right	
7:00 AM					0	46	0	10	0	0	29	6	0	4	60	0	155	766	0	0	0
7:15 AM					0	72	0	12	0	0	35	19	0	13	78	0	229	780	0	0	0
7:30 AM					0	105	0	8	0	0	27	8	1	9	60	0	218	721	0	0	0
7:45 AM					0	68	0	7	0	0	20	22	0	16	31	0	164	691	0	0	0
8:00 AM					0	67	0	5	0	0	29	15	0	18	35	0	169	717	0	0	0
8:15 AM					0	54	0	13	0	0	33	17	0	20	33	0	170		5	0	0
8:30 AM					0	71	0	12	0	0	34	13	0	16	42	0	188		0	0	0
8:45 AM					0	84	0	10	0	0	26	10	0	18	42	0	190		2	0	0
Count Total					0	567	0	77	0	0	233	110	1	114	381	0	1,483		7	0	0
Peak Hour					0	312	0	32	0	0	111	64	1	56	204	0	780		0	0	0





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Location: 1 E BAYSHORE RD & CLARKE AVE PM

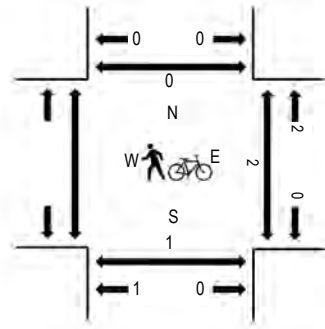
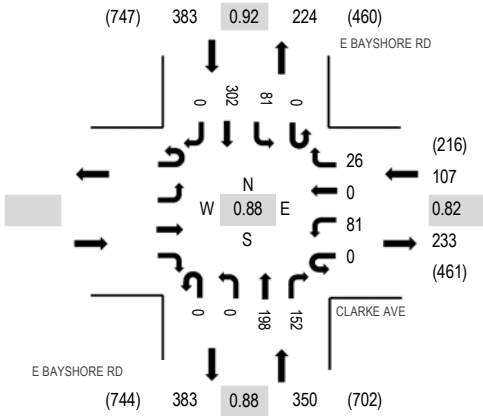
Date: Tuesday, September 25, 2018

Peak Hour: 04:00 PM - 05:00 PM

Peak 15-Minutes: 04:15 PM - 04:30 PM

Peak Hour - All Vehicles

Peak Hour - Pedestrians/Bicycles on Crosswalk



Note: Total study counts contained in parentheses.

Traffic Counts

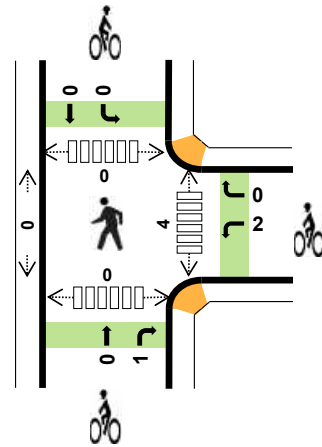
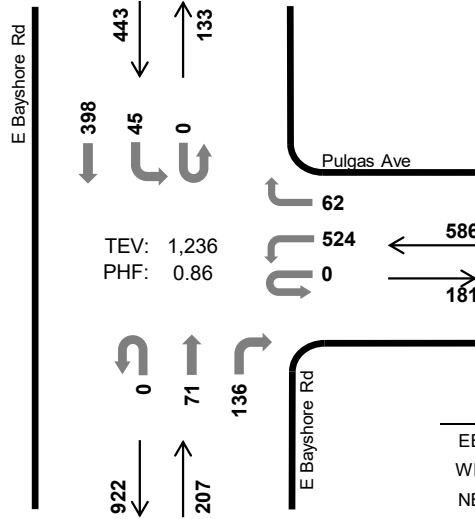
Interval Start Time	CLARKE AVE				E BAYSHORE RD				E BAYSHORE RD				Total	Rolling Hour	Pedestrian Crossings						
	Eastbound		Westbound		Northbound		Southbound		U-Turn	Left	Thru	Right			West	East	South	North			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right					U-Turn	Left					Thru	Right	
4:00 PM					0	11	0	9	0	0	45	39	0	18	81	0	203	840	0	0	0
4:15 PM					0	29	0	5	0	0	62	40	0	25	79	0	240	821	1	0	0
4:30 PM					0	18	0	8	0	0	46	41	0	24	73	0	210	823	1	0	0
4:45 PM					0	23	0	4	0	0	45	32	0	14	69	0	187	807	0	0	0
5:00 PM					0	21	0	4	0	0	54	37	0	13	55	0	184	825	1	0	0
5:15 PM					0	25	0	7	0	0	59	40	0	17	94	0	242		1	0	0
5:30 PM					0	20	0	6	0	0	45	28	0	28	67	0	194		0	0	0
5:45 PM					0	18	0	8	0	0	53	36	0	29	61	0	205		1	0	0
Count Total					0	165	0	51	0	0	409	293	0	168	579	0	1,665		5	0	0
Peak Hour					0	81	0	26	0	0	198	152	0	81	302	0	840		2	0	0

### E Bayshore Rd Pulgas Ave



Peak Hour

Date: 06-05-2019  
Count Period: 7:00 AM to 10:00 AM  
Peak Hour: 7:00 AM to 8:00 AM



	HV %:	PHF
EB	-	-
WB	1.0%	0.89
NB	2.4%	0.78
SB	1.1%	0.84
TOTAL	1.3%	0.86

#### Three-Hour Count Summaries

Interval Start	n/a				Pulgas Ave				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	133	0	17	0	0	15	26	0	10	87	0	288	0	
7:15 AM	0	0	0	0	0	142	0	19	0	0	19	47	0	17	115	0	359	0	
7:30 AM	0	0	0	0	0	147	0	17	0	0	16	31	0	8	106	0	325	0	
7:45 AM	0	0	0	0	0	102	0	9	0	0	21	32	0	10	90	0	264	1,236	
Peak Hour	All	0	0	0	0	0	524	0	62	0	0	71	136	0	45	398	0	1,236	0
	HV	0	0	0	0	0	5	0	1	0	0	4	1	0	4	1	0	16	0
	HV%	-	-	-	-	-	1%	-	2%	-	-	6%	1%	-	9%	0%	-	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	1	2	4	0	1	0	0	1	0	0	0	0	0
7:15 AM	0	1	1	1	3	0	1	0	0	1	0	0	0	0	0
7:30 AM	0	3	1	0	4	0	0	0	0	0	1	0	0	0	1
7:45 AM	0	1	2	2	5	0	0	1	0	1	3	0	0	0	3
Peak Hour	0	6	5	5	16	0	2	1	0	3	4	0	0	0	4

Three-Hour Count Summaries																			
Interval Start	n/a				Pulgas Ave				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	133	0	17	0	0	15	26	0	10	87	0	288	0	
7:15 AM	0	0	0	0	0	142	0	19	0	0	19	47	0	17	115	0	359	0	
7:30 AM	0	0	0	0	0	147	0	17	0	0	16	31	0	8	106	0	325	0	
7:45 AM	0	0	0	0	0	102	0	9	0	0	21	32	0	10	90	0	264	1,236	
8:00 AM	0	0	0	0	0	103	0	17	0	0	32	31	0	9	85	0	277	1,225	
8:15 AM	0	0	0	0	1	101	0	12	0	0	28	29	0	10	93	0	274	1,140	
8:30 AM	0	0	0	0	0	114	0	17	0	0	36	38	0	17	125	0	347	1,162	
8:45 AM	0	0	0	0	0	108	0	18	0	0	32	25	0	17	105	0	305	1,203	
9:00 AM	0	0	0	0	0	88	0	7	0	0	29	34	0	17	99	0	274	1,200	
9:15 AM	0	0	0	0	0	89	0	11	0	0	35	28	0	22	97	0	282	1,208	
9:30 AM	0	0	0	0	0	102	0	10	0	0	33	34	0	7	89	0	275	1,136	
9:45 AM	0	0	0	0	0	82	0	19	0	0	36	31	0	5	100	0	273	1,104	
Count Total	0	0	0	0	1	1,311	0	173	0	0	332	386	0	149	1,191	0	3,543	0	
Peak Hour	All	0	0	0	0	0	524	0	62	0	0	71	136	0	45	398	0	1,236	0
	HV	0	0	0	0	0	5	0	1	0	0	4	1	0	4	1	0	16	0
	HV%	-	-	-	-	-	1%	-	2%	-	-	6%	1%	-	9%	0%	-	1%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	1	1	2	4	0	1	0	0	1	0	0	0	0	0
7:15 AM	0	1	1	1	3	0	1	0	0	1	0	0	0	0	0
7:30 AM	0	3	1	0	4	0	0	0	0	0	1	0	0	0	1
7:45 AM	0	1	2	2	5	0	0	1	0	1	3	0	0	0	3
8:00 AM	0	2	1	1	4	0	1	0	1	2	0	0	0	0	0
8:15 AM	0	3	0	3	6	0	1	1	0	2	0	0	0	0	0
8:30 AM	0	1	1	0	2	0	1	0	2	3	1	0	0	0	1
8:45 AM	0	1	1	4	6	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	1	0	2	3	0	0	1	0	1	2	0	0	0	2
9:15 AM	0	2	1	2	5	0	1	1	1	3	0	0	0	0	0
9:30 AM	0	4	2	1	7	0	0	1	0	1	0	0	0	0	0
9:45 AM	0	1	1	1	3	0	0	1	2	3	1	0	0	0	1
Count Total	0	21	12	19	52	0	6	6	6	18	8	0	0	0	8
Peak Hr	0	6	5	5	16	0	2	1	0	3	4	0	0	0	4

Three-Hour Count Summaries - Heavy Vehicles																			
Interval Start	n/a				Pulgas Ave				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	1	0	4	0
7:15 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	0	3	0
7:30 AM	0	0	0	0	0	2	0	1	0	0	0	1	0	0	0	0	0	4	0
7:45 AM	0	0	0	0	0	1	0	0	0	0	0	1	1	0	2	0	0	5	16
8:00 AM	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	1	0	4	16
8:15 AM	0	0	0	0	0	2	0	1	0	0	0	0	0	0	2	1	0	6	19
8:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2	17
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2	2	0	6	18
9:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	3	17
9:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	0	1	1	0	5	16
9:30 AM	0	0	0	0	0	3	0	1	0	0	0	0	2	0	0	1	0	7	21
9:45 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	3	18
Count Total	0	0	0	0	0	15	0	6	0	0	7	5	0	10	9	0	52	0	
Peak Hour	0	0	0	0	0	5	0	1	0	0	4	1	0	4	1	0	16	0	

Three-Hour Count Summaries - Bikes																		
Interval Start	n/a			Pulgas Ave			E Bayshore Rd			E Bayshore Rd			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	2	4
8:15 AM	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	5
8:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	3	8
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
9:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	6
9:15 AM	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	3	7
9:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	5
9:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3	8
Count Total	0	0	0	5	0	1	0	0	3	3	0	6	0	0	0	0	18	0
Peak Hour	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	0	3	0

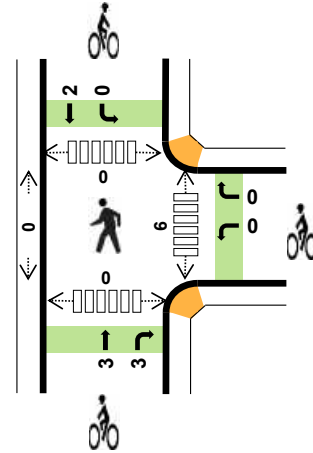
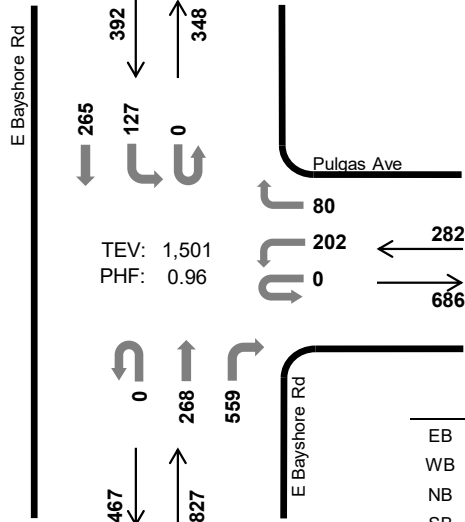
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

### E Bayshore Rd Pulgas Ave



Peak Hour

Date: 06-05-2019  
Count Period: 4:00 PM to 7:00 PM  
Peak Hour: 4:00 PM to 5:00 PM



	HV %:	PHF
EB	-	-
WB	0.7%	0.97
NB	1.1%	0.97
SB	0.8%	0.92
TOTAL	0.9%	0.96

#### Three-Hour Count Summaries

Interval Start	n/a				Pulgas Ave				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour	
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	53	0	13	0	0	82	128	0	38	57	0	371	0	
4:15 PM	0	0	0	0	0	50	0	22	0	0	65	149	0	27	79	0	392	0	
4:30 PM	0	0	0	0	0	49	0	22	0	0	55	156	0	33	56	0	371	0	
4:45 PM	0	0	0	0	0	50	0	23	0	0	66	126	0	29	73	0	367	1,501	
Peak Hour	All	0	0	0	0	0	202	0	80	0	0	268	559	0	127	265	0	1,501	0
	HV	0	0	0	0	0	0	0	2	0	0	1	8	0	3	0	0	14	0
	HV%	-	-	-	-	-	0%	-	3%	-	-	0%	1%	-	2%	0%	-	1%	0

Note: For all three-hour count summary, see next page.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	2	1	4	0	0	1	0	1	0	0	0	0	0
4:15 PM	0	0	4	1	5	0	0	2	0	2	1	0	0	0	1
4:30 PM	0	1	3	0	4	0	0	1	1	2	4	0	0	0	4
4:45 PM	0	0	0	1	1	0	0	2	1	3	1	0	0	0	1
Peak Hour	0	2	9	3	14	0	0	6	2	8	6	0	0	0	6

Three-Hour Count Summaries														15-min Total	Rolling One Hour				
Interval Start	n/a				Pulgas Ave				E Bayshore Rd				E Bayshore Rd						
	Eastbound				Westbound				Northbound				Southbound						
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	0	0	0	53	0	13	0	0	82	128	0	38	57	0	371	0	
4:15 PM	0	0	0	0	0	50	0	22	0	0	65	149	0	27	79	0	392	0	
4:30 PM	0	0	0	0	0	49	0	22	0	0	55	156	0	33	56	0	371	0	
4:45 PM	0	0	0	0	0	50	0	23	0	0	66	126	0	29	73	0	367	1,501	
5:00 PM	0	0	0	0	0	62	0	17	0	0	72	136	0	21	58	0	366	1,496	
5:15 PM	0	0	0	0	0	57	0	29	0	0	77	125	0	26	66	0	380	1,484	
5:30 PM	0	0	0	0	0	53	0	23	0	0	64	137	0	25	50	0	352	1,465	
5:45 PM	0	0	0	0	0	44	0	18	0	0	62	152	0	29	46	0	351	1,449	
6:00 PM	0	0	0	0	0	51	0	20	0	0	67	145	0	23	51	0	357	1,440	
6:15 PM	0	0	0	0	0	41	0	19	0	0	66	146	0	35	48	0	355	1,415	
6:30 PM	0	0	0	0	0	51	0	20	0	0	67	130	0	27	42	0	337	1,400	
6:45 PM	0	0	0	0	0	50	0	12	0	0	78	132	0	46	34	0	352	1,401	
Count Total	0	0	0	0	0	611	0	238	0	0	821	1,662	0	359	660	0	4,351	0	
Peak Hour	All	0	0	0	0	0	202	0	80	0	0	268	559	0	127	265	0	1,501	0
	HV	0	0	0	0	0	0	0	2	0	0	1	8	0	3	0	0	14	0
	HV%	-	-	-	-	-	0%	-	3%	-	-	0%	1%	-	2%	0%	-	1%	0

Note: Three-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	1	2	1	4	0	0	1	0	1	0	0	0	0	0
4:15 PM	0	0	4	1	5	0	0	2	0	2	1	0	0	0	1
4:30 PM	0	1	3	0	4	0	0	1	1	2	4	0	0	0	4
4:45 PM	0	0	0	1	1	0	0	2	1	3	1	0	0	0	1
5:00 PM	0	1	0	0	1	0	0	1	1	2	1	0	0	0	1
5:15 PM	0	1	1	0	2	0	0	1	1	2	3	0	0	0	3
5:30 PM	0	1	0	0	1	0	1	3	1	5	5	0	0	0	5
5:45 PM	0	1	1	1	3	0	0	2	0	2	2	0	0	0	2
6:00 PM	0	1	2	0	3	0	1	0	1	2	1	0	0	0	1
6:15 PM	0	0	1	1	2	0	0	1	0	1	0	0	0	0	0
6:30 PM	0	1	2	0	3	0	0	0	2	2	8	0	0	0	8
6:45 PM	0	0	1	1	2	0	0	0	0	0	2	0	0	0	2
Count Total	0	8	17	6	31	0	2	14	8	24	28	0	0	0	28
Peak Hr	0	2	9	3	14	0	0	6	2	8	6	0	0	0	6

Three-Hour Count Summaries - Heavy Vehicles																		
Interval Start	n/a				Pulgas Ave				E Bayshore Rd				E Bayshore Rd				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	2	0	1	0	0	4	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	3	0	1	0	0	5	0
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	4	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	14
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	11
5:15 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	8
5:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	5
5:45 PM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	3	7
6:00 PM	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	3	9
6:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	9
6:30 PM	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	3	11
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	10
Count Total	0	0	0	0	0	3	0	5	0	0	4	13	0	5	1	0	31	0
Peak Hour	0	0	0	0	0	0	0	2	0	0	1	8	0	3	0	0	14	0

Three-Hour Count Summaries - Bikes																	
Interval Start	n/a			Pulgas Ave			E Bayshore Rd			E Bayshore Rd			15-min Total	Rolling One Hour			
	Eastbound			Westbound			Northbound			Southbound							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT					
4:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
4:15 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0
4:30 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	0
4:45 PM	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	3	8
5:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	9
5:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2	9
5:30 PM	0	0	0	1	0	0	0	0	3	0	0	0	1	0	0	5	12
5:45 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	11
6:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2	11
6:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	10
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	7
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Count Total	0	0	0	2	0	0	0	0	10	4	0	8	0	0	0	24	0
Peak Hour	0	0	0	0	0	0	0	0	3	3	0	2	0	0	0	8	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Appendix B**  
**Willow Road Microsimulation**





## Memorandum

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**Date:** September 16, 2020  
**To:** Kirsten Chapman, ICF International  
**From:** Trisha Dudala, Ollie Zhou  
**Subject:** Willow Village – Willow Road Traffic Operations Analysis

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## Introduction

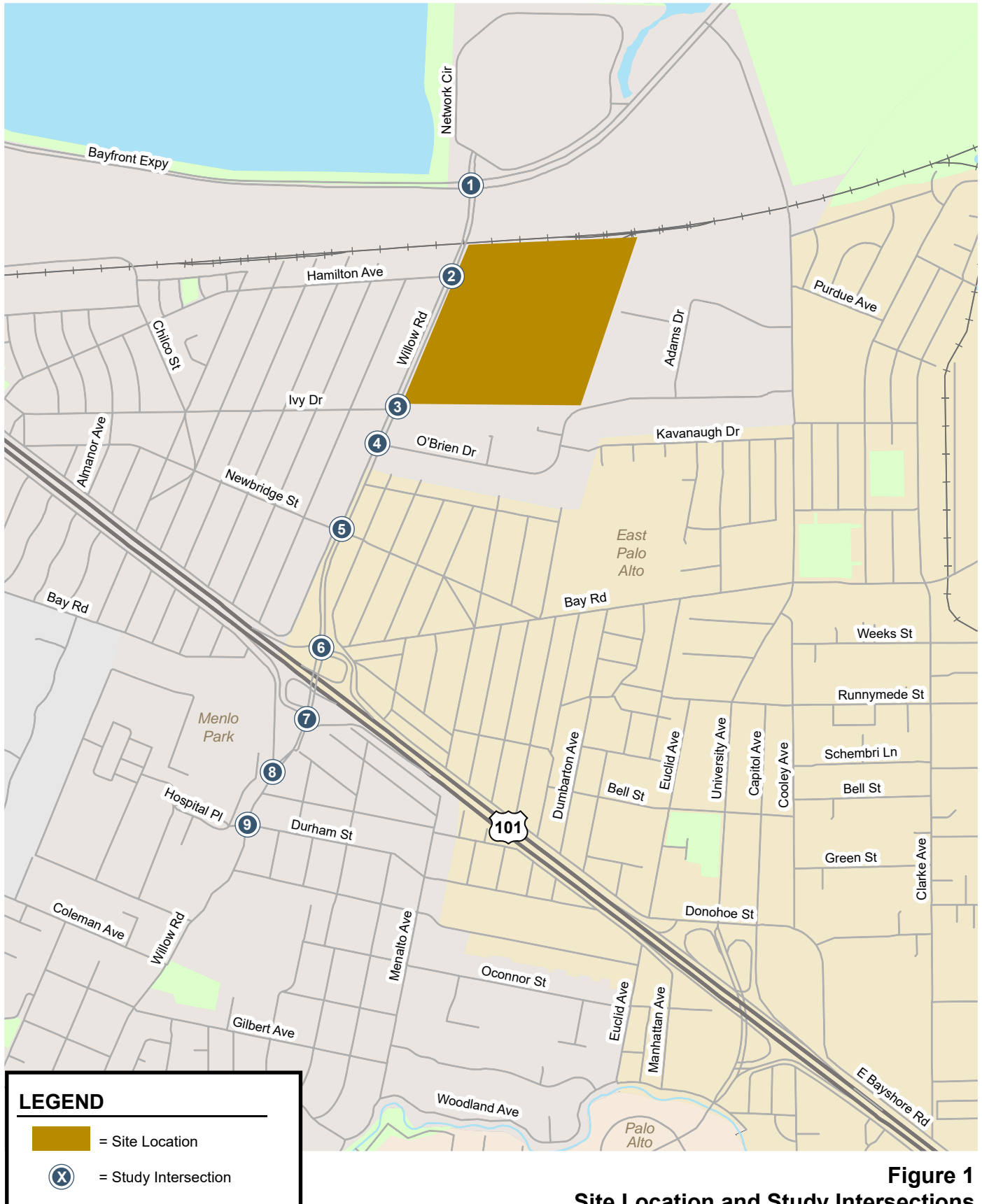
This report presents the results of the corridor study conducted along Willow Road between Bayfront Expressway to the north and Durham Road to the south in the City of Menlo Park, California. The objective of the study was to quantify peak hour intersection operations taking into consideration the effect of vehicular queueing on Willow Road. Presented in this report are the results of a detailed analysis of the existing traffic operations at intersections along Willow Road. A map of the study area is shown on Figure 1.

## Scope of Study

This study was conducted for the purpose of documenting existing traffic operations along Willow Road. This corridor study includes an analysis of weekday AM (7-10 AM) and PM (4-7 PM) peak hour traffic conditions for the following nine signalized intersections along Willow Road. These intersections are shown on Figure 1.

## Study Intersections

1. Bayfront Expressway & Willow Road
2. Hamilton Avenue & Willow Road
3. Ivy Drive & Willow Road
4. O'Brien Drive & Willow Road
5. Newbridge Street & Willow Road
6. US 101 NB Ramps & Willow Road
7. US 101 SB Ramps & Willow Road
8. Bay Road & Willow Road
9. Hospital Plaza/Durham Street & Willow Road



**Figure 1**  
Site Location and Study Intersections

## Data Collection

Hexagon collected existing roadway geometry, peak hour intersection turning movement volumes, travel time runs and intersection queuing characteristics within the study area during March and April 2019. Most traffic congestion in the study area was observed to occur during the morning (7:00 – 10:00 AM) and evening (4:00 – 7:00 PM) peak commute hours. It is noted that during the time when the traffic counts were conducted, the US 101 improvements at the Willow Road interchange were not fully constructed. The existing conditions analysis was calibrated and validated based on the March/April 2019 lane geometry, traffic counts and field observations of queuing in the study area, when the US 101 interchange improvements were still under construction. Since then, US 101 interchange improvements at Willow Road have been completed. The lane geometry at the study intersections are shown on Figure 2.

### Intersection Turning Movements Counts

Traffic counts at the study intersections were not all conducted on the same day. Intersection turning movements counts at the intersections of Bayfront/Willow and Bay/Willow were conducted on April 23, 2019 for both the AM and PM peak hour durations. AM and PM peak hour turning movement counts for intersections at Hamilton/Willow, Ivy/Willow, O'Brien/Willow and Newbridge/Willow were conducted on March 21<sup>st</sup>, 2019. AM and PM peak hour turning movement counts at the US 101 NB/Willow and US 101/SB Willow intersections were conducted on March 13, 2019. AM and PM peak hour traffic counts at the Durham/Willow intersection were conducted on April 16, 2019.

The AM peak hour turning movement vehicular volumes at all study intersections are shown on Figure 3 and the PM peak hour turning movement vehicular volumes (occurring between 5:00 – 6:00pm) are shown on Figure 4 for all study intersections.

### Demand Volumes

As discussed below, field observations showed that queuing occurs for some turning movements, particularly during the PM peak period along the Willow Road corridor. The vehicles in queue represent unserved demand during the peak hour periods. In order to account for the unserved demand, turning movements counts at all study intersections along the corridor were balanced, and the turning movement volumes were adjusted by adding the number of queued vehicles to the count volumes. The number of queued vehicles were calculated based on how far vehicular queues extended on the roadways during some cycles observed during the peak hour. The demand volumes are also shown on Figure 3 and Figure 4.

## Field Observations

Hexagon conducted field observations of traffic congestion and vehicle queuing at the study intersections during the AM and PM peak periods in March 2019. Field observations showed that some operational problems currently occur during the peak commute hours. These problems are described below.

### Willow Road and Bayfront Expressway

During the AM peak hour, the eastbound left-turn queue exceeded the storage length. The eastbound left-turn traffic encroached into the closest eastbound through lane. The eastbound left-turn traffic required more than one cycle to clear the intersection. The northbound left-turn was observed to back up traffic (possibly) due to the westbound red light at the Willow Road/Hamilton Avenue intersection. This backup caused the westbound through lane to wait to clear the Willow

Road/Bayfront Expressway intersection until there was room to clear the intersection. The westbound through lane occasionally required more than one cycle to clear the intersection.

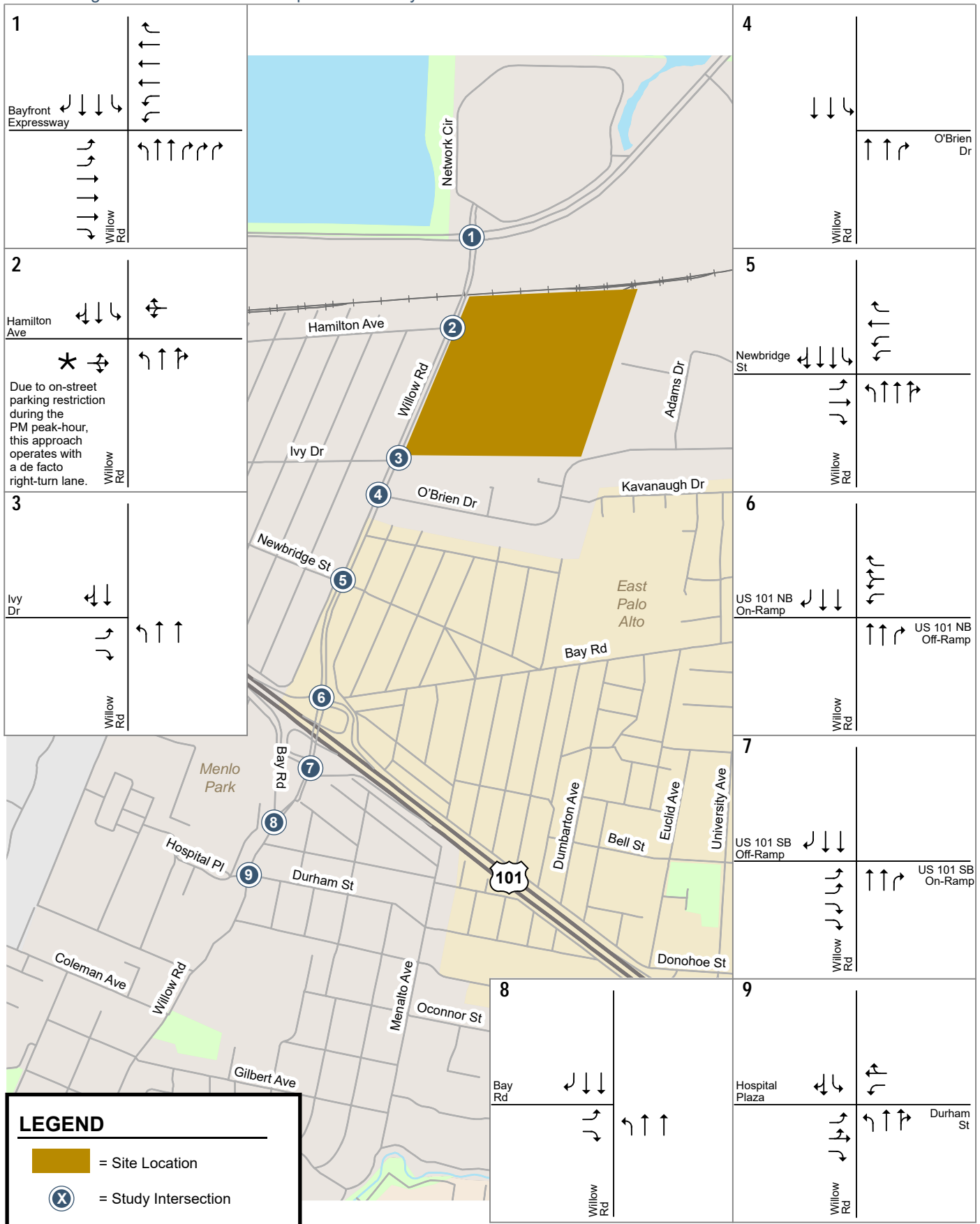
During the PM peak hour, the eastbound right-turn queue exceeded the storage length and spilled into the nearest through lane. The eastbound right-turn lane occasionally required more than one cycle to clear the intersection.

### **Willow Road between Hamilton Avenue and Hospital Plaza/Durham Street**

During the AM peak hour, there was heavy demand on westbound Willow Road along this corridor. Westbound vehicles often required multiple cycles to clear an intersection. As a result, the southbound right-turn and northbound left-turn movements on the side streets turning onto westbound Willow Road also required multiple cycles to clear the intersection. The westbound queue was usually able to clear at the Willow Road/Durham Street intersection due to the long through phase. The eastbound left-turn movement at the Newbridge Street intersection received heavy demand and occasionally required two signal cycles to clear. Vehicles at the US 101 northbound off-ramp turning right onto eastbound Willow Road frequently queued onto the auxiliary lane on US 101 and required multiple cycles to clear.

During the PM peak hour, there was heavy demand on eastbound Willow Road along this corridor. Eastbound vehicles often required multiple cycles to clear an intersection. As a result, the northbound right-turn and southbound left-turn movements on the side streets turning onto eastbound Willow Road also required multiple cycles to clear the intersection. The westbound left-turn movement at the Hamilton Avenue intersection received heavy demand that often required two signal cycles to clear. Vehicles at the US 101 northbound off-ramp turning right onto eastbound Willow Road frequently queued onto the auxiliary lane on US 101 and required multiple cycles to clear. Vehicles at the US 101 southbound off-ramp turning left onto eastbound Willow Road were often impacted by eastbound spillback queues and were observed to block the westbound through movement. The southbound left-turn queue extended onto US 101 southbound and impacted freeway operations.

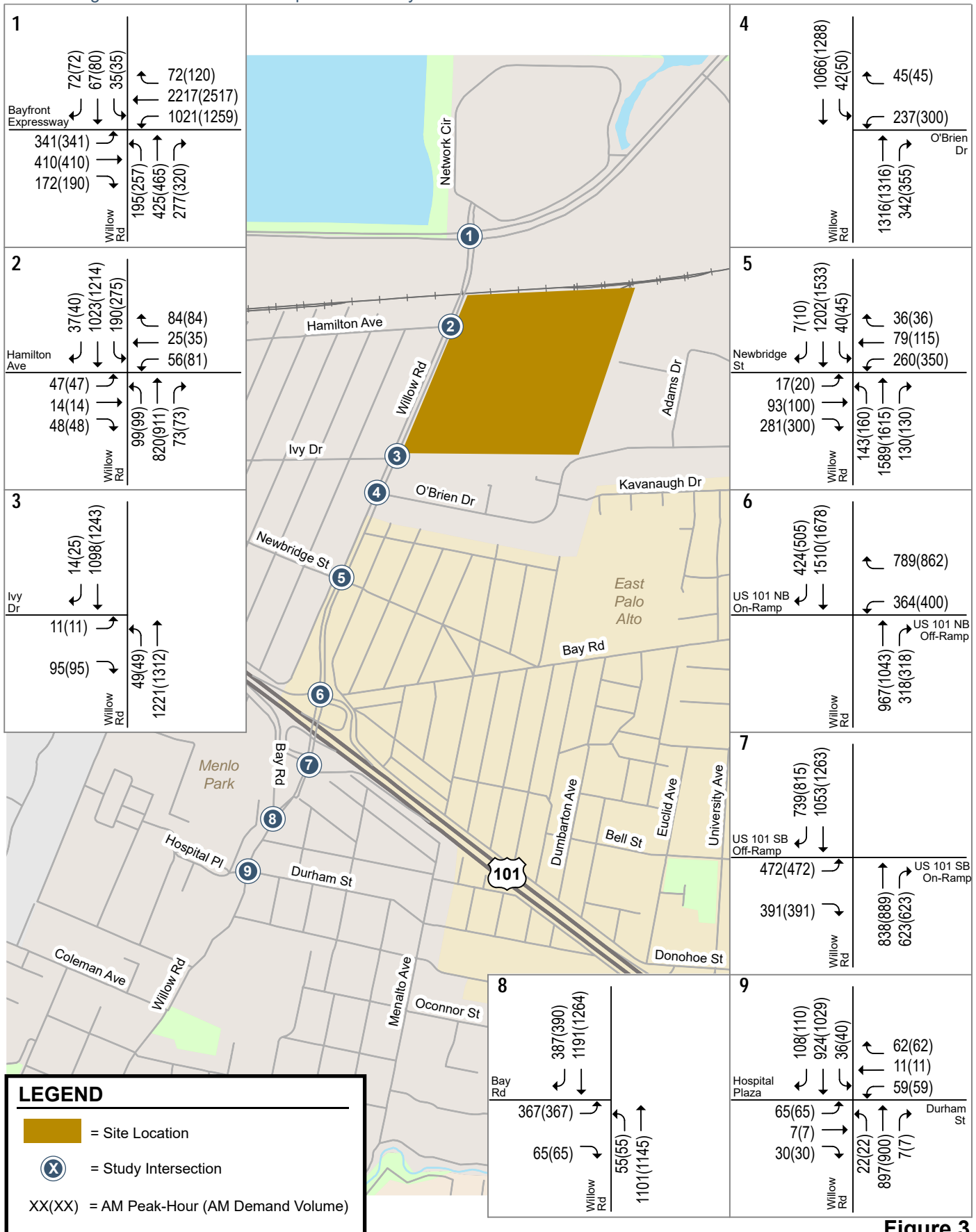
Willow Village - Willow Road Traffic Operations Analysis



**Figure 2**  
Existing Lane Geometry

Note: April 2019 Lane Geometry

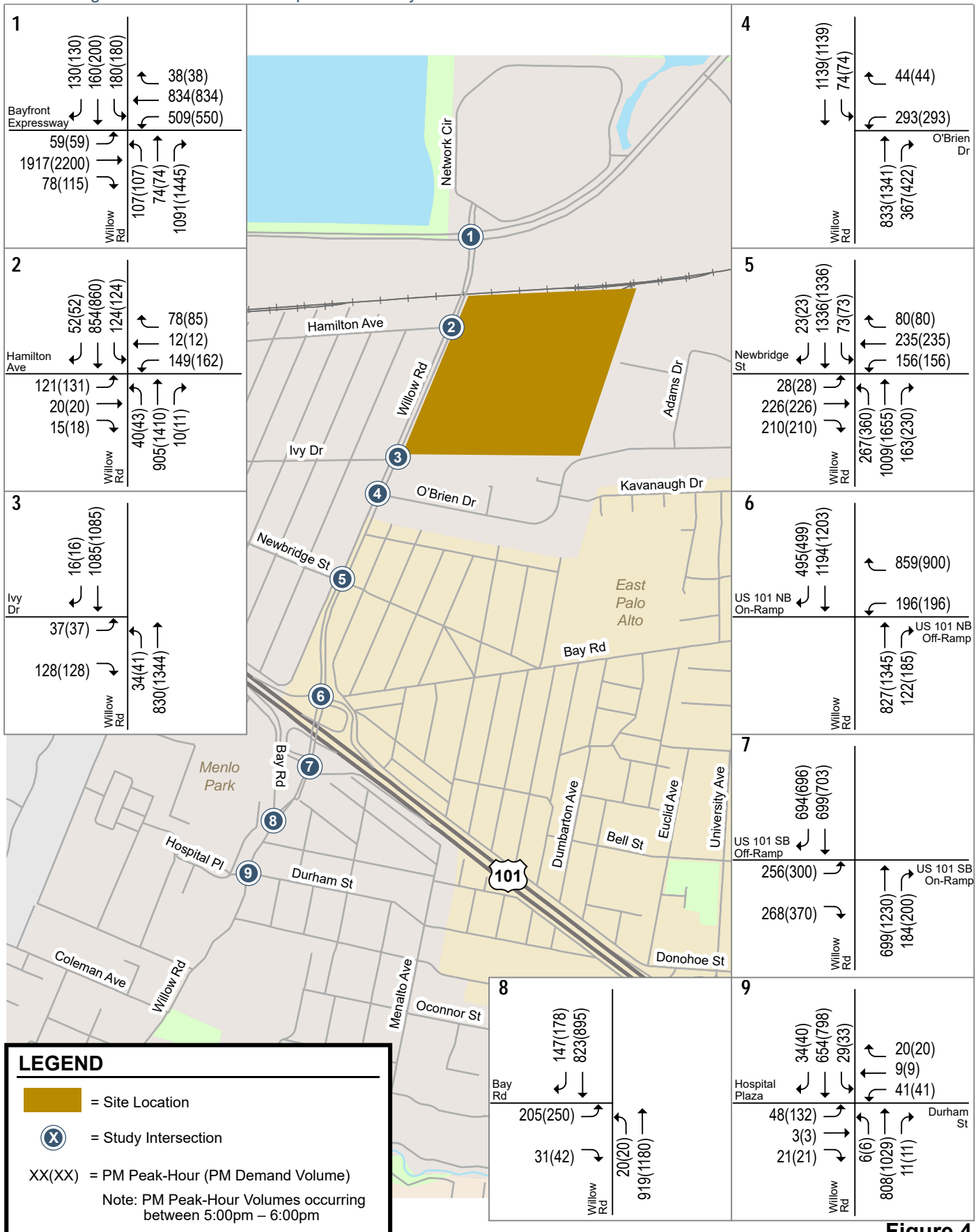
Willow Village - Willow Road Traffic Operations Analysis



**Figure 3**  
AM Peak-Hour Volumes

Note: March/April 2019 Counts

Willow Village - Willow Road Traffic Operations Analysis



**Figure 4**  
PM Peak-Hour Volumes

Note: March/April 2019 Counts

## Travel Time Runs

Hexagon collected Bluetooth travel time data on May 22, 2019 to determine the AM and PM peak hour travel time on eastbound and westbound Willow Road between Bayfront Expressway and Coleman Avenue. Bluetooth sensors were placed at nine locations along the study corridor. Two sensors were placed south of Bayfront Expressway to capture eastbound and westbound traffic on Willow Road near the intersection. Sensors capturing both directions of traffic were placed along Willow Road at the intersections of Hamilton Avenue, Ivy Drive, O'Brien Drive, Newbridge Street, Bay Road, Durham Street, and Coleman Avenue. These sensors anonymously record timestamps when vehicles with Bluetooth-capable devices pass them. In order to deem the data as valid, two requirements were applied to the data: a) sampled travel time cannot be lower than the free-flow travel time resulting from a speed of 40 mph, and b) sampled travel time cannot be longer than 3 signal cycles unless justified by field observations. Using these requirements, valid Bluetooth data at the intersections varied from 0.4% to 22% of the existing traffic counts. AM and PM peak hour travel times on eastbound and westbound Willow Road are summarized in Table 1.

As shown in Table 1, the travel time on eastbound Willow Road varied between 3 minutes and 26 minutes during the AM peak hour, with an average travel time of 9 minutes. During the PM peak hour, the travel varied between 8 minutes and 38 minutes, with an average travel time of 18 minutes. The travel time on westbound Willow Road varied between 4 minutes and 35 minutes with an average of 12 minutes during the AM peak hour and between 2 minutes and 31 minutes with an average travel time of 9 minutes during the PM peak hour. Field observations conducted during the PM peak hour indicated that the high demand for traffic on eastbound Willow Road to turn onto southbound Bayfront Expressway caused vehicular queues to extend through the upstream intersections affecting traffic progression on eastbound Willow Road.



**Table 1**  
**Willow Road Travel Time Runs**

Segments Along Willow Road			AM Peak Hour				PM Peak Hour			
			Travel Time Statistics (secs)		Valid Samples Statistics <sup>1</sup>		Travel Time Statistics (secs)		Valid Samples Statistics <sup>1</sup>	
			From	To	Dr.	Average	Range	Count	% of Roadway Traffic	Average
Bayfront Expressway	Hamilton Avenue	WB	112	17 - 478	189	15%	112	14 - 387	102	11%
Hamilton Avenue	Ivy Drive	WB	190	74 - 371	14	1%	148	30 - 363	27	2%
Ivy Drive	O'Brien Drive	WB	47	6 - 263	107	10%	49	6 - 438	100	9%
O'Brien Drive	Newbridge Street	WB	98	30 - 319	67	5%	73	21 - 175	69	5%
Newbridge Street	Bay Road	WB	215	101 - 321	6	0.4%	92	46 - 120	8	1%
Bay Road	Durham Street	WB	65	13 - 318	91	9%	75	13 - 396	32	6%
<i>Total Travel Time (secs)</i>			<b>727</b>	241 - 2070			<b>549</b>	130 - 1879		
<i>Total Travel Time (mins)</i>			<b>12.12</b>	4 - 34.5			<b>9.15</b>	2.2 - 31.3		
Hamilton Avenue	Bayfront Expressway	EB	112	15 - 463	124	14%	127	17 - 318	245	22%
Ivy Drive	Hamilton Avenue	EB	193	46 - 448	5	0.4%	266	241 - 293	5	1%
O'Brien Drive	Ivy Drive	EB	44	6 - 197	49	4%	46	6 - 163	154	15%
Newbridge Street	O'Brien Drive	EB	34	17 - 62	7	0.4%	104	29 - 247	39	3%
Bay Road	Newbridge Street	EB	92	47 - 138	6	0.4%	392	142 - 775	12	1%
Durham Street	Bay Road	EB	57	13 - 272	82	8%	132	15 - 476	64	5%
<i>Total Travel Time (secs)</i>			<b>532</b>	144 - 1580			<b>1067</b>	450 - 2272		
<i>Total Travel Time (mins)</i>			<b>8.86</b>	2.4 - 26.3			<b>17.78</b>	7.5 - 37.9		

Notes:  
WB = Westbound, EB = Eastbound  
<sup>1</sup> Two validity requirements were applied: a) sampled travel time cannot be lower than a free-flow travel time resulting from a speed of 40 mph, and b) sampled travel time cannot be longer than 3 signal cycles unless justified by field observations.

## Analysis Methodology

This section describes the methods and performance criteria use to evaluate traffic operations along the Willow Road corridor between Bayfront Expressway and Durham Street.

### Analysis Method

Due to the close spacing of the study intersections, the intersection analysis was conducted using the SimTraffic (version 10) software, using methodologies consistent with the *Highway Capacity Manual 2010* (Transportation Research Board, 2011). Unlike macroscopic models of isolated intersection operations, such as the *Highway Capacity Manual* intersection level of service methodology, SimTraffic is a microscopic model that measures the full impact of queuing and blocking attributed to closely spaced intersections. In addition to reporting statistics such as average vehicle delay, the simulation software produces visual animation files that depict traffic operations.

Per Caltrans guidelines, the simulation analysis reflects pent-up traffic demand that is unable to be served during the peak hour and thus is not reflected in existing intersection turning-movement counts. The existing traffic demand was estimated based on the turning-movement count volumes and the observed queue lengths. The existing conditions SimTraffic model was calibrated and validated to existing conditions based on existing lane geometry (as of March 2019), existing AM and PM peak hour traffic counts, observed peak-hour vehicular queues, and the observed signal timings. The procedures used are consistent with *Traffic Analysis Toolbox Volume III” Guidelines for Applying Traffic Microsimulation Modeling Software* (FHWA, 2004).

### Level of Service Criteria

The average delay time (measured in seconds per vehicle) calculated by the simulation model was correlated to Level of Service (LOS) based on the thresholds contained in the *2010 Highway Capacity Manual*. Level of Service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays. The correlation between delay and level of service is shown on Table 2 for signalized intersections. All study intersections along Willow Road between Bayfront Expressway and US 101 interchange are under the jurisdiction of Caltrans. Caltrans maintains a minimum level of service (LOS) at the transition between LOS C and LOS D for all of its facilities. Where an existing facility is operating at less than the LOS C/D threshold, the existing LOS should be maintained. The study intersections of Willow/Bay and Willow/Hospital Plaza-Durham Street are under the jurisdiction of the City. The City of Menlo Park level of service standard is LOS D or better for all signalized study intersections.

### Measures of Effectiveness

The following Measures of Effectiveness (MOEs) computed with the SimTraffic model are used to quantify and validate traffic operations along Willow Road between Bayfront Expressway and Durham Street:

- Volume Served – The number of vehicles that can be served by the corridor during the analysis period. At locations where the demand exceeds capacity, the volume served will be less than the demand volume.
- Total Travel Time – The average time taken by all vehicles to travel through the corridor during the peak hour. It includes the average delay through the corridor, vehicles queues, and impedance caused by merging vehicles.

- LOS - The weighted average delay (measured in seconds per vehicle) calculated by the microscopic simulation model was correlated to LOS based on the thresholds contained in the *2010 Highway Capacity Manual*.

**Table 2**  
**Signalized Intersection Level of Service Definitions Based on Control Delay**

Level of Service	Description	Average Control Delay Per Vehicle (Sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	greater than 80.0

Source: Transportation Research Board, *2010 Highway Capacity Manual*.

## Existing Conditions Traffic Operations Analysis

This section describes the development, calibration and validation of the Synchro model that was used to evaluate existing peak hour conditions along Willow Road.

### Model Development and Calibration

The Synchro model was developed by drawing the roadway network using an aerial photo of the study area as a background image. Geometric information such as number of lanes, curvature, turn restrictions, and location of lane drops, and lane additions were based on aerial photographs and field observations conducted in March 2019. Intersection signal operations were based on signal timing information that was provided by the City. Adjustments were made to the signal timing based on measuring the cycle lengths and splits at each of the study intersections in the field. Where unsignalized driveways with heavy traffic turning into and out of the driveways are located on Willow

Road between the signalized intersections, saturation flow rates for Willow Road were adjusted. The existing AM and PM peak hour demand volumes were used as input volumes to develop the existing conditions model. It is noted that the Willow Road/US 101 interchange improvements were not completed when the traffic counts were done in March/April 2019. As a result, existing AM and PM peak hour conditions were calibrated and validated based on the lane geometry, traffic volumes, travel time runs and field observations that were conducted in 2019. Since then, the US 101/Willow Road interchange improvements have been completed. At both the US 101 off-ramps, no right-turn-on red was assumed.

The Synchro model was validated to existing conditions using the criteria described in *Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software* (FHWA Department of Transportation, 2004). The software's default data on vehicle and driver characteristics were used. A number of iterations were required to successfully validate the existing conditions model to observed conditions. Further refinements were made at specific locations during the model calibration process. For example, for the eastbound Willow Road segment between Hamilton and Ivy Drive, the model showed a higher throughput for the eastbound traffic compared to the traffic counts during the PM peak hour. The headway factors for the eastbound through lanes were adjusted (to account for traffic turning in and out of the unsignalized driveways between Hamilton Avenue and Ivy Drive) so that the model served volume matched the traffic counts at this intersection. Increasing the headway factor for the eastbound approach on Willow Road caused vehicles to slow down resulting in longer travel time for eastbound Willow Road attributed to traffic slow down due to traffic turning into and out of the unsignalized driveways between Hamilton Avenue and Ivy Drive.

### Model Validation

During the validation process, the model estimates were compared to the field data to measure the model's accuracy. The following criteria were used:

- Turning movement volumes for more than 85% of the cases should have a GEH (Geoffrey E. Havers) statistic of less than 5. The GEH statistic is a measure of goodness of fit named after the statistician who developed it. The model served volume at each of the five study intersections was compared to the raw turning movement counts. The GEH statistic for the individual turning movements was calculated to be less than 5 at most of the locations, and the GEH statistic for the total volume through the intersection was also calculated to be less than 5 (see Table 3). The formula for GEH statistic is shown below:

$$GEH = \sqrt{\frac{2(M - C)^2}{M + C}}$$

- Where  $M$  is the hourly traffic volume from the Synchro model and  $C$  is the real-world hourly traffic count.
- Average travel time runs should fall within the range observed in the field. The model estimated average travel time on eastbound Willow Road was approximately 8 minutes during the AM peak hour and 23 minutes during the PM peak hour (see Table 4 and Table 6). The blue tooth travel time runs on eastbound Willow Road showed that the average travel time was approximately 9 minutes during the AM peak hour and 18 minutes during the PM peak hour. The model estimated average travel time on westbound Willow Road was approximately 13 minutes during the AM peak hour and 9 minutes during the PM peak hour (see Table 5 and Table 7). The Bluetooth travel time runs on westbound Willow Road showed that the travel time averaged approximately 12 minutes during the AM peak hour and 9 minutes during the PM peak hour. Although the average travel times between intersections varied widely between the model data and the Bluetooth data, the overall

average travel time on eastbound and westbound Willow Road between Bayfront Expressway and Durham Road matched well during both the peak hours.

- The visual queuing shown in the model should match queues observed in the field. Queues shown in the model matched field observations. The model showed long queues on westbound Willow Road during the AM peak hour and on eastbound Willow Road during the PM peak hour in the study area. The queues extended from the Bayfront Expressway past Durham Road during the PM peak hour. The model queues matched the queues observed in the field.

**Table 3**  
**Existing Peak Hour – Model Served Volumes**

Movement	Existing Conditions						
	AM Peak Hour			PM Peak Hour			
	Raw Count Volume	Model Served Volume	GEH Statistic	Raw Count Volume	Model Served Volume	GEH Statistic	
<b>1. Bayfront Expressway &amp; Willow Road</b>							
SBL	341	347	0.32	0	76	49	3.42
SBT	410	407	0.15	0	1899	1920	0.48
SBR	172	199	1.98	0	118	104	1.33
NBL	1021	1040	0.59	0	559	547	0.51
NBT	2217	2209	0.17	0	704	836	4.76
NBR	72	101	3.12	0	34	36	0.34
EBL	195	234	2.66	0	88	80	0.87
EBT	425	452	1.29	0	95	76	2.05
EBR	277	297	1.18	0	1112	1092	0.6
WBL	35	35	0	0	159	179	1.54
WBT	67	82	1.74	0	204	194	0.71
WBR	72	77	0.58	0	133	133	0
<b>TOTAL</b>	<b>5304</b>	<b>5480</b>	<b>2.4</b>	<b>0</b>	<b>5181</b>	<b>5246</b>	<b>0.9</b>
<b>2. Hamilton Avenue &amp; Willow Road</b>							
SBL	47	44	0.44	0	83	133	4.81
SBT	14	13	0.27	0	17	21	0.92
SBR	48	48	0	0	35	19	3.08
NBL	56	79	2.8	0	193	160	2.48
NBT	25	34	1.66	0	18	12	1.55
NBR	84	83	0.11	0	99	90	0.93
EBL	99	93	0.61	0	43	29	2.33
EBT	820	842	0.76	0	1065	1017	1.49
EBR	73	67	0.72	0	7	8	0.37
WBL	190	241	3.47	0	138	118	1.77
WBT	1023	1074	1.58	0	707	853	5.23
WBR	37	35	0.33	0	54	52	0.27
<b>TOTAL</b>	<b>2516</b>	<b>2653</b>	<b>2.69</b>	<b>0</b>	<b>2459</b>	<b>2512</b>	<b>1.06</b>
<b>3. Ivy Drive &amp; Willow Road</b>							
SBL	11	9	0.63	0	32	37	0.85
SBR	95	83	1.27	0	114	130	1.45
EBL	49	41	1.19	0	44	33	1.77
EBT	1221	1223	0.06	0	933	989	1.81
WBT	1098	1047	1.56	0	1106	1074	0.97
WBR	14	21	1.67	0	24	18	1.31
<b>Total</b>	<b>2488</b>	<b>2424</b>	<b>1.29</b>	<b>0</b>	<b>2253</b>	<b>2281</b>	<b>0.59</b>
<b>4. O'Brien Drive &amp; Willow Road</b>							
NBL	237	239	0.13	0	274	177	6.46
NBR	45	36	1.41	0	45	26	3.19
EBT	1316	1235	2.27	0	1000	1006	0.19
EBR	342	333	0.49	0	352	330	1.19
WBL	42	40	0.31	0	57	78	2.56
WBT	1066	1077	0.34	0	1065	1125	1.81
<b>Total</b>	<b>3048</b>	<b>2960</b>	<b>1.61</b>	<b>0</b>	<b>2793</b>	<b>2742</b>	<b>0.97</b>

**Table 4(Contd.)  
Existing Peak Hour – Model Served Volumes**

Movement	Existing Conditions					
	AM Peak Hour			PM Peak Hour		
	Raw Count Volume	Model Served Volume	GEH Statistic	Raw Count Volume	Model Served Volume	GEH Statistic
<b>5. Newbridge Road &amp; Willow Road</b>						
SBL	17	20	0.7	27	28	0.19
SBT	93	102	0.91	170	231	4.31
SBR	281	302	1.23	206	215	0.62
NBL	260	294	2.04	160	158	0.16
NBT	79	98	2.02	255	238	1.08
NBR	36	32	0.69	56	80	2.91
EBL	143	150	0.58	268	278	0.61
EBT	1589	1519	1.78	1310	1244	1.85
EBR	130	124	0.53	138	174	2.88
WBL	40	35	0.82	78	67	1.29
WBT	1202	1226	0.69	1171	1221	1.45
WBR	7	9	0.71	26	22	0.82
<b>TOTAL</b>	<b>3877</b>	<b>3911</b>	<b>0.54</b>	<b>3865</b>	<b>3956</b>	<b>1.46</b>
<b>6. US 101 NB &amp; Willow Road</b>						
NBL	364	359	0.26	196	195	0.07
NBR	789	764	0.9	859	874	0.51
EBT	967	1037	2.21	827	928	3.41
EBR	318	322	0.22	122	128	0.54
WBT	1510	1371	3.66	1194	1121	2.15
WBR	424	414	0.49	495	460	1.6
<b>TOTAL</b>	<b>4372</b>	<b>4267</b>	<b>1.6</b>	<b>3693</b>	<b>3706</b>	<b>0.21</b>
<b>7. US 101 SB &amp; Willow Road</b>						
SBL	472	468	0.18	285	246	2.39
SBR	391	392	0.05	352	347	0.27
EBT	838	892	1.84	651	836	6.78
EBR	623	625	0.08	199	138	4.7
WBT	1053	1076	0.7	766	662	3.89
WBR	739	647	3.49	633	637	0.16
<b>TOTAL</b>	<b>4116</b>	<b>4100</b>	<b>0.25</b>	<b>2886</b>	<b>2866</b>	<b>0.37</b>
<b>8. Bay Road &amp; Willow Road</b>						
SBL	367	363	0.21	241	148	6.67
SBR	65	66	0.12	40	27	2.25
EBL	55	48	0.98	20	15	1.2
EBT	1101	1153	1.55	1201	869	10.32
WBT	1191	1125	1.94	678	837	5.78
WBR	387	342	2.36	100	162	5.42
<b>TOTAL</b>	<b>3166</b>	<b>3097</b>	<b>1.23</b>	<b>2280</b>	<b>2058</b>	<b>4.77</b>
<b>9. Hospital Plaza/Durham St &amp; Willow Road</b>						
SBL	65	64	0.12	132	119	1.16
SBT	7	6	0.39	1	3	1.41
SBR	30	31	0.18	31	21	1.96
NBL	59	56	0.4	21	41	3.59
NBT	11	10	0.31	6	8	0.76
NBR	62	65	0.38	17	19	0.47
EBL	22	21	0.22	9	5	1.51
EBT	897	905	0.27	1029	786	8.07
EBR	7	6	0.39	4	8	1.63
WBL	36	35	0.17	29	32	0.54
WBT	924	924	0	522	761	9.44
WBR	108	99	0.88	18	39	3.93
<b>TOTAL</b>	<b>2228</b>	<b>2222</b>	<b>0.13</b>	<b>1819</b>	<b>1842</b>	<b>0.54</b>

**Table 4**  
**Model Estimated Travel Times – Willow Road Eastbound (AM Peak Hour)**

Willow Road (Eastbound) - AM Peak Hour Travel Time						
Willow Road (Eastbound)		Node	Bluetooth	Model	% Match	Diff
<b>From</b>	<b>To</b>	27				
Durham	Bay RD	33	57	32.7	57%	-24.3
Bay Rd	Newbridge St	26	92	92.6	101%	0.6
Newbridge St	O'Brien Dr	45	34	61.2	180%	27.2
O'Brien Dr	Ivy Dr	25	44	21.4	49%	-22.6
Ivy Dr	Hamilton Ave	24	193	172.9	90%	-20.1
Hamilton Ave	Bayfront Expwy	23	112	108.5	97%	-3.5
<b>Total (in seconds)</b>			<b>532</b>	<b>489.3</b>	92%	-42.7
<b>Total (in minutes)</b>			<b>8.87</b>	<b>8.16</b>		

*Note:- The bluetooth data showed that the travel time on eastbound Willow Road varied between 3 minutes and 26 minutes during the AM peak hour, with an average travel time of approximately 9 minutes. The travel time from the model falls within this range.*

**Table 5**  
**Model Estimated Travel Times – Willow Road Westbound (AM Peak Hour)**

Willow Road (Westbound) - AM Peak Hour Travel Time						
Willow Road (Westbound)		Node	Bluetooth	Model	% Match	Diff
<b>From</b>	<b>To</b>	17				
Bayfront Expwy	Hamilton Ave	18	65	51.7	80%	-13.3
Hamilton Ave	Ivy Dr	21	215	149.3	69%	-65.7
Ivy Dr	O'Brien Dr	22	98	45.6	47%	-52.4
O'Brien Dr	Newbridge St	23	47	152.3	324%	105.3
Newbridge St	Bay Rd	26	190	302.7	159%	112.7
Bay Rd	Durham	27	112	70.2	63%	-41.8
<b>Total (in seconds)</b>			<b>727</b>	<b>771.8</b>	106%	44.8
<b>Total (in minutes)</b>			<b>12.12</b>	<b>12.86</b>		

*Note:- The bluetooth data showed that the travel time on westbound Willow Road varied between 4 minutes and 35 minutes during the AM peak hour, with an average travel time of approximately 12 minutes. The travel time from the model falls within this range.*



**Table 6**  
**Model Estimated Travel Times – Willow Road Eastbound (PM Peak Hour)**

Willow Road (Eastbound) - PM Peak Hour Travel Time						
Willow Road (Eastbound)		Node	Bluetooth	Model	% Match	Diff
<b>From</b>	<b>To</b>	27				
Durham	Bay RD	33	132	103.1	78%	-28.9
Bay Rd	Newbridge St	26	392	442.6	113%	50.6
Newbridge St	O'Brien Dr	45	104	201.4	194%	97.4
O'Brien Dr	Ivy Dr	25	46	66.5	145%	20.5
Ivy Dr	Hamilton Ave	24	266	434.5	163%	168.5
Hamilton Ave	Bayfront Expwy	23	127	138.8	109%	11.8
<b>Total (in seconds)</b>			<b>1067</b>	<b>1386.9</b>	130%	319.9
<b>Total (in minutes)</b>			<b>17.78</b>	<b>23.12</b>		

*Note:- The bluetooth data showed that the travel time on eastbound Willow Road varied between 8 minutes and 38 minutes during the PM peak hour, with an average travel time of approximately 18 minutes. The travel time from the model falls within this range.*

**Table 7**  
**Model Estimated Travel Times – Willow Road Westbound (PM Peak Hour)**

Willow Road (Westbound) - PM Peak Hour Travel Time						
Willow Road (Westbound)		Node	Bluetooth	Model	% Match	Diff
<b>From</b>	<b>To</b>	17				
Bayfront Expwy	Hamilton Ave	18	75	27.6	37%	-47.4
Hamilton Ave	Ivy Dr	21	92	38.8	42%	-53.2
Ivy Dr	O'Brien Dr	22	73	19.8	27%	-53.2
O'Brien Dr	Newbridge St	23	49	131.6	269%	82.6
Newbridge St	Bay Rd	26	148	211.1	143%	63.1
Bay Rd	Durham	27	112	97.4	87%	-14.6
<b>Total (in seconds)</b>			<b>549</b>	<b>526.3</b>	96%	-22.7
<b>Total (in minutes)</b>			<b>9.15</b>	<b>8.77</b>		

*Note:- The bluetooth data showed that the travel time on westbound Willow Road varied between 2 minutes and 31 minutes during the PM peak hour, with an average travel time of approximately 9 minutes. The travel time from the model falls within this range.*

### Existing Conditions Level of Service Analysis

The calibrated and validated SimTraffic model was used to analyze traffic operations at the nine study intersections along the corridor. Table 8 shows the average weighted delay and the corresponding LOS during the AM and PM peak hour periods under existing conditions. The weighted average delay (measured in seconds per vehicle) calculated by the microscopic simulation model was correlated to LOS based on the thresholds contained in the *2010 Highway Capacity Manual*. Also provided in the table is the delay and LOS at the study intersections that were reported in previous studies using Vistro software. The large variance in the delay and LOS is primarily because the Vistro model did not take into account the delay caused by downstream queues on Willow Road during the AM and PM peak hours. The simulation analysis showed that all

study intersections along Willow Road between Bayfront Expressway and Durham Street operate at unacceptable levels of service during at least one of the peak hours.

The analysis showed that during the AM peak hour, all study intersection along Willow Road between Bayfront Expressway and US 101 northbound off-ramp currently operate at unacceptable LOS E or F. During the PM peak hour, the analysis showed that all study intersections along Willow Road currently operate at unacceptable LOS E or F except for the intersection of Willow Road and Ivy Drive. During the PM peak hour, the poor levels of service along Willow Road is attributed to the heavy demand on eastbound Willow Road. Due to the close proximity of the traffic signal at Ivy Drive to the traffic signal at O'Brien Drive, the queues on eastbound Willow Road at Ivy Drive spill over into the upstream intersection at O'Brien Drive. The delay caused by this spill over queue is reflected in the delay reported for the Willow Road/O'Brien Drive intersection. The delay reported for the Willow Road/Ivy Drive intersection reflects delay for the eastbound approach only between Ivy Drive and O'Brien Drive, which is a short segment that measures approximately 270 feet in length.

**Table 8**  
**Existing Conditions Level of Service Analysis**

#	Intersection	Control	Peak Hour	Count Date	Existing Conditions			
					SimTraffic		Vistro <sup>1</sup>	
					Avg. Delay <sup>2</sup>	LOS	Avg. Delay <sup>2</sup>	LOS
1	Bayfront Expwy & Willow Rd	Signal	AM	04/23/19	<b>175.7</b>	<b>F</b>	<b>158.5</b>	<b>F</b>
			PM	04/23/19	<b>142.0</b>	<b>F</b>	<b>64.8</b>	<b>E</b>
2	Hamilton Ave & Willow Rd	Signal	AM	03/21/19	<b>73.7</b>	<b>E</b>	<b>64.7</b>	<b>E</b>
			PM	03/21/19	<b>155.5</b>	<b>F</b>	26.7	C
3	Ivy Dr & Willow Rd	Signal	AM	03/21/19	<b>75.2</b>	<b>E</b>	17.1	B
			PM	03/21/19	40.2	D	11.9	B
4	O'Brien Dr & Willow Rd	Signal	AM	03/21/19	<b>58.9</b>	<b>E</b>	14.6	B
			PM	03/21/19	<b>147.5</b>	<b>F</b>	12.3	B
5	Newbridge St & Willow Rd	Signal	AM	03/21/19	<b>93.3</b>	<b>F</b>	42.5	D
			PM	03/21/19	<b>133.9</b>	<b>F</b>	41.3	D
6	US 101 NB Ramps & Willow Rd	Signal	AM	03/13/19	<b>92.3</b>	<b>F</b>	N/A	
			PM	03/13/19	<b>83.8</b>	<b>F</b>	N/A	
7	US 101 SB Ramps & Willow Rd	Signal	AM	03/13/19	38.5	D	N/A	
			PM	03/13/19	<b>99.8</b>	<b>F</b>	N/A	
8	Bay Rd & Willow Rd	Signal	AM	04/23/19	45.9	D	12.4	B
			PM	04/23/19	<b>113.3</b>	<b>F</b>	16.7	B
9	Hospital Plaza/Durham St & Willow Rd	Signal	AM	04/16/19	43.5	D	19.0	B
			PM	04/16/19	<b>167.7</b>	<b>F</b>	16.6	B

Notes:  
Avg Delay = Average Delay in seconds; LOS = Level of Service  
<sup>1</sup> Average delay was obtained from the Vistro files provided by Kittleson & Associates.  
<sup>2</sup> At signalized intersections, delay shown is the weighted average delay for all vehicles entering the intersection.  
**Bold** indicates a substandard level of service.

**Appendix C**  
**Level of Service Analysis**

Vistro File: \\...\Vistro\_AllScenarios\_AM - 12.1.2021.vistro

Scenario 16 Existing AM (2019 vols)

Report File: \\...\Existing AM.pdf

12/9/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Right	0.838	19.0	B
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.696	18.5	B
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.711	35.3	D
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.641	19.7	B
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NWB Left	0.667	36.1	D
10	Middlefield Rd/Ringswood Ave	Signalized	HCM 6th Edition	NEB Left	0.351	12.5	B
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Left	0.727	11.4	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	WB Left	1.108	175.5	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	SB Left	0.981	73.3	E
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	EB Right	1.065	75.2	E
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	NB Thru	1.109	58.9	E
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	SB Right	1.128	93.4	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	SWB Thru	0.977	45.3	D
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	NB Left	0.862	43.6	D
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.782	18.6	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	EB Left	0.684	19.7	B
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.561	61.6	E
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	0.727	15.8	B

131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	SB Thru	0.280	9.2	A
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.816	50.5	D
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.276	38.5	D
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.417	92.8	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.760	10.9	B
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.621	8.4	A
199	Bayfront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.775	7.9	A
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	SB Thru	0.504	11.8	B
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.888	10.0	A
207	Chilco St/Constitution Dr	All-way stop	HCM 6th Edition	SB Right	0.985	32.1	D
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	0.846	50.6	D
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	0.106	17.3	C
265	Adam Court/Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.025	11.5	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.838

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↵↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	891	1462	217	1123	436
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	891	1462	217	1123	436
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	227	373	54	286	111
Total Analysis Volume [veh/h]	0	909	1492	217	1146	445
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]		3		0		0

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	46	44	30	30
g / C, Green / Cycle	0.57	0.54	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.23	0.42	0.34	0.28
s, saturation flow rate [veh/h]	4000	3515	3373	1572
c, Capacity [veh/h]	2283	1914	1257	586
d1, Uniform Delay [s]	9.52	14.40	23.80	21.91
k, delay calibration	0.50	0.50	0.04	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	3.22	1.14	4.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.40	0.78	0.91	0.76
d, Delay for Lane Group [s/veh]	10.04	17.62	24.94	26.21
Lane Group LOS	B	B	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.95	9.95	9.78	7.55
50th-Percentile Queue Length [ft/ln]	98.65	248.63	244.40	188.71
95th-Percentile Queue Length [veh/ln]	7.10	15.12	14.90	12.05
95th-Percentile Queue Length [ft/ln]	177.56	377.93	372.59	301.35

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	10.04	17.62	0.00	24.94	26.21
Movement LOS		B	B		C	C
d_A, Approach Delay [s/veh]	10.04		17.62		25.30	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.95					
Intersection LOS	B					
Intersection V/C	0.838					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	2.936	0.000	2.509
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.310	2.791	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	24	1050	7	448	1189	272	13	4	58	225	19	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	0.00	0.00	12.70	1.70	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	59	0	0	0
Total Hourly Volume [veh/h]	24	1050	7	448	1189	272	13	4	0	225	19	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	292	2	124	330	76	4	1	0	63	5	0
Total Analysis Volume [veh/h]	27	1167	8	498	1321	302	14	4	0	250	21	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			1			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			1			1	
v_co, Outbound Pedestrian Volume crossing		1			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		1			0			1			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	40	40	15	40	40	0	20	0	20	20	20
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	51	51	31	70	70	0	41	0	37	37	37
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	5	107	107	121	114	114	6	6	27	27
g / C, Green / Cycle	0.03	0.67	0.67	0.76	0.71	0.71	0.04	0.04	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.22	0.22	0.43	0.44	0.47	0.01	0.00	0.14	0.01
s, saturation flow rate [veh/h]	1758	3532	1848	1162	1840	1727	1829	2572	1785	1900
c, Capacity [veh/h]	56	2363	1236	877	1311	1231	72	101	296	315
d1, Uniform Delay [s]	76.05	11.20	11.20	8.14	11.80	12.45	74.49	0.00	64.63	56.20
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.23	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.66	0.37	0.70	2.66	2.20	2.78	1.34	0.00	12.90	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.33	0.33	0.57	0.62	0.66	0.25	0.00	0.84	0.07
d, Delay for Lane Group [s/veh]	80.71	11.57	11.91	10.80	14.00	15.23	75.83	0.00	77.53	56.26
Lane Group LOS	F	B	B	B	B	B	E	A	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.17	5.84	6.23	2.81	14.82	15.73	0.75	0.00	11.05	0.74
50th-Percentile Queue Length [ft/ln]	29.17	146.00	155.75	70.19	370.38	393.27	18.86	0.00	276.37	18.39
95th-Percentile Queue Length [veh/ln]	2.10	9.80	10.32	5.05	21.13	22.24	1.36	0.00	16.51	1.32
95th-Percentile Queue Length [ft/ln]	52.50	245.09	258.08	126.34	528.20	555.89	33.94	0.00	412.69	33.10

**Movement, Approach, & Intersection Results**

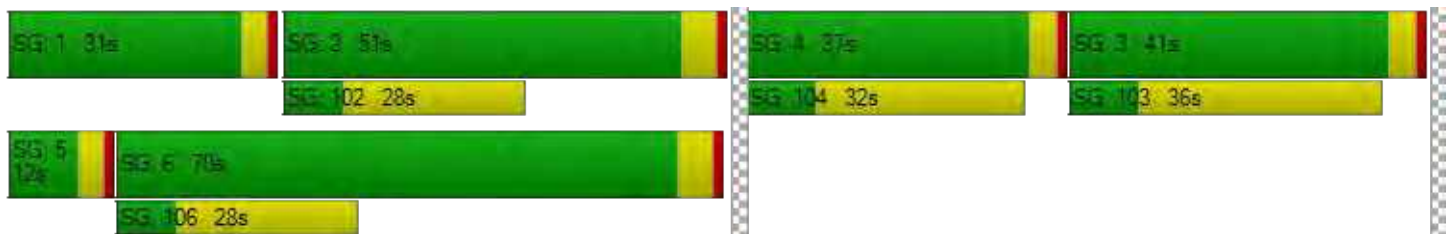
d_M, Delay for Movement [s/veh]	80.71	11.68	11.91	10.80	14.47	15.23	75.83	75.83	0.00	77.53	56.26	56.26
Movement LOS	F	B	B	B	B	B	E	E	A	E	E	E
d_A, Approach Delay [s/veh]	13.24			13.72			75.83			75.88		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	18.53											
Intersection LOS	B											
Intersection V/C	0.696											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.40	68.40	69.33	69.33
I_p,int, Pedestrian LOS Score for Intersection	3.033	3.205	2.992	2.131
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	575	813	460	410
d_b, Bicycle Delay [s]	40.59	28.16	47.39	50.52
I_b,int, Bicycle LOS Score for Intersection	2.221	3.309	1.687	2.007
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	35.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	114	804	80	29	1007	413	496	47	137	35	15	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	114	804	80	29	1007	413	496	47	122	35	15	25
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	207	21	7	260	106	128	12	31	9	4	6
Total Analysis Volume [veh/h]	118	829	82	30	1038	426	511	48	126	36	15	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			2			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			1			2	
v_co, Outbound Pedestrian Volume crossing		0			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			0			6			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	104	104	5	96	96	31	31	31	12	12
g / C, Green / Cycle	0.08	0.65	0.65	0.03	0.60	0.60	0.19	0.19	0.19	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.07	0.25	0.25	0.02	0.42	0.43	0.16	0.16	0.08	0.03	0.03
s, saturation flow rate [veh/h]	1752	1876	1809	1704	1823	1647	1717	1702	1523	1439	1192
c, Capacity [veh/h]	142	1220	1177	58	1101	994	332	329	294	104	86
d1, Uniform Delay [s]	72.35	12.96	12.98	75.88	21.51	21.96	62.21	62.20	56.61	70.61	71.29
k, delay calibration	0.48	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	39.14	0.90	0.94	2.58	3.54	4.28	4.52	4.53	0.73	1.48	3.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	0.38	0.38	0.51	0.69	0.71	0.85	0.85	0.43	0.35	0.48
d, Delay for Lane Group [s/veh]	111.48	13.86	13.92	78.45	25.05	26.24	66.74	66.72	57.35	72.08	74.33
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.32	7.94	7.72	1.26	19.95	19.08	11.56	11.44	4.61	1.47	1.71
50th-Percentile Queue Length [ft/ln]	157.93	198.53	192.92	31.42	498.66	477.06	288.91	286.02	115.18	36.66	42.75
95th-Percentile Queue Length [veh/ln]	10.44	12.56	12.27	2.26	27.27	26.25	17.13	16.99	8.13	2.64	3.08
95th-Percentile Queue Length [ft/ln]	260.98	314.07	306.81	56.56	681.78	656.16	428.29	424.70	203.19	65.99	76.95

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	111.48	13.88	13.92	78.45	25.37	26.24	66.73	66.72	57.35	72.08	74.33	74.33
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	25.08			26.68			65.00			73.28		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	35.26											
Intersection LOS	D											
Intersection V/C	0.711											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.34	69.34	69.34	69.34
I_p,int, Pedestrian LOS Score for Intersection	2.906	3.022	2.435	2.032
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	843	400	410
d_b, Bicycle Delay [s]	24.53	26.77	51.32	50.53
I_b,int, Bicycle LOS Score for Intersection	2.409	2.792	2.715	1.687
Bicycle LOS	B	C	B	A

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	810	82	267	755	47	139	63	2	39	19	202
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	810	82	267	755	47	139	63	2	39	19	202
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	207	21	68	193	12	35	16	1	10	5	52
Total Analysis Volume [veh/h]	0	827	84	272	770	48	142	64	2	40	19	206
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			5			0			5	
v_di, Inbound Pedestrian Volume crossing in		0			5			0			5	
v_co, Outbound Pedestrian Volume crossing		1			1			1			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			1			1			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			12			9			2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	33	33	16	52	52	24	24
g / C, Green / Cycle	0.41	0.41	0.20	0.65	0.65	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.16	0.23	0.23	0.19	0.17
s, saturation flow rate [veh/h]	1882	1654	1708	1807	1763	1082	1605
c, Capacity [veh/h]	812	674	342	1166	1137	397	529
d1, Uniform Delay [s]	18.95	18.96	30.47	6.54	6.55	25.25	23.77
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.24	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.23	4.48	4.20	0.84	0.87	2.34	1.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.60	0.63	0.79	0.35	0.36	0.52	0.50
d, Delay for Lane Group [s/veh]	22.19	23.44	34.67	7.38	7.42	27.59	25.34
Lane Group LOS	C	C	C	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.29	6.61	5.15	2.83	2.78	3.75	4.29
50th-Percentile Queue Length [ft/ln]	182.32	165.34	128.70	70.71	69.54	93.69	107.30
95th-Percentile Queue Length [veh/ln]	11.72	10.83	8.87	5.09	5.01	6.75	7.69
95th-Percentile Queue Length [ft/ln]	293.05	270.78	221.72	127.27	125.17	168.65	192.24



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	22.19	22.70	23.44	34.67	7.40	7.42	27.59	27.59	27.59	25.34	25.34	25.34
Movement LOS	C	C	C	C	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	22.77			14.20			27.59			25.34		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	19.68											
Intersection LOS	B											
Intersection V/C	0.641											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	23.9
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.79	29.79	29.79	19.70
I_p,int, Pedestrian LOS Score for Intersection	2.671	3.011	1.820	2.026
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	597	1072	682	682
d_b, Bicycle Delay [s]	19.70	8.68	17.47	17.41
I_b,int, Bicycle LOS Score for Intersection	2.311	2.459	1.903	1.997
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.667

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	87	422	456	400	416	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	11.80	4.20	3.10	2.50	3.30	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	87	0	456	400	416	104
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	121	106	111	28
Total Analysis Volume [veh/h]	93	0	485	426	443	111
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing in	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	10	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.6	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	13	13	33	100	68
g / C, Green / Cycle	0.11	0.11	0.28	0.84	0.57
(v / s)_i Volume / Saturation Flow Rate	0.06	0.00	0.27	0.23	0.31
s, saturation flow rate [veh/h]	1641	1561	1765	1862	1768
c, Capacity [veh/h]	180	172	485	1555	999
d1, Uniform Delay [s]	50.42	0.00	43.50	2.11	16.53
k, delay calibration	0.08	0.08	0.45	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.69	0.00	38.73	0.44	2.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	1.00	0.27	0.55
d, Delay for Lane Group [s/veh]	52.11	0.00	82.23	2.55	18.75
Lane Group LOS	D	A	F	A	B
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	0.00	19.31	1.50	9.79
50th-Percentile Queue Length [ft/ln]	68.20	0.00	482.67	37.40	244.72
95th-Percentile Queue Length [veh/ln]	4.91	0.00	26.51	2.69	14.92
95th-Percentile Queue Length [ft/ln]	122.76	0.00	662.82	67.32	373.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.11	0.00	82.23	2.55	18.75	18.75
Movement LOS	D	A	F	A	B	B
d_A, Approach Delay [s/veh]	52.11		44.97		18.75	
Approach LOS	D		D		B	
d_I, Intersection Delay [s/veh]	36.07					
Intersection LOS	D					
Intersection V/C	0.667					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.52	49.52	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.925	2.814	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	763	1090	507
d_b, Bicycle Delay [s]	23.21	12.68	34.09
I_b,int, Bicycle LOS Score for Intersection	1.560	3.063	2.474
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringswood Ave**

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.351

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↑			↑↵			↵↵↵			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	6	11	9	129	28	269	21	561	114	193	619	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	8.30	4.40	0.00	4.00	0.00	3.20	0.00	4.60	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	222	0	0	96	0	0	0
Total Hourly Volume [veh/h]	6	11	9	129	28	47	21	561	18	193	619	56
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	2	34	7	13	6	149	5	51	165	15
Total Analysis Volume [veh/h]	6	12	10	137	30	50	22	597	19	205	659	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing in	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	24	24	24	24	92	81	81	89	83	83
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.77	0.67	0.67	0.75	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.00	0.01	0.13	0.03	0.03	0.17	0.01	0.23	0.20	0.20
s, saturation flow rate [veh/h]	1401	1737	1277	1481	792	3526	1475	899	1840	1768
c, Capacity [veh/h]	120	347	310	296	645	2379	995	711	1278	1228
d1, Uniform Delay [s]	55.18	38.93	46.16	39.71	4.25	7.64	6.42	4.69	6.98	7.00
k, delay calibration	0.10	0.10	0.10	0.10	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	0.07	1.40	0.26	0.02	0.25	0.04	1.02	0.56	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.06	0.54	0.17	0.03	0.25	0.02	0.29	0.29	0.29
d, Delay for Lane Group [s/veh]	55.34	39.01	47.55	39.97	4.27	7.89	6.46	5.72	7.54	7.59
Lane Group LOS	E	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.18	0.55	4.77	1.25	0.12	2.87	0.16	1.45	3.42	3.33
50th-Percentile Queue Length [ft/ln]	4.57	13.68	119.22	31.25	3.09	71.71	3.97	36.28	85.39	83.35
95th-Percentile Queue Length [veh/ln]	0.33	0.99	8.35	2.25	0.22	5.16	0.29	2.61	6.15	6.00
95th-Percentile Queue Length [ft/ln]	8.23	24.63	208.76	56.25	5.56	129.08	7.14	65.30	153.71	150.02

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	55.34	39.01	39.01	47.55	47.55	39.97	4.27	7.89	6.46	5.72	7.56	7.59
Movement LOS	E	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	42.51			45.81			7.72			7.16		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	12.55											
Intersection LOS	B											
Intersection V/C	0.351											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.007			2.715			3.090			2.731		
Crosswalk LOS	B			B			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	513			513			757			507		
d_b, Bicycle Delay [s]	33.29			33.54			23.36			34.10		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.284			2.165			2.322		
Bicycle LOS	A			B			B			B		

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	11.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

**Intersection Setup**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	829	67	1148	2695	205	416
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	3.50	1.60	3.10	2.20	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	829	67	1148	2695	205	416
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	214	17	296	695	53	107
Total Analysis Volume [veh/h]	855	69	1184	2778	211	429
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	18	18	25	46	7	36
g / C, Green / Cycle	0.29	0.29	0.39	0.74	0.11	0.56
(v / s)_i Volume / Saturation Flow Rate	0.17	0.04	0.34	0.55	0.06	0.10
s, saturation flow rate [veh/h]	4955	1549	3470	5049	3453	4166
c, Capacity [veh/h]	1415	442	1365	3716	370	2349
d1, Uniform Delay [s]	19.46	16.85	17.62	4.89	26.79	6.69
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.51	0.20	0.68	0.37	0.52	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.60	0.16	0.87	0.75	0.57	0.18
d, Delay for Lane Group [s/veh]	19.97	17.04	18.30	5.26	27.31	6.70
Lane Group LOS	B	B	B	A	C	A
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.99	0.64	6.06	1.37	1.43	0.72
50th-Percentile Queue Length [ft/ln]	74.72	15.91	151.47	34.24	35.83	18.10
95th-Percentile Queue Length [veh/ln]	5.38	1.15	10.10	2.47	2.58	1.30
95th-Percentile Queue Length [ft/ln]	134.50	28.64	252.38	61.64	64.49	32.58

**Movement, Approach, & Intersection Results**

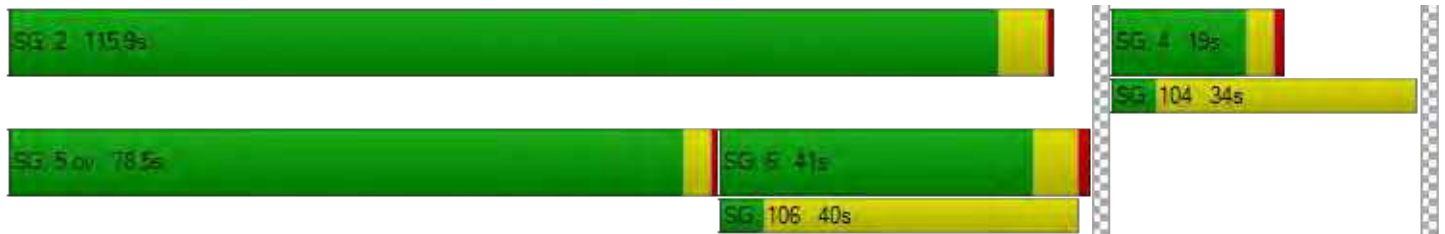
d_M, Delay for Movement [s/veh]	19.97	17.04	18.30	5.26	27.31	6.70
Movement LOS	B	B	B	A	C	A
d_A, Approach Delay [s/veh]	19.75		9.16		13.49	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	11.43					
Intersection LOS	B					
Intersection V/C	0.727					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	23.14	0.00	23.14
I_p,int, Pedestrian LOS Score for Intersection	3.576	0.000	2.885
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1111	444	476
d_b, Bicycle Delay [s]	6.22	19.07	18.29
I_b,int, Bicycle LOS Score for Intersection	2.068	3.739	1.670
Bicycle LOS	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	175.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.108

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	195	425	277	35	67	72	341	410	172	1021	2217	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	195	425	277	35	67	56	341	410	66	1021	2217	72
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	108	71	9	17	14	87	105	17	260	566	18
Total Analysis Volume [veh/h]	199	434	283	36	68	57	348	418	67	1042	2262	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			2			3			0	
v_di, Inbound Pedestrian Volume crossing in		0			3			2			0	
v_co, Outbound Pedestrian Volume crossing		4			0			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		3			0			4			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	22	21	51	9	9	9	26	51	51	25	50	50
g / C, Green / Cycle	0.17	0.17	0.40	0.07	0.07	0.07	0.21	0.40	0.40	0.20	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.27	0.20	0.07	0.05	0.02	0.05	0.23	0.08	0.05	0.38	0.45	0.05
s, saturation flow rate [veh/h]	740	2209	3942	670	2746	1075	1515	4922	1458	2715	5020	1615
c, Capacity [veh/h]	128	369	1577	48	196	77	312	1989	589	538	1990	640
d1, Uniform Delay [s]	52.15	52.54	24.45	57.49	55.76	57.36	50.09	24.48	23.48	50.58	38.08	24.07
k, delay calibration	0.50	0.27	0.11	0.16	0.11	0.15	0.11	0.11	0.11	0.40	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	283.13	94.19	0.05	28.34	1.05	17.46	62.52	0.05	0.08	427.00	63.16	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.55	1.18	0.18	0.75	0.35	0.74	1.12	0.21	0.11	1.94	1.14	0.11
d, Delay for Lane Group [s/veh]	335.27	146.72	24.51	85.83	56.81	74.82	112.61	24.53	23.56	477.58	101.23	24.15
Lane Group LOS	F	F	C	F	E	E	F	C	C	F	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.06	10.56	1.81	1.52	1.08	2.18	7.61	2.75	1.28	40.38	31.73	1.41
50th-Percentile Queue Length [ft/ln]	351.45	263.90	45.13	38.07	26.97	54.60	190.28	68.82	31.98	1009.39	793.28	35.31
95th-Percentile Queue Length [veh/ln]	23.77	17.06	3.25	2.74	1.94	3.93	12.77	4.95	2.30	64.33	44.75	2.54
95th-Percentile Queue Length [ft/ln]	594.29	426.44	81.24	68.52	48.55	98.28	319.14	123.87	57.56	1608.20	1118.76	63.55

**Movement, Approach, & Intersection Results**

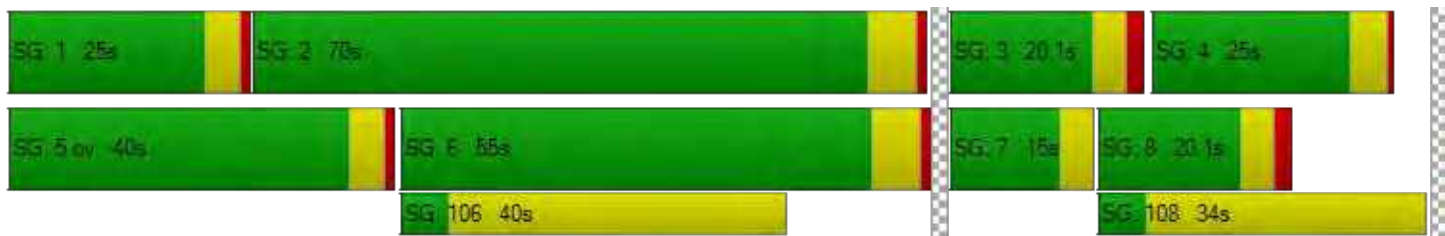
d_M, Delay for Movement [s/veh]	335.27	146.72	24.51	85.83	56.81	74.82	112.61	24.53	23.56	477.58	101.23	24.15
Movement LOS	F	F	C	F	E	E	F	C	C	F	F	C
d_A, Approach Delay [s/veh]	149.93			69.68			61.25			215.69		
Approach LOS	F			E			E			F		
d_I, Intersection Delay [s/veh]	175.52											
Intersection LOS	F											
Intersection V/C	1.108											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.43	0.00	54.43	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.109	0.000	3.328	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	326	238	776	1014
d_b, Bicycle Delay [s]	44.19	49.00	23.62	15.34
I_b,int, Bicycle LOS Score for Intersection	2.315	1.706	2.076	3.417
Bicycle LOS	B	A	B	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	73.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.981

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	99	820	73	190	1023	37	47	14	48	56	25	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	6.30	7.00	9.10	8.40	10.50	1.30	4.50	6.00	23.10	12.50	30.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	820	73	190	1023	37	47	14	48	56	25	84
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	220	20	51	275	10	13	4	13	15	7	23
Total Analysis Volume [veh/h]	106	882	78	204	1100	40	51	15	52	60	27	90
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing in	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	93	76	76	93	82	82	30	30
g / C, Green / Cycle	0.71	0.58	0.58	0.71	0.63	0.63	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.20	0.60	0.61	0.34	0.61	0.62	0.21	0.23
s, saturation flow rate [veh/h]	523	808	779	605	934	917	555	758
c, Capacity [veh/h]	152	471	454	179	590	579	168	199
d1, Uniform Delay [s]	32.18	27.12	27.12	48.05	22.76	23.05	49.87	46.81
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.33	0.42
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	23.46	50.67	53.78	109.75	30.53	32.47	14.87	35.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.70	1.03	1.04	1.14	0.97	0.98	0.70	0.89
d, Delay for Lane Group [s/veh]	55.64	77.79	80.90	157.81	53.29	55.52	64.74	81.98
Lane Group LOS	E	F	F	F	D	E	E	F
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.84	19.83	19.52	7.13	20.42	20.67	4.53	7.42
50th-Percentile Queue Length [ft/ln]	46.08	495.76	487.93	178.24	510.51	516.86	113.29	185.39
95th-Percentile Queue Length [veh/ln]	3.32	27.88	27.66	12.56	27.83	28.13	8.02	11.88
95th-Percentile Queue Length [ft/ln]	82.94	697.04	691.61	313.94	695.79	703.28	200.57	297.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	55.64	79.19	80.90	157.81	54.36	55.52	64.74	64.74	64.74	81.98	81.98	81.98
Movement LOS	E	E	F	F	D	E	E	E	E	F	F	F
d_A, Approach Delay [s/veh]	76.97			70.10			64.74			81.98		
Approach LOS	E			E			E			F		
d_I, Intersection Delay [s/veh]	73.35											
Intersection LOS	E											
Intersection V/C	0.981											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.30	56.30	54.45	54.45
I_p,int, Pedestrian LOS Score for Intersection	3.213	2.929	1.948	2.099
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1123	1077	505	508
d_b, Bicycle Delay [s]	12.58	14.10	36.42	36.38
I_b,int, Bicycle LOS Score for Intersection	2.439	2.668	1.754	1.852
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	75.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.065

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑ ↑		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	49	1221	1098	14	11	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	5.70	10.30	22.20	0.00	6.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	1221	1098	14	11	95
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	332	298	4	3	26
Total Analysis Volume [veh/h]	53	1327	1193	15	12	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing in	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	106	90	90	24	24
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	9	104	92	92	19	19
g / C, Green / Cycle	0.07	0.80	0.70	0.70	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.86	0.77	0.78	0.01	0.13
s, saturation flow rate [veh/h]	795	1546	781	777	1744	779
c, Capacity [veh/h]	55	1233	551	548	259	116
d1, Uniform Delay [s]	60.22	13.13	19.14	19.14	47.40	54.02
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.30
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.85	48.86	67.56	69.60	0.03	41.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	1.08	1.10	1.10	0.05	0.89
d, Delay for Lane Group [s/veh]	86.07	61.99	86.70	88.74	47.42	95.18
Lane Group LOS	F	F	F	F	D	F
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.11	20.47	24.00	24.19	0.34	4.61
50th-Percentile Queue Length [ft/ln]	52.83	511.86	599.92	604.66	8.46	115.30
95th-Percentile Queue Length [veh/ln]	3.80	29.71	34.58	34.95	0.61	8.13
95th-Percentile Queue Length [ft/ln]	95.10	742.86	864.46	873.82	15.22	203.34

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	86.07	61.99	87.71	88.74	47.42	95.18
Movement LOS	F	F	F	F	D	F
d_A, Approach Delay [s/veh]	62.92		87.72		90.19	
Approach LOS	E		F		F	
d_I, Intersection Delay [s/veh]	75.16					
Intersection LOS	E					
Intersection V/C	1.065					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.015	2.978	2.017
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.01	7.42	45.67
I_b,int, Bicycle LOS Score for Intersection	2.698	2.556	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	58.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.109

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	



**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1316	342	42	1066	237	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.30	7.40	9.70	10.30	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1316	342	42	1066	237	45
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	350	91	11	284	63	12
Total Analysis Volume [veh/h]	1400	364	45	1134	252	48
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	100	100	4	107	15	15
g / C, Green / Cycle	0.77	0.77	0.03	0.83	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.90	0.25	0.03	0.76	0.10	0.10
s, saturation flow rate [veh/h]	1549	1480	1704	1494	1312	1630
c, Capacity [veh/h]	1193	1140	57	1236	154	192
d1, Uniform Delay [s]	14.92	4.48	62.26	8.06	56.27	56.30
k, delay calibration	0.50	0.50	0.04	0.50	0.09	0.09
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	87.12	0.74	8.38	12.21	10.91	9.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.17	0.32	0.78	0.92	0.86	0.87
d, Delay for Lane Group [s/veh]	102.04	5.22	70.64	20.27	67.18	65.80
Lane Group LOS	F	A	E	C	E	E
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	27.31	2.59	1.59	8.95	4.77	5.88
50th-Percentile Queue Length [ft/ln]	682.76	64.86	39.79	223.64	119.22	146.92
95th-Percentile Queue Length [veh/ln]	40.84	4.67	2.86	13.85	8.35	9.85
95th-Percentile Queue Length [ft/ln]	1020.98	116.75	71.61	346.27	208.76	246.31

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	102.04	5.22	70.64	20.27	66.55	65.80
Movement LOS	F	A	E	C	E	E
d_A, Approach Delay [s/veh]	82.07		22.19		66.42	
Approach LOS	F		C		E	
d_I, Intersection Delay [s/veh]	58.85					
Intersection LOS	E					
Intersection V/C	1.109					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.42
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.188
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.17	3.45	44.18
I_b,int, Bicycle LOS Score for Intersection	3.015	2.532	2.055
Bicycle LOS	C	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	93.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.128

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐			⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	143	1589	130	40	1202	7	17	93	281	260	79	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	143	1589	130	40	1202	7	17	93	237	260	79	2
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	423	35	11	320	2	5	25	63	69	21	1
Total Analysis Volume [veh/h]	152	1690	138	43	1279	7	18	99	252	277	84	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			3			3	
v_di, Inbound Pedestrian Volume crossing in		3			3			2			2	
v_co, Outbound Pedestrian Volume crossing		8			12			7			11	
v_ci, Inbound Pedestrian Volume crossing mi		7			11			8			12	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			1			5			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	65	65	4	56	56	26	26	26	20	20	20
g / C, Green / Cycle	0.10	0.50	0.50	0.03	0.43	0.43	0.20	0.20	0.20	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.09	0.35	0.36	0.02	0.57	0.57	0.01	0.06	0.19	0.18	0.11	0.00
s, saturation flow rate [veh/h]	1781	3455	1733	1781	1491	780	1420	1577	1312	1536	800	668
c, Capacity [veh/h]	176	1728	867	55	644	337	285	317	264	234	122	102
d1, Uniform Delay [s]	57.68	25.02	25.18	62.52	36.90	36.90	42.04	44.29	50.90	55.09	52.17	46.82
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.14	0.07	0.15	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.16	2.41	4.90	8.31	150.45	159.54	0.03	0.21	20.15	88.70	9.27	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.70	0.71	0.78	1.31	1.31	0.06	0.31	0.96	1.18	0.69	0.02
d, Delay for Lane Group [s/veh]	62.85	27.43	30.08	70.83	187.35	196.44	42.07	44.49	71.05	143.78	61.43	46.85
Lane Group LOS	E	C	C	E	F	F	D	D	E	F	E	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.10	14.34	15.24	1.55	23.60	25.56	0.48	2.76	9.50	6.71	2.91	0.06
50th-Percentile Queue Length [ft/ln]	127.62	358.40	380.97	38.81	589.92	638.92	11.90	69.04	237.52	167.82	72.85	1.41
95th-Percentile Queue Length [veh/ln]	8.81	20.55	21.64	2.79	37.15	39.90	0.86	4.97	14.56	11.71	5.24	0.10
95th-Percentile Queue Length [ft/ln]	220.26	513.64	541.02	69.86	928.65	997.60	21.43	124.27	363.90	292.72	131.12	2.54



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	62.85	28.18	30.08	70.83	190.44	196.44	42.07	44.49	71.05	143.78	61.43	46.85
Movement LOS	E	C	C	E	F	F	D	D	E	F	E	D
d_A, Approach Delay [s/veh]	30.97			186.60			62.51			124.19		
Approach LOS	C			F			E			F		
d_I, Intersection Delay [s/veh]	93.41											
Intersection LOS	F											
Intersection V/C	1.128											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.46	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.325	2.970	2.371	2.499
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.33	21.07	38.56	50.34
I_b,int, Bicycle LOS Score for Intersection	2.649	2.291	2.241	2.215
Bicycle LOS	B	B	B	B

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	45.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.977

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↵		↵		↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1080	1186	423	352	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1080	1186	124	352	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	270	297	31	88	0
Total Analysis Volume [veh/h]	65	1080	1186	124	352	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	5	45	36	36	35	35
g / C, Green / Cycle	0.06	0.50	0.40	0.40	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.05	0.41	0.43	0.10	0.38	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1229	928	1597
c, Capacity [veh/h]	77	1300	1107	492	366	631
d1, Uniform Delay [s]	41.97	19.38	27.02	17.99	26.56	0.00
k, delay calibration	0.04	0.15	0.15	0.15	0.40	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.86	2.03	38.24	0.38	33.49	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.84	0.83	1.07	0.25	0.96	0.00
d, Delay for Lane Group [s/veh]	50.83	21.42	65.26	18.37	60.05	0.00
Lane Group LOS	D	C	F	B	E	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.60	9.26	16.82	1.68	10.35	0.00
50th-Percentile Queue Length [ft/ln]	40.02	231.38	420.53	42.08	258.67	0.00
95th-Percentile Queue Length [veh/ln]	2.88	14.24	24.66	3.03	15.62	0.00
95th-Percentile Queue Length [ft/ln]	72.04	356.12	616.49	75.74	390.56	0.00

**Movement, Approach, & Intersection Results**

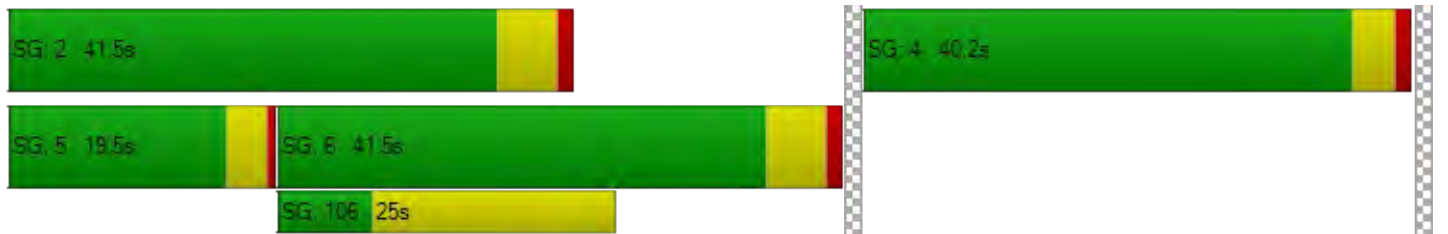
d_M, Delay for Movement [s/veh]	50.83	21.42	65.26	18.37	60.05	0.00
Movement LOS	D	C	F	B	E	A
d_A, Approach Delay [s/veh]	23.08		60.83		60.05	
Approach LOS	C		E		E	
d_I, Intersection Delay [s/veh]	45.33					
Intersection LOS	D					
Intersection V/C	0.977					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.62
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.347
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	801	801	801
d_b, Bicycle Delay [s]	16.16	16.17	16.16
I_b,int, Bicycle LOS Score for Intersection	2.504	2.887	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	43.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	22	897	7	36	924	108	65	7	30	59	11	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0
Total Hourly Volume [veh/h]	22	897	7	36	924	108	65	7	24	59	11	62
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	234	2	9	241	28	17	2	6	15	3	16
Total Analysis Volume [veh/h]	23	934	7	38	963	113	68	7	25	61	11	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing in	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			6			2		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	147	147	147	147	147	147	147	147	147	147
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	3	97	97	6	100	12	12	12	13	13
g / C, Green / Cycle	0.02	0.66	0.66	0.04	0.68	0.08	0.08	0.08	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.28	0.04	0.70	0.03	0.03	0.02	0.06	0.06
s, saturation flow rate [veh/h]	952	1445	1895	952	1537	952	1387	1340	952	1208
c, Capacity [veh/h]	23	953	1250	42	1043	80	117	113	86	109
d1, Uniform Delay [s]	71.86	11.88	11.89	70.17	23.64	63.79	63.78	62.71	65.12	65.04
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	86.75	0.65	0.50	45.99	36.21	2.94	2.01	0.97	10.26	7.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.00	0.43	0.43	0.92	1.03	0.38	0.38	0.22	0.71	0.70
d, Delay for Lane Group [s/veh]	158.62	12.53	12.38	116.16	59.86	66.73	65.79	63.68	75.38	72.81
Lane Group LOS	F	B	B	F	F	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.43	6.52	8.50	1.97	44.31	1.19	1.69	0.93	2.49	3.03
50th-Percentile Queue Length [ft/ln]	35.81	162.91	212.42	49.30	1107.76	29.67	42.24	23.25	62.36	75.86
95th-Percentile Queue Length [veh/ln]	2.58	10.70	13.28	3.55	56.83	2.14	3.04	1.67	4.49	5.46
95th-Percentile Queue Length [ft/ln]	64.45	267.57	331.93	88.74	1420.72	53.40	76.03	41.86	112.26	136.55

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	158.62	12.45	12.38	116.16	59.86	59.86	66.22	65.79	63.68	75.38	72.81	72.81
Movement LOS	F	B	B	F	E	E	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	15.93			61.78			65.55			73.95		
Approach LOS	B			E			E			E		
d_I, Intersection Delay [s/veh]	43.57											
Intersection LOS	D											
Intersection V/C	0.862											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	62.93			62.93			62.93			62.93		
I_p,int, Pedestrian LOS Score for Intersection	2.565			2.772			2.184			2.015		
Crosswalk LOS	B			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	272			272			408			408		
d_b, Bicycle Delay [s]	54.93			54.90			46.72			46.62		
I_b,int, Bicycle LOS Score for Intersection	2.355			3.398			1.735			1.786		
Bicycle LOS	B			C			A			A		

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.782

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	28	783	7	4	878	107	161	6	56	1	2	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.70	0.00	0.00	3.90	3.30	1.00	0.00	0.00	0.00	0.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	28	783	7	4	878	107	161	6	56	1	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	206	2	1	231	28	42	2	15	0	1	2
Total Analysis Volume [veh/h]	29	824	7	4	924	113	169	6	59	1	2	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing in	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			2			13			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	109	109	109	109	109	109	41	41	41	0	41	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	114	114	114	114	27	27
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.05	0.46	0.01	0.58	0.17	0.01
s, saturation flow rate [veh/h]	533	1826	671	1801	1381	1686
c, Capacity [veh/h]	278	1395	419	1376	292	333
d1, Uniform Delay [s]	25.60	7.67	15.06	9.85	60.04	50.46
k, delay calibration	0.50	0.50	0.50	0.50	0.23	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.75	1.88	0.04	3.87	10.09	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.10	0.60	0.01	0.75	0.80	0.03
d, Delay for Lane Group [s/veh]	26.35	9.55	15.10	13.72	70.13	50.49
Lane Group LOS	C	A	B	B	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.70	11.71	0.07	18.52	9.59	0.29
50th-Percentile Queue Length [ft/ln]	17.57	292.68	1.70	463.05	239.78	7.18
95th-Percentile Queue Length [veh/ln]	1.27	17.32	0.12	25.58	14.67	0.52
95th-Percentile Queue Length [ft/ln]	31.63	432.96	3.07	639.50	366.76	12.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.35	9.55	9.55	15.10	13.72	13.72	70.13	70.13	70.13	50.49	50.49	50.49
Movement LOS	C	A	A	B	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	10.12			13.73			70.13			50.49		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	18.59											
Intersection LOS	B											
Intersection V/C	0.782											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.35			64.35			64.35			64.35		
I_p,int, Pedestrian LOS Score for Intersection	2.465			2.868			1.965			1.755		
Crosswalk LOS	B			C			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1400			1400			492			492		
d_b, Bicycle Delay [s]	6.77			6.76			42.86			42.61		
I_b,int, Bicycle LOS Score for Intersection	2.979			3.277			1.946			1.574		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.684

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇑⇐			⇐⇑⇓⇑⇐			⇐⇑⇓⇑⇐			⇐⇑⇓⇑⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	7	686	68	52	905	0	20	82	11	88	94	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.20	10.00	7.40	3.60	0.00	2.70	0.00	0.00	2.60	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	686	68	52	905	0	20	82	11	88	94	93
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	186	18	14	246	0	5	22	3	24	26	25
Total Analysis Volume [veh/h]	8	746	74	57	984	0	22	89	12	96	102	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		6			4			6			3	
v_di, Inbound Pedestrian Volume crossing in		6			3			6			4	
v_co, Outbound Pedestrian Volume crossing		0			2			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			2			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		9			12			11			11	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	116	116	116	116	116	116	34	34	34	0	34	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	117	117	117	117	25	25	25	25
g / C, Green / Cycle	0.78	0.78	0.78	0.78	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.46	0.09	0.53	0.02	0.05	0.08	0.12
s, saturation flow rate [veh/h]	581	1789	638	1846	1169	1839	1258	1710
c, Capacity [veh/h]	352	1393	422	1438	91	306	175	284
d1, Uniform Delay [s]	17.28	6.77	14.10	7.85	70.90	55.10	65.63	59.09
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	1.83	0.66	2.66	1.37	0.62	2.68	4.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.02	0.59	0.14	0.68	0.24	0.33	0.55	0.71
d, Delay for Lane Group [s/veh]	17.40	8.60	14.76	10.51	72.27	55.73	68.31	63.72
Lane Group LOS	B	A	B	B	E	E	E	E
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.15	10.63	0.99	14.87	0.87	3.48	3.75	7.75
50th-Percentile Queue Length [ft/ln]	3.78	265.70	24.76	371.73	21.86	86.99	93.67	193.78
95th-Percentile Queue Length [veh/ln]	0.27	15.97	1.78	21.19	1.57	6.26	6.74	12.32
95th-Percentile Queue Length [ft/ln]	6.80	399.36	44.57	529.83	39.35	156.57	168.60	307.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	17.40	8.60	8.60	14.76	10.51	10.51	72.27	55.73	55.73	68.31	63.72	63.72
Movement LOS	B	A	A	B	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	8.68			10.74			58.69			65.20		
Approach LOS	A			B			E			E		
d_I, Intersection Delay [s/veh]	19.68											
Intersection LOS	B											
Intersection V/C	0.684											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.38			64.38			64.38			64.38		
I_p,int, Pedestrian LOS Score for Intersection	2.621			2.575			2.039			2.186		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1493			1493			399			399		
d_b, Bicycle Delay [s]	4.85			4.86			48.32			48.32		
I_b,int, Bicycle LOS Score for Intersection	2.926			3.277			1.763			2.053		
Bicycle LOS	C			C			A			B		

**Sequence**





Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	61.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.561

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	27	271	112	374	92	416	101	344	170	314	329	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	3.60	2.60	2.70	3.80	2.50	0.50	5.50	5.30	3.70	13.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	119	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	27	271	0	374	92	0	101	344	170	314	329	19
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	71	0	97	24	0	26	90	44	82	86	5
Total Analysis Volume [veh/h]	28	282	0	390	96	0	105	358	177	327	343	20
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		10			2			10			2	
v_di, Inbound Pedestrian Volume crossing in		10			2			10			2	
v_co, Outbound Pedestrian Volume crossing		5			3			2			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			2			3			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		29			22			6			20	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			Yes	
Maximum Recall		No			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	26	26	26	63	63	63	19	19	19	19	24	24	24
g / C, Green / Cycle	0.17	0.17	0.17	0.42	0.42	0.42	0.13	0.13	0.13	0.13	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.15	0.00	0.14	0.14	0.00	0.06	0.10	0.10	0.11	0.13	0.13	0.13
s, saturation flow rate [veh/h]	1810	1825	1569	1772	1805	1567	1774	1892	1850	1487	1734	1808	1634
c, Capacity [veh/h]	313	316	271	744	758	658	222	237	232	186	276	288	260
d1, Uniform Delay [s]	52.06	60.62	0.00	29.19	29.19	0.00	60.94	63.73	63.78	63.86	61.12	61.10	61.20
k, delay calibration	0.11	0.30	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.13	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	20.25	0.00	1.15	1.13	0.00	1.56	6.25	6.73	12.06	6.61	6.28	7.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.09	0.89	0.00	0.32	0.32	0.00	0.47	0.80	0.81	0.85	0.84	0.83	0.84
d, Delay for Lane Group [s/veh]	52.18	80.87	0.00	30.35	30.33	0.00	62.49	69.98	70.51	75.92	67.73	67.38	68.71
Lane Group LOS	D	F	A	C	C	A	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.91	12.30	0.00	6.24	6.35	0.00	3.84	7.50	7.41	6.52	9.06	9.40	8.68
50th-Percentile Queue Length [ft/ln]	22.69	307.44	0.00	156.01	158.74	0.00	95.97	187.4	185.3	163.0	226.43	234.88	216.94
95th-Percentile Queue Length [veh/ln]	1.63	18.05	0.00	10.34	10.48	0.00	6.91	11.99	11.88	10.71	13.99	14.42	13.51
95th-Percentile Queue Length [ft/ln]	40.85	451.22	0.00	258.43	262.05	0.00	172.7	299.6	296.9	267.7	349.82	360.55	337.71

**Movement, Approach, & Intersection Results**

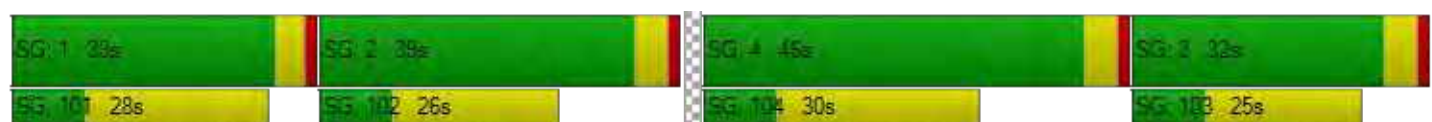
d_M, Delay for Movement [s/veh]	52.18	80.87	0.00	30.34	30.33	0.00	62.49	70.23	75.92	67.63	68.15	68.71
Movement LOS	D	F	A	C	C	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	78.28			30.34			70.37			67.92		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	61.58											
Intersection LOS	E											
Intersection V/C	0.561											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.45	63.45	63.45	63.45
I_p,int, Pedestrian LOS Score for Intersection	2.483	4.278	4.304	2.728
Crosswalk LOS	B	E	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	458
d_b, Bicycle Delay [s]	49.74	39.79	50.30	45.04
I_b,int, Bicycle LOS Score for Intersection	2.267	4.012	2.913	2.129
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road and US 101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	15.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

**Intersection Setup**

Name	Marsh Road		Marsh Road			
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road			
Base Volume Input [veh/h]	1415	0	0	858	771	657
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1415	0	0	858	771	657
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	365	0	0	221	199	169
Total Analysis Volume [veh/h]	1459	0	0	885	795	677
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	53	53	23	23
g / C, Green / Cycle	0.66	0.66	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.42	0.26	0.23	0.25
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2303	2290	981	783
d1, Uniform Delay [s]	7.92	6.18	26.60	27.14
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.34	0.49	0.62	1.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.63	0.39	0.81	0.87
d, Delay for Lane Group [s/veh]	9.26	6.68	27.22	28.30
Lane Group LOS	A	A	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.28	2.93	6.80	5.96
50th-Percentile Queue Length [ft/ln]	157.07	73.27	169.90	148.95
95th-Percentile Queue Length [veh/ln]	10.39	5.28	11.07	9.96
95th-Percentile Queue Length [ft/ln]	259.84	131.89	276.79	249.03

**Movement, Approach, & Intersection Results**

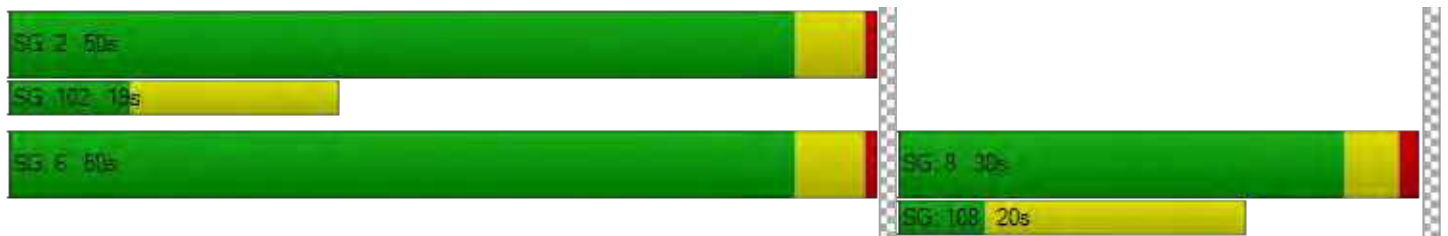
d_M, Delay for Movement [s/veh]	9.26	0.00	0.00	6.68	27.22	28.30
Movement LOS	A			A	C	C
d_A, Approach Delay [s/veh]	9.26		6.68		27.22	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	15.78					
Intersection LOS	B					
Intersection V/C	0.727					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.863	2.483
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.45	18.31
I_b,int, Bicycle LOS Score for Intersection	2.763	2.290	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.280

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	88	10	50	79	15	37	41	16	22	51	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	88	10	50	79	15	37	41	16	22	51	131
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	23	3	16	25	5	12	13	5	6	14	36
Total Analysis Volume [veh/h]	14	92	10	63	99	19	47	52	20	24	56	144
Pedestrian Volume [ped/h]	3			3			9			5		



**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	722	730	726	801
Degree of Utilization, x	0.16	0.25	0.16	0.28

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.57	0.97	0.58	1.15
95th-Percentile Queue Length [ft]	14.25	24.37	14.59	28.64
Approach Delay [s/veh]	8.94	9.55	8.93	9.23
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	9.21			
Intersection LOS	A			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	50.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ← ←			← ←			← ← ←			← ← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	1502	10	30	7	8	196	296	1931	371	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1502	10	30	7	8	196	296	1931	371	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	391	3	8	2	2	51	77	503	97	9
Total Analysis Volume [veh/h]	169	28	1565	10	31	7	8	204	308	2011	386	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			1			1			0	
v_di, Inbound Pedestrian Volume crossing in		0			1			1			0	
v_co, Outbound Pedestrian Volume crossing		0			22			0			22	
v_ci, Inbound Pedestrian Volume crossing mi		0			22			0			22	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			13			25			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	69	11	11	0	32	25	32	48	32	48	69	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	19	88	29	29	36	36	36	67	67
g / C, Green / Cycle	0.12	0.55	0.18	0.18	0.22	0.22	0.22	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.38	0.01	0.01	0.07	0.07	0.21	0.40	0.24
s, saturation flow rate [veh/h]	1822	4114	1863	1610	1621	1480	1443	5075	1787
c, Capacity [veh/h]	215	2160	339	293	360	329	321	2120	746
d1, Uniform Delay [s]	69.75	29.01	54.28	54.32	51.96	51.96	60.93	44.91	35.48
k, delay calibration	0.50	0.50	0.04	0.04	0.11	0.11	0.30	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.53	2.16	0.03	0.04	0.48	0.52	30.18	10.68	3.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.91	0.72	0.07	0.08	0.31	0.31	0.96	0.95	0.56
d, Delay for Lane Group [s/veh]	112.27	31.16	54.31	54.36	52.44	52.48	91.11	55.60	38.55
Lane Group LOS	F	C	D	D	D	D	F	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.57	15.72	0.86	0.78	3.82	3.49	14.97	27.60	13.29
50th-Percentile Queue Length [ft/ln]	264.21	393.09	21.43	19.47	95.45	87.21	374.29	690.04	332.24
95th-Percentile Queue Length [veh/ln]	15.90	22.23	1.54	1.40	6.87	6.28	21.32	36.22	19.27
95th-Percentile Queue Length [ft/ln]	397.50	555.66	38.58	35.04	171.82	156.97	532.94	905.44	481.70

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	112.27	112.27	31.16	54.31	54.34	54.36	52.44	52.46	91.11	55.60	38.55	38.55
Movement LOS	F	F	C	D	D	D	D	D	F	E	D	D
d_A, Approach Delay [s/veh]	40.23			54.33			75.35			52.65		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	50.55											
Intersection LOS	D											
Intersection V/C	0.816											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	71.25	71.25	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.007	2.423	0.000
Crosswalk LOS	F	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	80	349	555	791
d_b, Bicycle Delay [s]	73.76	54.89	42.29	29.24
I_b,int, Bicycle LOS Score for Intersection	4.467	1.599	1.989	5.572
Bicycle LOS	E	A	A	F

**Sequence**

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.276

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	838	623	0	1053	739	0	0	0	472	0	391
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	3.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	838	623	0	1053	739	0	0	0	472	0	391
Peak Hour Factor	1.0000	0.9700	1.0000	1.0000	0.9700	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	216	156	0	271	190	0	0	0	118	0	109
Total Analysis Volume [veh/h]	0	864	623	0	1086	762	0	0	0	472	0	434
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing in		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		6			1			0			0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	56	56	56		16	16
g / C, Green / Cycle	0.70	0.70	0.70		0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.17	0.21	0.87		0.13	0.15
s, saturation flow rate [veh/h]	5053	5053	877		3514	2859
c, Capacity [veh/h]	3534	3534	614		704	573
d1, Uniform Delay [s]	4.35	4.59	11.44		29.48	30.08
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.16	0.23	122.14		1.12	2.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.24	0.31	1.24		0.67	0.76
d, Delay for Lane Group [s/veh]	4.51	4.82	133.59		30.59	32.17
Lane Group LOS	A	A	F		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	1.37	1.82	28.21		4.16	3.97
50th-Percentile Queue Length [ft/ln]	34.28	45.55	705.29		103.98	99.17
95th-Percentile Queue Length [veh/ln]	2.47	3.28	43.41		7.49	7.14
95th-Percentile Queue Length [ft/ln]	61.70	82.00	1085.34		187.17	178.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	4.51	0.00	0.00	4.82	133.59	0.00	0.00	0.00	30.59	0.00	32.17
Movement LOS		A			A	F				C		C
d_A, Approach Delay [s/veh]	4.51		57.91				0.00			31.35		
Approach LOS	A		E				A			C		
d_I, Intersection Delay [s/veh]	38.51											
Intersection LOS	D											
Intersection V/C	1.276											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.922	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.10	12.07	39.95	12.06
I_b,int, Bicycle LOS Score for Intersection	2.035	2.576	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	92.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.417

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	967	318	0	1510	424	0	0	0	364	0	789
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	2.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	967	318	0	1510	424	0	0	0	364	0	789
Peak Hour Factor	1.0000	0.9700	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	249	82	0	389	106	0	0	0	91	0	219
Total Analysis Volume [veh/h]	0	997	328	0	1557	424	0	0	0	364	0	877
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			3			0			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	L	R
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	36	36	36
g / C, Green / Cycle	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.20	0.21	0.57	0.10	0.56
s, saturation flow rate [veh/h]	5012	1551	2715	3514	1567
c, Capacity [veh/h]	2253	697	1220	1582	706
d1, Uniform Delay [s]	15.10	15.24	21.97	13.45	21.71
k, delay calibration	0.50	0.50	0.50	0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	2.27	130.69	0.07	113.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.44	0.47	1.28	0.23	1.24
d, Delay for Lane Group [s/veh]	15.73	17.51	152.65	13.52	135.29
Lane Group LOS	B	B	F	B	F
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.00	4.30	21.66	1.91	17.06
50th-Percentile Queue Length [ft/ln]	100.05	107.39	541.43	47.71	426.42
95th-Percentile Queue Length [veh/ln]	7.20	7.69	34.06	3.43	27.23
95th-Percentile Queue Length [ft/ln]	180.09	192.36	851.44	85.87	680.84

**Movement, Approach, & Intersection Results**

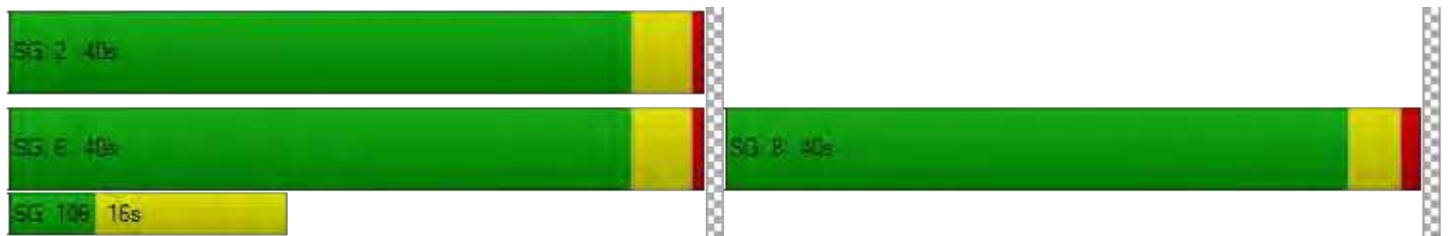
d_M, Delay for Movement [s/veh]	0.00	15.73	17.51	0.00	152.65	0.00	0.00	0.00	0.00	13.52	0.00	135.29
Movement LOS		B	B		F					B		F
d_A, Approach Delay [s/veh]		16.17			152.65			0.00			99.58	
Approach LOS		B			F			A			F	
d_I, Intersection Delay [s/veh]	92.82											
Intersection LOS	F											
Intersection V/C	1.417											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.09	12.08	39.95	12.07
I_b,int, Bicycle LOS Score for Intersection	2.288	2.416	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	10.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	102	221	1174	492	287	1963
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	221	1174	492	287	1963
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	58	309	129	76	517
Total Analysis Volume [veh/h]	107	233	1236	518	302	2066
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	47	47	47	47	47	47
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	10	10	17	17	28	28
g / C, Green / Cycle	0.21	0.21	0.36	0.36	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.03	0.18	0.25	0.33	0.37	0.41
s, saturation flow rate [veh/h]	3420	1320	4967	1547	820	5020
c, Capacity [veh/h]	721	278	1812	564	609	2916
d1, Uniform Delay [s]	15.28	17.97	12.76	14.41	7.66	7.09
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	2.58	0.17	2.66	0.23	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.15	0.84	0.68	0.92	0.50	0.71
d, Delay for Lane Group [s/veh]	15.31	20.54	12.93	17.07	7.89	7.21
Lane Group LOS	B	C	B	B	A	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.42	2.32	2.54	3.98	0.76	2.32
50th-Percentile Queue Length [ft/ln]	10.45	58.07	63.42	99.44	18.88	57.97
95th-Percentile Queue Length [veh/ln]	0.75	4.18	4.57	7.16	1.36	4.17
95th-Percentile Queue Length [ft/ln]	18.81	104.53	114.15	179.00	33.98	104.34

**Movement, Approach, & Intersection Results**

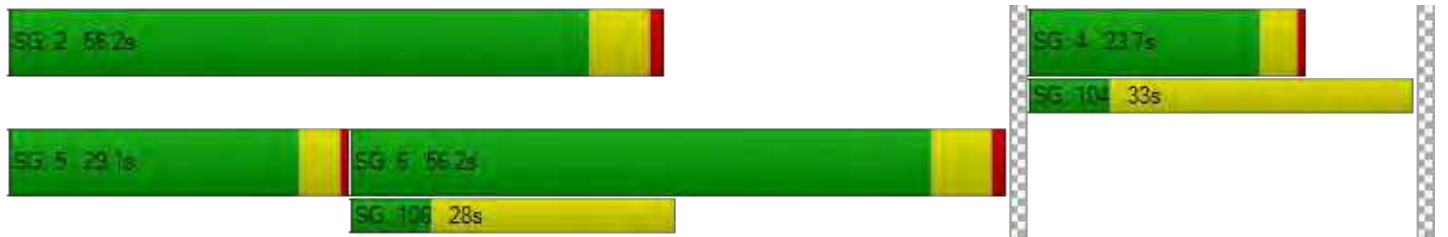
d_M, Delay for Movement [s/veh]	15.31	20.54	12.93	17.07	7.89	7.21
Movement LOS	B	C	B	B	A	A
d_A, Approach Delay [s/veh]	18.90		14.16		7.30	
Approach LOS	B		B		A	
d_I, Intersection Delay [s/veh]	10.88					
Intersection LOS	B					
Intersection V/C	0.760					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	13.96	13.96	13.96
I_p,int, Pedestrian LOS Score for Intersection	2.664	3.486	3.359
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	844	2111	2111
d_b, Bicycle Delay [s]	7.91	0.07	0.07
I_b,int, Bicycle LOS Score for Intersection	1.560	2.524	2.862
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	8.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	115	47	1510	117	101	2050
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	47	1510	117	101	2050
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	12	389	30	26	528
Total Analysis Volume [veh/h]	119	48	1557	121	104	2113
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	34	34	34	34	34	34
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	4	4	12	12	3	19
g / C, Green / Cycle	0.12	0.12	0.36	0.36	0.09	0.57
(v / s)_i Volume / Saturation Flow Rate	0.04	0.03	0.31	0.08	0.06	0.42
s, saturation flow rate [veh/h]	3173	1509	4959	1492	1810	5024
c, Capacity [veh/h]	371	177	1769	532	168	2858
d1, Uniform Delay [s]	13.93	13.85	10.37	7.73	15.01	5.51
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	0.30	0.59	0.08	1.38	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.32	0.27	0.88	0.23	0.62	0.74
d, Delay for Lane Group [s/veh]	14.11	14.15	10.96	7.81	16.39	5.66
Lane Group LOS	B	B	B	A	B	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.36	0.30	2.04	0.35	0.62	0.70
50th-Percentile Queue Length [ft/ln]	9.12	7.50	50.97	8.73	15.61	17.58
95th-Percentile Queue Length [veh/ln]	0.66	0.54	3.67	0.63	1.12	1.27
95th-Percentile Queue Length [ft/ln]	16.42	13.50	91.75	15.71	28.09	31.64

**Movement, Approach, & Intersection Results**

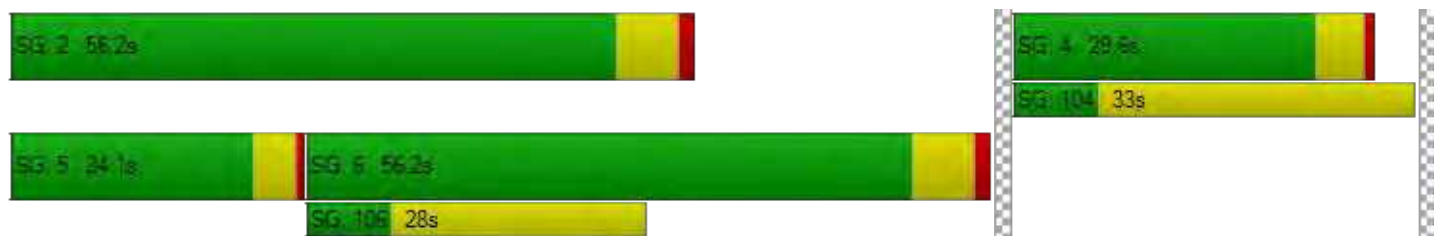
d_M, Delay for Movement [s/veh]	14.11	14.15	10.96	7.81	16.39	5.66
Movement LOS	B	B	B	A	B	A
d_A, Approach Delay [s/veh]	14.12		10.73		6.16	
Approach LOS	B		B		A	
d_I, Intersection Delay [s/veh]	8.38					
Intersection LOS	A					
Intersection V/C	0.621					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	7.90	7.90	7.90
I_p,int, Pedestrian LOS Score for Intersection	2.151	3.380	3.333
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1459	2918	2918
d_b, Bicycle Delay [s]	1.25	3.61	3.61
I_b,int, Bicycle LOS Score for Intersection	1.560	2.483	2.779
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 199: Bayfront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	7.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

**Intersection Setup**

Name	Bldg 21		Bayfront Expwy		Bayfront Expwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑⇐		⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	95	74	1055	449	280	2198
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	35.50	35.50	11.60	11.60	4.40	4.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	74	1055	449	280	2198
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	19	275	117	73	572
Total Analysis Volume [veh/h]	99	77	1099	468	292	2290
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	25	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	38	38	38	38	38	38
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	4	4	15	15	24	24
g / C, Green / Cycle	0.11	0.11	0.39	0.39	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.26	0.35	0.19	0.51
s, saturation flow rate [veh/h]	1172	1057	4231	1320	1511	4496
c, Capacity [veh/h]	132	119	1654	516	1113	2813
d1, Uniform Delay [s]	16.14	16.20	9.48	10.87	4.18	5.40
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.38	2.99	0.17	2.56	0.05	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.69	0.72	0.66	0.91	0.26	0.81
d, Delay for Lane Group [s/veh]	18.52	19.19	9.65	13.43	4.23	5.62
Lane Group LOS	B	B	A	B	A	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.72	0.69	1.42	2.42	0.07	0.62
50th-Percentile Queue Length [ft/ln]	17.97	17.34	35.62	60.40	1.63	15.49
95th-Percentile Queue Length [veh/ln]	1.29	1.25	2.56	4.35	0.12	1.12
95th-Percentile Queue Length [ft/ln]	32.34	31.21	64.12	108.72	2.94	27.89

**Movement, Approach, & Intersection Results**

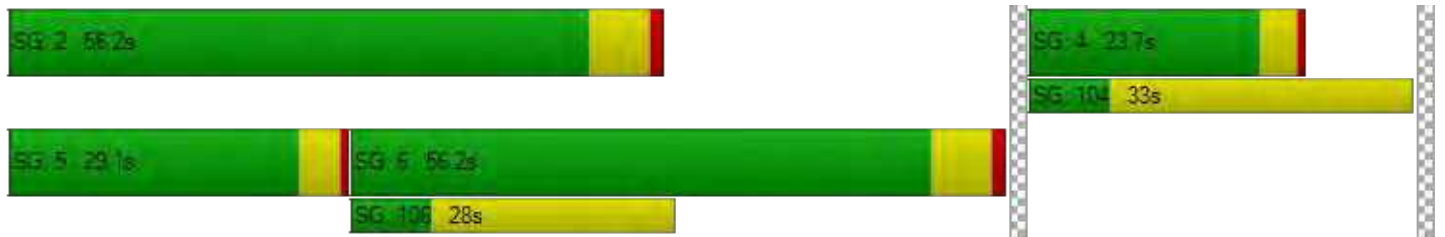
d_M, Delay for Movement [s/veh]	18.59	19.19	9.65	13.43	4.23	5.62
Movement LOS	B	B	A	B	A	A
d_A, Approach Delay [s/veh]	18.84		10.78		5.46	
Approach LOS	B		B		A	
d_I, Intersection Delay [s/veh]	7.93					
Intersection LOS	A					
Intersection V/C	0.775					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	9.47	9.47	9.47
I_p,int, Pedestrian LOS Score for Intersection	2.491	3.368	3.360
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1060	2651	2651
d_b, Bicycle Delay [s]	4.16	2.00	2.00
I_b,int, Bicycle LOS Score for Intersection	1.850	2.421	2.980
Bicycle LOS	A	B	C

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	11.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.504

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	200	96	9	319	128	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	96	9	319	128	16
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	27	3	91	36	5
Total Analysis Volume [veh/h]	227	109	10	363	145	18
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	763	740	630
Degree of Utilization, x	0.44	0.50	0.26

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	2.27	2.87	1.03
95th-Percentile Queue Length [ft]	56.68	71.73	25.75
Approach Delay [s/veh]	11.39	12.70	10.71
Approach LOS	B	B	B
Intersection Delay [s/veh]	11.82		
Intersection LOS	B		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

**Intersection Setup**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	980.00	760.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	

**Volumes**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Base Volume Input [veh/h]	0	70	909	265	98	2486
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	88.60	11.70	11.70	6.30	6.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	70	909	265	98	2486
Peak Hour Factor	0.9500	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	19	242	70	26	661
Total Analysis Volume [veh/h]	0	74	967	282	104	2645
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	25	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	66	66	66	66	66
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	8	39	39	48	48
g / C, Green / Cycle	0.13	0.59	0.59	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.17	0.23	0.21	0.16	0.60
s, saturation flow rate [veh/h]	436	4227	1319	654	4426
c, Capacity [veh/h]	56	2487	776	565	3195
d1, Uniform Delay [s]	28.94	7.30	7.17	3.39	6.39
k, delay calibration	0.06	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	154.82	0.04	0.11	0.06	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.31	0.39	0.36	0.18	0.83
d, Delay for Lane Group [s/veh]	183.76	7.34	7.27	3.45	6.61
Lane Group LOS	F	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.32	1.68	1.46	0.18	3.45
50th-Percentile Queue Length [ft/ln]	83.06	42.10	36.52	4.53	86.20
95th-Percentile Queue Length [veh/ln]	5.98	3.03	2.63	0.33	6.21
95th-Percentile Queue Length [ft/ln]	149.50	75.77	65.73	8.16	155.15

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	183.76	7.34	7.27	3.45	6.61
Movement LOS		F	A	A	A	A
d_A, Approach Delay [s/veh]	183.76		7.33		6.49	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	9.97					
Intersection LOS	A					
Intersection V/C	0.888					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	23.09	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.391	0.000
Crosswalk LOS	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	603	1507	1507
d_b, Bicycle Delay [s]	16.19	2.01	2.01
I_b,int, Bicycle LOS Score for Intersection	1.560	2.247	3.072
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 207: Chilco St/Constitution Dr**

Control Type:	All-way stop	Delay (sec / veh):	32.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.985

**Intersection Setup**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	72	207	46	175	193	423	69	20	73	34	28	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	10.10	6.80	2.30	3.40	0.00	40.00	40.00	29.40	14.30	37.50	7.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	207	46	175	193	423	69	20	73	34	28	43
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	53	12	45	49	108	18	5	19	9	7	11
Total Analysis Volume [veh/h]	73	211	47	179	197	432	70	20	74	35	29	44
Pedestrian Volume [ped/h]	21			0			0			152		

**Intersection Settings****Lanes**

Capacity per Entry Lane [veh/h]	494	534	541	639	415	487	463
Degree of Utilization, x	0.15	0.48	0.33	0.99	0.22	0.15	0.23

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.52	2.60	1.44	14.77	0.81	0.53	0.90
95th-Percentile Queue Length [ft]	12.88	65.11	35.91	369.34	20.37	13.30	22.39
Approach Delay [s/veh]	14.61		45.67		12.70		13.14
Approach LOS	B		E		B		B
Intersection Delay [s/veh]	32.06						
Intersection LOS	D						



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	50.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
Base Volume Input [veh/h]	79	368	19	15	234	211	36	20	100	2	153	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80	0.00	17.90	100.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	368	19	15	234	211	36	20	100	2	153	19
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	102	5	4	65	59	10	6	28	1	43	5
Total Analysis Volume [veh/h]	88	409	21	17	260	234	40	22	111	2	170	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		13			14			5			5	
v_di, Inbound Pedestrian Volume crossing in		14			13			5			5	
v_co, Outbound Pedestrian Volume crossing		0			1			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	25	0	0	19	0	0	46	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	29	29	16	30	30
g / C, Green / Cycle	0.34	0.33	0.33	0.19	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.36	0.01	0.32	0.17	0.07	0.07
s, saturation flow rate [veh/h]	1421	1357	1566	1040	1466	1279
c, Capacity [veh/h]	534	453	522	196	543	437
d1, Uniform Delay [s]	29.88	19.73	28.47	34.68	20.43	20.47
k, delay calibration	0.50	0.11	0.39	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	32.36	0.03	23.99	12.30	0.17	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.97	0.04	0.95	0.88	0.19	0.21
d, Delay for Lane Group [s/veh]	62.23	19.77	52.46	46.98	20.60	20.71
Lane Group LOS	E	B	D	D	C	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.50	0.23	13.11	4.17	1.46	1.32
50th-Percentile Queue Length [ft/ln]	387.45	5.85	327.63	104.33	36.50	32.93
95th-Percentile Queue Length [veh/ln]	21.95	0.42	19.04	7.51	2.63	2.37
95th-Percentile Queue Length [ft/ln]	548.85	10.52	476.06	187.80	65.70	59.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	62.23	62.23	62.23	19.77	52.46	52.46	46.98	46.98	46.98	20.60	20.64	20.71
Movement LOS	E	E	E	B	D	D	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	62.23			51.37			46.98			20.65		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	50.61											
Intersection LOS	D											
Intersection V/C	0.846											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.49	33.49	33.49	33.49
I_p,int, Pedestrian LOS Score for Intersection	2.204	2.122	2.102	2.223
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	959	479	342	959
d_b, Bicycle Delay [s]	11.87	25.32	30.08	11.87
I_b,int, Bicycle LOS Score for Intersection	2.414	2.403	1.845	1.719
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.106

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	29	72	86	80	276	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	72	86	80	276	28
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	23	28	26	90	9
Total Analysis Volume [veh/h]	38	94	112	104	358	36
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.11	0.14	0.10	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	17.29	12.64	8.48	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.97	0.97	0.32	0.32	0.00	0.00
95th-Percentile Queue Length [ft/ln]	24.26	24.26	8.09	8.09	0.00	0.00
d_A, Approach Delay [s/veh]	13.98		4.39		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.77					
Intersection LOS	C					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	38	42	60	103	13	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.50	12.50	15.60	15.60	46.80	46.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	42	60	103	13	65
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	12	18	30	4	19
Total Analysis Volume [veh/h]	45	49	71	121	15	76
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.02	0.09
d_M, Delay for Movement [s/veh]	7.82	0.00	0.00	0.00	11.52	10.07
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.11	0.11	0.00	0.00	0.40	0.40
95th-Percentile Queue Length [ft/ln]	2.64	2.64	0.00	0.00	10.01	10.01
d_A, Approach Delay [s/veh]	3.74		0.00		10.31	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.42					
Intersection LOS	B					

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Scenario 16 Existing AM (2019 vols)

Report File: \\...\Existing AM.pdf

12/9/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	891		1462		1123	436	3912

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	24	1050	7	448	1189	272	13	4	58	225	19	0	3309

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	114	804	80	29	1007	413	496	47	137	35	15	25	3202

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	0	810	82	267	755	47	139	63	2	39	19	202	2425

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	87	422	456	400	416	104	1885

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	6	11	9	129	28	269	21	561	114	193	619	56	2016

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	829	67	1148	2695	205	416	5360

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	195	425	277	35	67	72	341	410	172	1021	2217	72	5304

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	99	820	73	190	1023	37	47	14	48	56	25	84	2516

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	49	1221	1098	14	11	95	2488

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1316	342	42	1066	237	45	3048

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	143	1589	130	40	1202	7	17	93	281	260	79	36	3877

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1080	1186	423	352	60	3166

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	22	897	7	36	924	108	65	7	30	59	11	62	2228

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	28	783	7	4	878	107	161	6	56	1	2	6	2039

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	7	686	68	52	905	0	20	82	11	88	94	93	2106

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	27	271	112	374	92	416	101	344	170	314	329	19	2569

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road and US 101 NB Ramps	1415		858		771	657	3701

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	88	10	50	79	15	37	41	16	22	51	131	553

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	162	27	1502	10	30	7	8	196	296	1931	371	34	4574

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	838	623	1053	739	472	391	4116

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	967	318	1510	424	364	789	4372

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	102	221	1174	492	287	1963	4239

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	115	47	1510	117	101	2050	3940

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	95	74	1055	449	280	2198	4151

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	200	96	9	319	128	16	768

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	70		909	265	98	2486	3828

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	72	207	46	175	193	423	69	20	73	34	28	43	1383

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	79	368	19	15	234	211	36	20	100	2	153	19	1256

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	29	72	86	80	276	28	571

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	38	42	60	103	13	65	321

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Scenario 16 Existing AM (2019 vols)

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12/9/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	891		1462		1123	436	3912
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>891</b>		<b>1462</b>		<b>1123</b>	<b>436</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	24	1050	7	448	1189	272	13	4	58	225	19	0	3309
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>24</b>	<b>1050</b>	<b>7</b>	<b>448</b>	<b>1189</b>	<b>272</b>	<b>13</b>	<b>4</b>	<b>58</b>	<b>225</b>	<b>19</b>	<b>0</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	114	804	80	29	1007	413	496	47	137	35	15	25	3202
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>114</b>	<b>804</b>	<b>80</b>	<b>29</b>	<b>1007</b>	<b>413</b>	<b>496</b>	<b>47</b>	<b>137</b>	<b>35</b>	<b>15</b>	<b>25</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	Final Base	0	810	82	267	755	47	139	63	2	39	19	202	2425
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>0</b>	<b>810</b>	<b>82</b>	<b>267</b>	<b>755</b>	<b>47</b>	<b>139</b>	<b>63</b>	<b>2</b>	<b>39</b>	<b>19</b>	<b>202</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	87	422	456	400	416	104	1885
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>87</b>	<b>422</b>	<b>456</b>	<b>400</b>	<b>416</b>	<b>104</b>	<b>1885</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	Final Base	6	11	9	129	28	269	21	561	114	193	619	56	2016
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>6</b>	<b>11</b>	<b>9</b>	<b>129</b>	<b>28</b>	<b>269</b>	<b>21</b>	<b>561</b>	<b>114</b>	<b>193</b>	<b>619</b>	<b>56</b>	<b>2016</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	829	67	1148	2695	205	416	5360
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>829</b>	<b>67</b>	<b>1148</b>	<b>2695</b>	<b>205</b>	<b>416</b>	<b>5360</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	195	425	277	35	67	72	341	410	172	1021	2217	72	5304
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>195</b>	<b>425</b>	<b>277</b>	<b>35</b>	<b>67</b>	<b>72</b>	<b>341</b>	<b>410</b>	<b>172</b>	<b>1021</b>	<b>2217</b>	<b>72</b>	<b>5304</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	99	820	73	190	1023	37	47	14	48	56	25	84	2516
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>99</b>	<b>820</b>	<b>73</b>	<b>190</b>	<b>1023</b>	<b>37</b>	<b>47</b>	<b>14</b>	<b>48</b>	<b>56</b>	<b>25</b>	<b>84</b>	<b>2516</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	49	1221	1098	14	11	95	2488
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>49</b>	<b>1221</b>	<b>1098</b>	<b>14</b>	<b>11</b>	<b>95</b>	<b>2488</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1316	342	42	1066	237	45	3048
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1316</b>	<b>342</b>	<b>42</b>	<b>1066</b>	<b>237</b>	<b>45</b>	<b>3048</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	143	1589	130	40	1202	7	17	93	281	260	79	36	3877
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>143</b>	<b>1589</b>	<b>130</b>	<b>40</b>	<b>1202</b>	<b>7</b>	<b>17</b>	<b>93</b>	<b>281</b>	<b>260</b>	<b>79</b>	<b>36</b>	<b>3877</b>



ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1080	1186	423	352	60	3166
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1080</b>	<b>1186</b>	<b>423</b>	<b>352</b>	<b>60</b>	<b>3166</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	22	897	7	36	924	108	65	7	30	59	11	62	2228
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>897</b>	<b>7</b>	<b>36</b>	<b>924</b>	<b>108</b>	<b>65</b>	<b>7</b>	<b>30</b>	<b>59</b>	<b>11</b>	<b>62</b>	<b>2228</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	28	783	7	4	878	107	161	6	56	1	2	6	2039
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>28</b>	<b>783</b>	<b>7</b>	<b>4</b>	<b>878</b>	<b>107</b>	<b>161</b>	<b>6</b>	<b>56</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>2039</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	7	686	68	52	905	0	20	82	11	88	94	93	2106
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>7</b>	<b>686</b>	<b>68</b>	<b>52</b>	<b>905</b>	<b>0</b>	<b>20</b>	<b>82</b>	<b>11</b>	<b>88</b>	<b>94</b>	<b>93</b>	<b>2106</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd- Willow Rd	Final Base	27	271	112	374	92	416	101	344	170	314	329	19	2569
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>27</b>	<b>271</b>	<b>112</b>	<b>374</b>	<b>92</b>	<b>416</b>	<b>101</b>	<b>344</b>	<b>170</b>	<b>314</b>	<b>329</b>	<b>19</b>	<b>2569</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road and US 101 NB Ramps	Final Base	1415		858		771	657	3701
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1415</b>		<b>858</b>		<b>771</b>	<b>657</b>	<b>3701</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	13	88	10	50	79	15	37	41	16	22	51	131	553
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>88</b>	<b>10</b>	<b>50</b>	<b>79</b>	<b>15</b>	<b>37</b>	<b>41</b>	<b>16</b>	<b>22</b>	<b>51</b>	<b>131</b>	<b>553</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	162	27	1502	10	30	7	8	196	296	1931	371	34	4574
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>162</b>	<b>27</b>	<b>1502</b>	<b>10</b>	<b>30</b>	<b>7</b>	<b>8</b>	<b>196</b>	<b>296</b>	<b>1931</b>	<b>371</b>	<b>34</b>	<b>4574</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	838	623	1053	739	472	391	4116
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>838</b>	<b>623</b>	<b>1053</b>	<b>739</b>	<b>472</b>	<b>391</b>	<b>4116</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	967	318	1510	424	364	789	4372
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>967</b>	<b>318</b>	<b>1510</b>	<b>424</b>	<b>364</b>	<b>789</b>	<b>4372</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	102	221	1174	492	287	1963	4239
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>102</b>	<b>221</b>	<b>1174</b>	<b>492</b>	<b>287</b>	<b>1963</b>	<b>4239</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	115	47	1510	117	101	2050	3940
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>115</b>	<b>47</b>	<b>1510</b>	<b>117</b>	<b>101</b>	<b>2050</b>	<b>3940</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	Final Base	95	74	1055	449	280	2198	4151
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>95</b>	<b>74</b>	<b>1055</b>	<b>449</b>	<b>280</b>	<b>2198</b>	<b>4151</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	200	96	9	319	128	16	768
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>200</b>	<b>96</b>	<b>9</b>	<b>319</b>	<b>128</b>	<b>16</b>	<b>768</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	70	909	265	98	2486	3828	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>70</b>	<b>909</b>	<b>265</b>	<b>98</b>	<b>2486</b>	<b>3828</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	72	207	46	175	193	423	69	20	73	34	28	43	1383
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>72</b>	<b>207</b>	<b>46</b>	<b>175</b>	<b>193</b>	<b>423</b>	<b>69</b>	<b>20</b>	<b>73</b>	<b>34</b>	<b>28</b>	<b>43</b>	<b>1383</b>

ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	79	368	19	15	234	211	36	20	100	2	153	19	1256
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>79</b>	<b>368</b>	<b>19</b>	<b>15</b>	<b>234</b>	<b>211</b>	<b>36</b>	<b>20</b>	<b>100</b>	<b>2</b>	<b>153</b>	<b>19</b>	<b>1256</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	29	72	86	80	276	28	571
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>29</b>	<b>72</b>	<b>86</b>	<b>80</b>	<b>276</b>	<b>28</b>	<b>571</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	Final Base	38	42	60	103	13	65	321
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>38</b>	<b>42</b>	<b>60</b>	<b>103</b>	<b>13</b>	<b>65</b>	<b>321</b>

## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	111	144	204	94
2	108	140	198	91
3	105	137	194	89
4	99	128	182	84
5	88	114	161	74
6	87	112	159	73
7	85	111	157	72
8	78	101	143	66
9	77	99	141	65
10	75	98	139	64
11	65	85	120	55
12	61	79	112	52
13	60	78	110	51
14	44	58	82	38
15	44	58	82	38
16	31	40	57	26
17	18	23	33	15
18	18	23	33	15
19	10	13	18	8
20	6	7	10	5
21	3	4	6	3
22	1	1	2	1
23	1	1	2	1
24	1	1	2	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	255	1	204	No	No	No	No	No	No	No	No	No	No
2	1	248	1	198	No	No	No	No	No	No	No	No	No	No
3	1	242	1	194	No	No	No	No	No	No	No	No	No	No
4	1	227	1	182	No	No	No	No	No	No	No	No	No	No
5	1	202	1	161	No	No	No	No	No	No	No	No	No	No
6	1	199	1	159	No	No	No	No	No	No	No	No	No	No
7	1	196	1	157	No	No	No	No	No	No	No	No	No	No
8	1	179	1	143	No	No	No	No	No	No	No	No	No	No
9	1	176	1	141	No	No	No	No	No	No	No	No	No	No
10	1	173	1	139	No	No	No	No	No	No	No	No	No	No
11	1	150	1	120	No	No	No	No	No	No	No	No	No	No
12	1	140	1	112	No	No	No	No	No	No	No	No	No	No
13	1	138	1	110	No	No	No	No	No	No	No	No	No	No
14	1	102	1	82	No	No	No	No	No	No	No	No	No	No
15	1	102	1	82	No	No	No	No	No	No	No	No	No	No
16	1	71	1	57	No	No	No	No	No	No	No	No	No	No
17	1	41	1	33	No	No	No	No	No	No	No	No	No	No
18	1	41	1	33	No	No	No	No	No	No	No	No	No	No
19	1	23	1	18	No	No	No	No	No	No	No	No	No	No
20	1	13	1	10	No	No	No	No	No	No	No	No	No	No
21	1	7	1	6	No	No	No	No	No	No	No	No	No	No
22	1	2	1	2	No	No	No	No	No	No	No	No	No	No
23	1	2	1	2	No	No	No	No	No	No	No	No	No	No
24	1	2	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.2	8.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:31	0:13
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	204	94
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	553	553
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	328	296	144
2	318	287	140
3	312	281	137
4	292	263	128
5	259	234	114
6	256	231	112
7	253	228	111
8	230	207	101
9	226	204	99
10	223	201	98
11	194	175	85
12	180	163	79
13	177	160	78
14	131	118	58
15	131	118	58
16	92	83	40
17	52	47	23
18	52	47	23
19	30	27	13
20	16	15	7
21	10	9	4
22	3	3	1
23	3	3	1
24	3	3	1



## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	624	1	144	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	1	605	1	140	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
3	1	593	1	137	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
4	1	555	1	128	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	1	493	1	114	No	No	Yes	Yes	No	No	No	Yes	No	No
6	1	487	1	112	No	No	Yes	Yes	No	No	No	Yes	No	No
7	1	481	1	111	No	No	Yes	Yes	No	No	No	Yes	No	No
8	1	437	1	101	No	No	No	Yes	No	No	No	Yes	No	No
9	1	430	1	99	No	No	No	Yes	No	No	No	Yes	No	No
10	1	424	1	98	No	No	No	Yes	No	No	No	Yes	No	No
11	1	369	1	85	No	No	No	Yes	No	No	No	No	No	No
12	1	343	1	79	No	No	No	No	No	No	No	No	No	No
13	1	337	1	78	No	No	No	No	No	No	No	No	No	No
14	1	249	1	58	No	No	No	No	No	No	No	No	No	No
15	1	249	1	58	No	No	No	No	No	No	No	No	No	No
16	1	175	1	40	No	No	No	No	No	No	No	No	No	No
17	1	99	1	23	No	No	No	No	No	No	No	No	No	No
18	1	99	1	23	No	No	No	No	No	No	No	No	No	No
19	1	57	1	13	No	No	No	No	No	No	No	No	No	No
20	1	31	1	7	No	No	No	No	No	No	No	No	No	No
21	1	19	1	4	No	No	No	No	No	No	No	No	No	No
22	1	6	1	1	No	No	No	No	No	No	No	No	No	No
23	1	6	1	1	No	No	No	No	No	No	No	No	No	No
24	1	6	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	0	2	4	10	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:25
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	144
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	768
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 207: Chilco St/Constitution Dr

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	105	162	791	325
2	102	157	767	315
3	100	154	751	309
4	93	144	704	289
5	83	128	625	257
6	82	126	617	254
7	81	125	609	250
8	74	113	554	227
9	72	112	546	224
10	71	110	538	221
11	62	96	467	192
12	58	89	435	179
13	57	87	427	176
14	42	65	316	130
15	42	65	316	130
16	29	45	221	91
17	17	26	127	52
18	17	26	127	52
19	9	15	71	29
20	5	8	40	16
21	3	5	24	10
22	1	2	8	3
23	1	2	8	3
24	1	2	8	3

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	267	2	791	No	No	No	No	No	No	No	No	Yes	Yes
2	2	259	2	767	No	No	No	No	No	No	No	No	Yes	Yes
3	2	254	2	751	No	No	No	No	No	No	No	No	Yes	Yes
4	2	237	2	704	No	No	No	No	No	No	No	No	Yes	Yes
5	2	211	2	625	No	No	No	No	No	No	No	No	Yes	Yes
6	2	208	2	617	No	No	No	No	No	No	No	No	Yes	Yes
7	2	206	2	609	No	No	No	No	No	No	No	No	Yes	Yes
8	2	187	2	554	No	No	No	No	No	No	No	No	Yes	No
9	2	184	2	546	No	No	No	No	No	No	No	No	Yes	No
10	2	181	2	538	No	No	No	No	No	No	No	No	Yes	No
11	2	158	2	467	No	No	No	No	No	No	No	No	Yes	No
12	2	147	2	435	No	No	No	No	No	No	No	No	No	No
13	2	144	2	427	No	No	No	No	No	No	No	No	No	No
14	2	107	2	316	No	No	No	No	No	No	No	No	No	No
15	2	107	2	316	No	No	No	No	No	No	No	No	No	No
16	2	74	2	221	No	No	No	No	No	No	No	No	No	No
17	2	43	2	127	No	No	No	No	No	No	No	No	No	No
18	2	43	2	127	No	No	No	No	No	No	No	No	No	No
19	2	24	2	71	No	No	No	No	No	No	No	No	No	No
20	2	13	2	40	No	No	No	No	No	No	No	No	No	No
21	2	8	2	24	No	No	No	No	No	No	No	No	No	No
22	2	3	2	8	No	No	No	No	No	No	No	No	No	No
23	2	3	2	8	No	No	No	No	No	No	No	No	No	No
24	2	3	2	8	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	11	7

## Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	45.7	14.6
Number of Lanes on Minor Street Approach	2	2
VehicleHours of Stopped Delay on Minor Approach (h:mm)	10:02	1:19
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	791	325
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1383	1383
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	No
<b>Warrant Met for Intersection</b>	<b>Yes</b>	

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	304	166	101
2	295	161	98
3	289	158	96
4	271	148	90
5	240	131	80
6	237	129	79
7	234	128	78
8	213	116	71
9	210	115	70
10	207	113	69
11	179	98	60
12	167	91	56
13	164	90	55
14	122	66	40
15	122	66	40
16	85	46	28
17	49	27	16
18	49	27	16
19	27	15	9
20	15	8	5
21	9	5	3
22	3	2	1
23	3	2	1
24	3	2	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	470	1	101	No	No	No	Yes	No	No	No	Yes	No	No
2	1	456	1	98	No	No	No	Yes	No	No	No	Yes	No	No
3	1	447	1	96	No	No	No	Yes	No	No	No	Yes	No	No
4	1	419	1	90	No	No	No	Yes	No	No	No	No	No	No
5	1	371	1	80	No	No	No	No	No	No	No	No	No	No
6	1	366	1	79	No	No	No	No	No	No	No	No	No	No
7	1	362	1	78	No	No	No	No	No	No	No	No	No	No
8	1	329	1	71	No	No	No	No	No	No	No	No	No	No
9	1	325	1	70	No	No	No	No	No	No	No	No	No	No
10	1	320	1	69	No	No	No	No	No	No	No	No	No	No
11	1	277	1	60	No	No	No	No	No	No	No	No	No	No
12	1	258	1	56	No	No	No	No	No	No	No	No	No	No
13	1	254	1	55	No	No	No	No	No	No	No	No	No	No
14	1	188	1	40	No	No	No	No	No	No	No	No	No	No
15	1	188	1	40	No	No	No	No	No	No	No	No	No	No
16	1	131	1	28	No	No	No	No	No	No	No	No	No	No
17	1	76	1	16	No	No	No	No	No	No	No	No	No	No
18	1	76	1	16	No	No	No	No	No	No	No	No	No	No
19	1	42	1	9	No	No	No	No	No	No	No	No	No	No
20	1	23	1	5	No	No	No	No	No	No	No	No	No	No
21	1	14	1	3	No	No	No	No	No	No	No	No	No	No
22	1	5	1	1	No	No	No	No	No	No	No	No	No	No
23	1	5	1	1	No	No	No	No	No	No	No	No	No	No
24	1	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	3	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	14
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:23
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	101
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	571
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 265: Adam Court/Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	80	163	78
2	78	158	76
3	76	155	74
4	71	145	69
5	63	129	62
6	62	127	61
7	62	126	60
8	56	114	55
9	55	112	54
10	54	111	53
11	47	96	46
12	44	90	43
13	43	88	42
14	32	65	31
15	32	65	31
16	22	46	22
17	13	26	12
18	13	26	12
19	7	15	7
20	4	8	4
21	2	5	2
22	1	2	1
23	1	2	1
24	1	2	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	243	1	78	No	No	No	No	No	No	No	No	No	No
2	1	236	1	76	No	No	No	No	No	No	No	No	No	No
3	1	231	1	74	No	No	No	No	No	No	No	No	No	No
4	1	216	1	69	No	No	No	No	No	No	No	No	No	No
5	1	192	1	62	No	No	No	No	No	No	No	No	No	No
6	1	189	1	61	No	No	No	No	No	No	No	No	No	No
7	1	188	1	60	No	No	No	No	No	No	No	No	No	No
8	1	170	1	55	No	No	No	No	No	No	No	No	No	No
9	1	167	1	54	No	No	No	No	No	No	No	No	No	No
10	1	165	1	53	No	No	No	No	No	No	No	No	No	No
11	1	143	1	46	No	No	No	No	No	No	No	No	No	No
12	1	134	1	43	No	No	No	No	No	No	No	No	No	No
13	1	131	1	42	No	No	No	No	No	No	No	No	No	No
14	1	97	1	31	No	No	No	No	No	No	No	No	No	No
15	1	97	1	31	No	No	No	No	No	No	No	No	No	No
16	1	68	1	22	No	No	No	No	No	No	No	No	No	No
17	1	39	1	12	No	No	No	No	No	No	No	No	No	No
18	1	39	1	12	No	No	No	No	No	No	No	No	No	No
19	1	22	1	7	No	No	No	No	No	No	No	No	No	No
20	1	12	1	4	No	No	No	No	No	No	No	No	No	No
21	1	7	1	2	No	No	No	No	No	No	No	No	No	No
22	1	3	1	1	No	No	No	No	No	No	No	No	No	No
23	1	3	1	1	No	No	No	No	No	No	No	No	No	No
24	1	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:13
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	78
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	321
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections



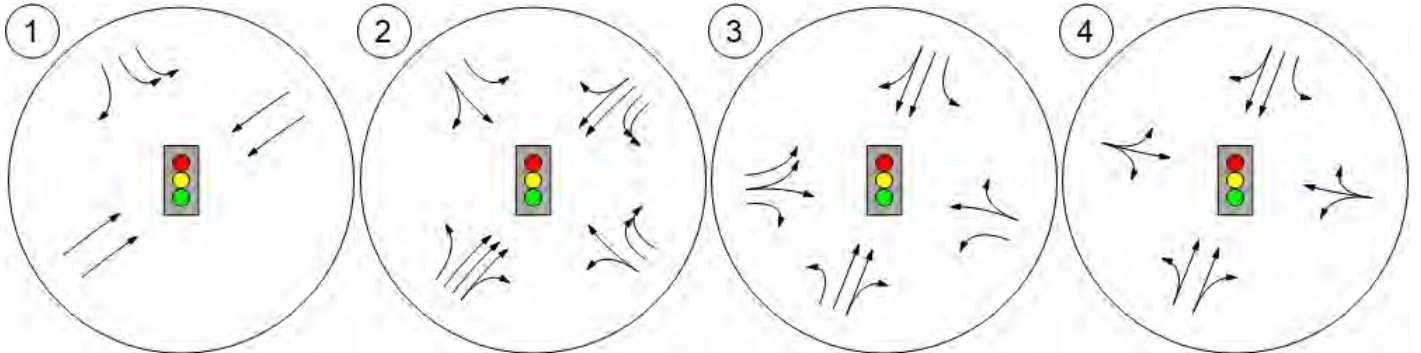


Lane Configuration and Traffic Control

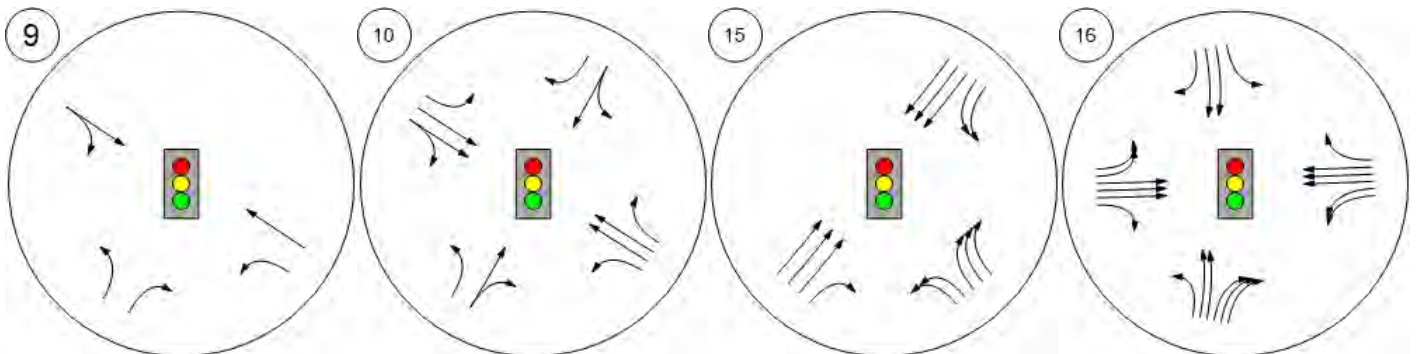


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



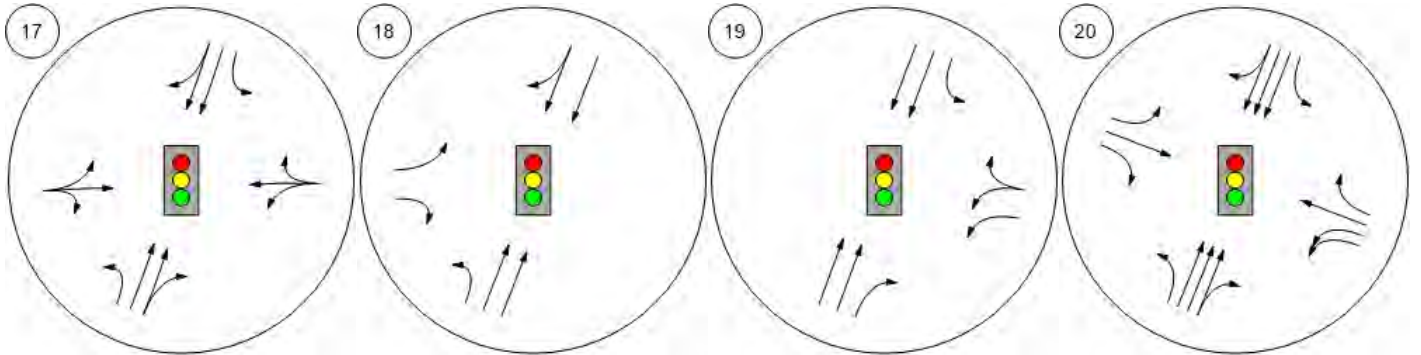
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



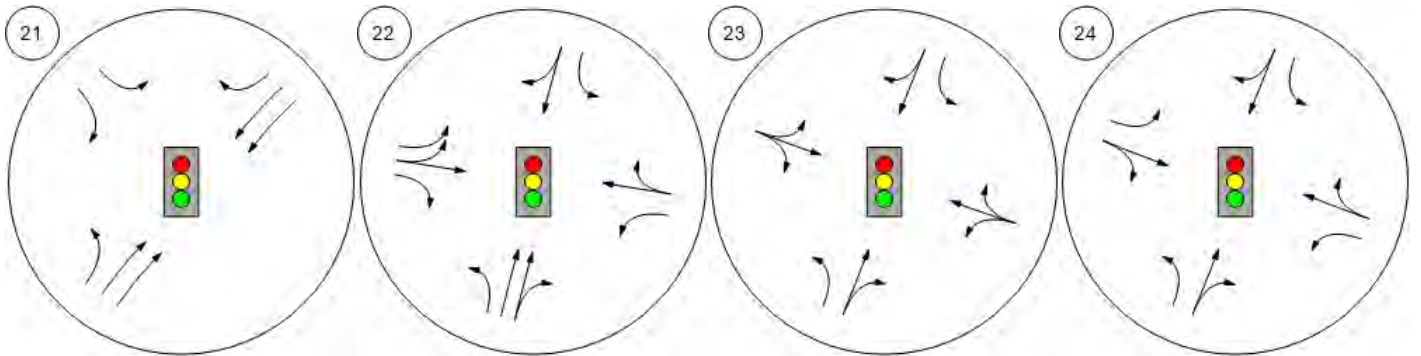
Lane Configuration and Traffic Control



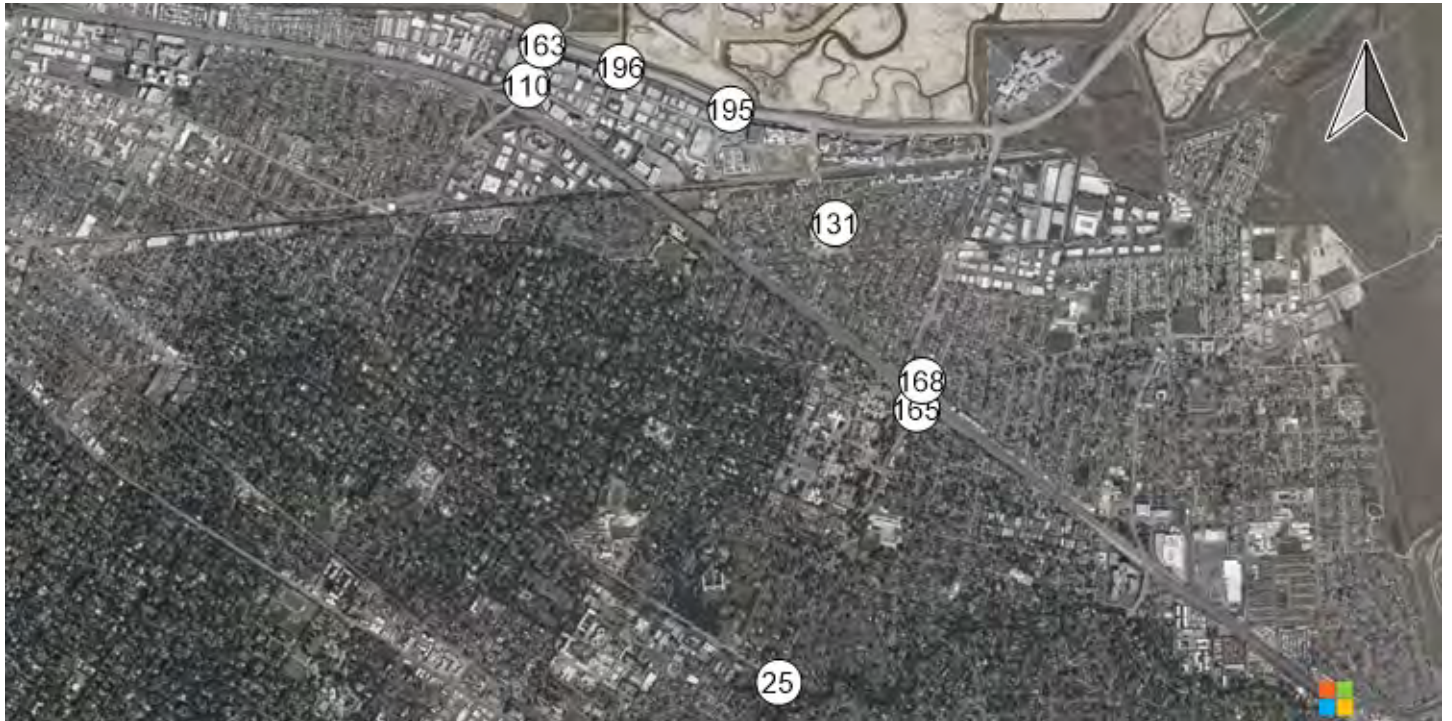
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



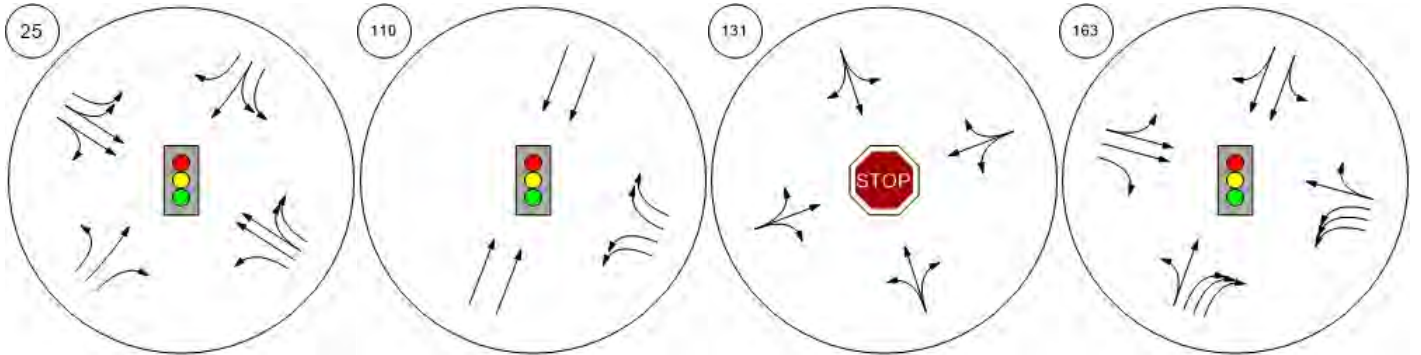
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



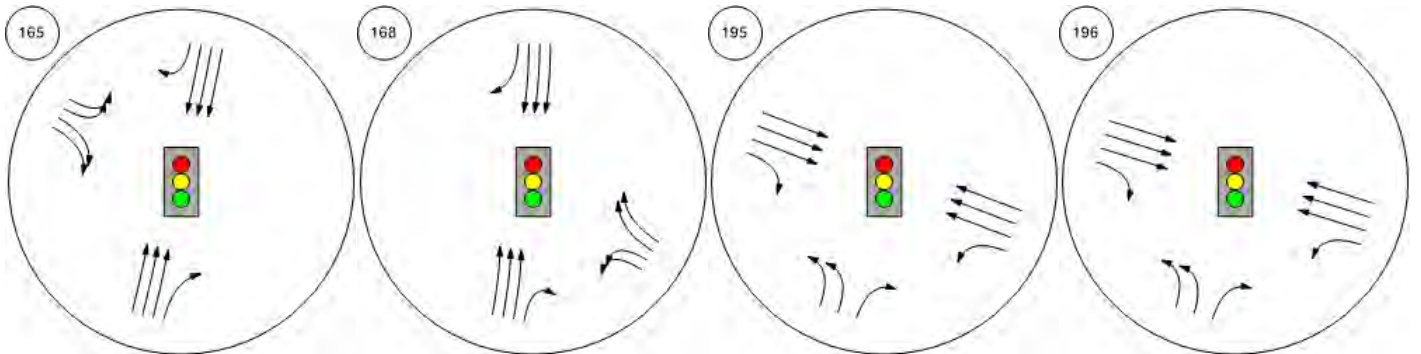
Lane Configuration and Traffic Control



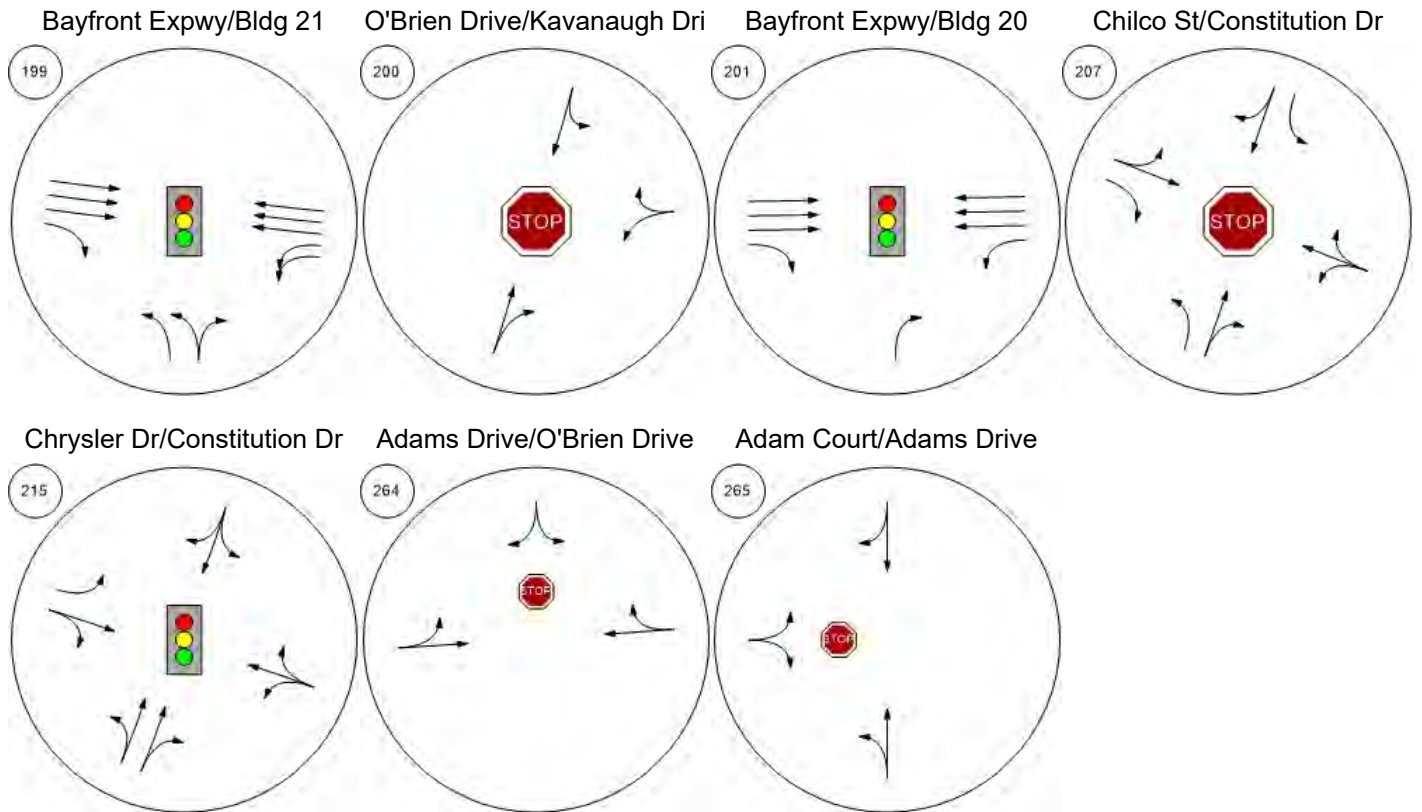
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



Lane Configuration and Traffic Control

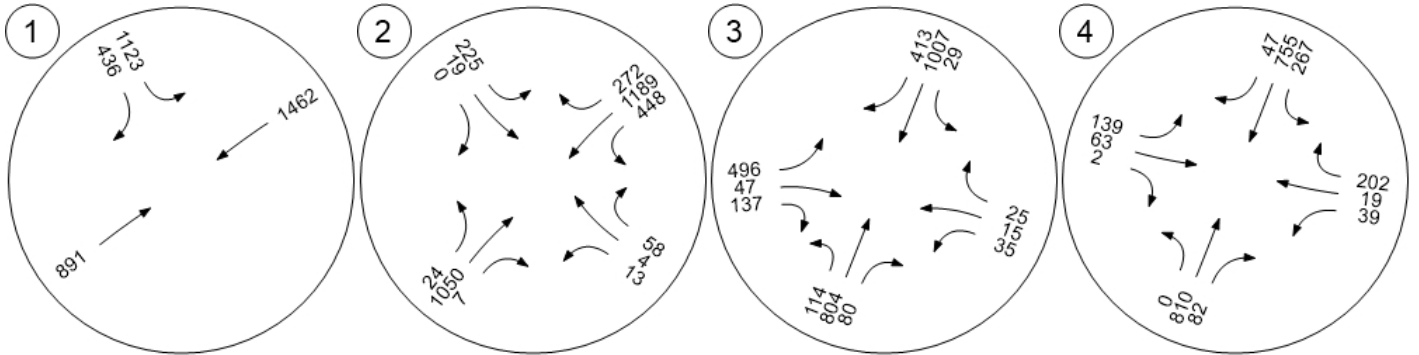


Traffic Volume - Base Volume

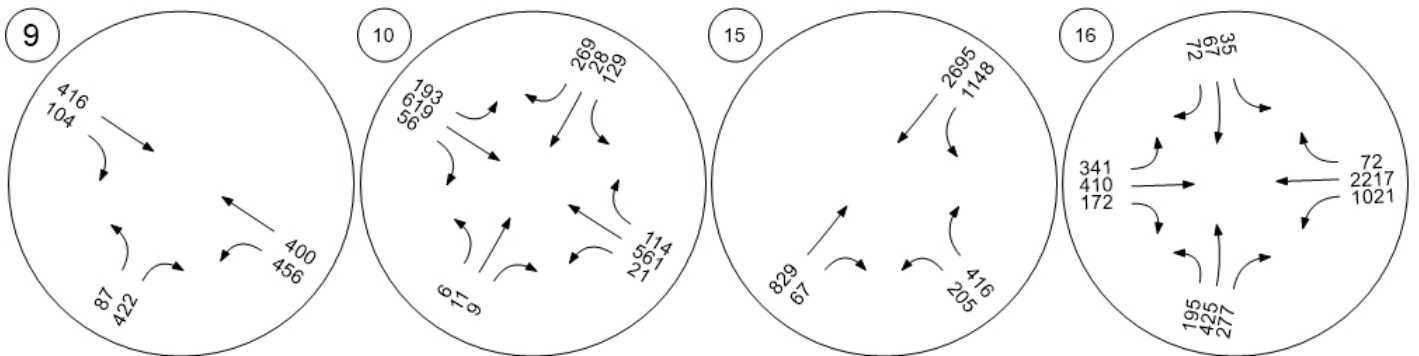


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



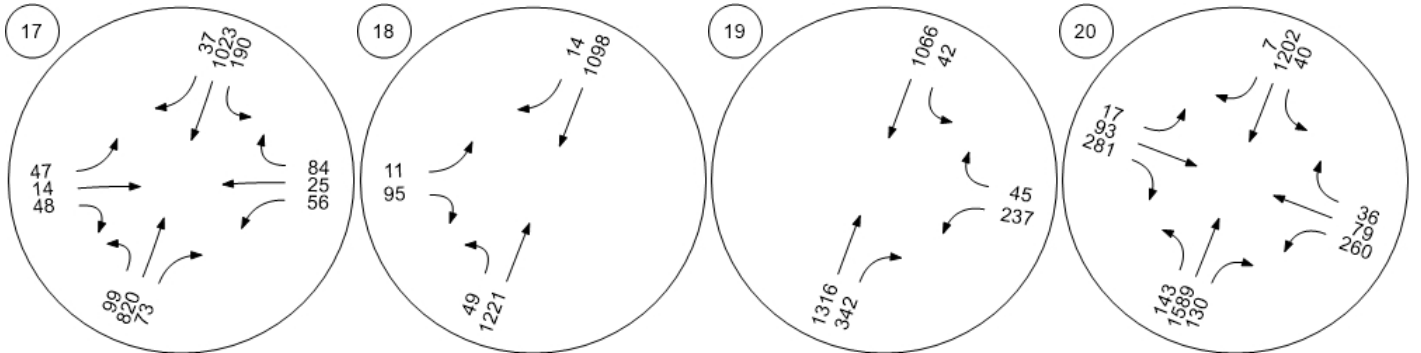
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



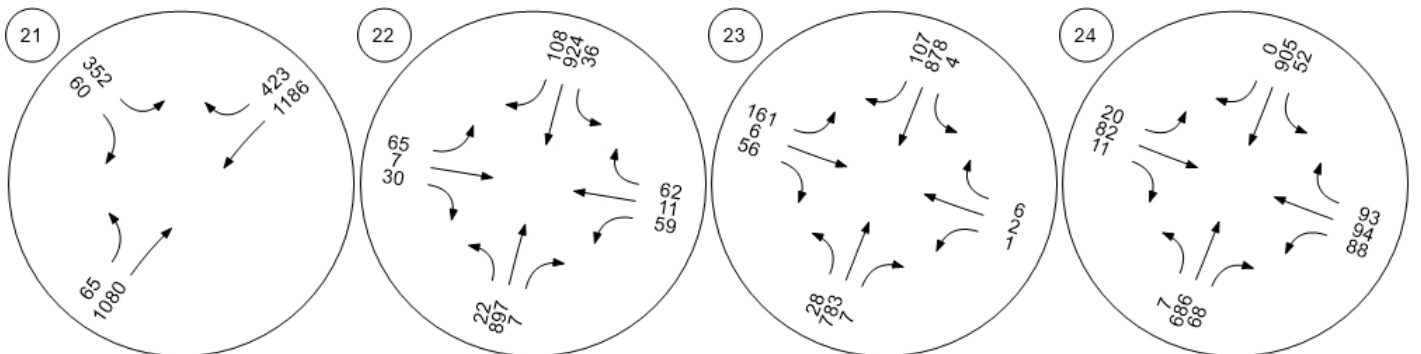
Traffic Volume - Base Volume



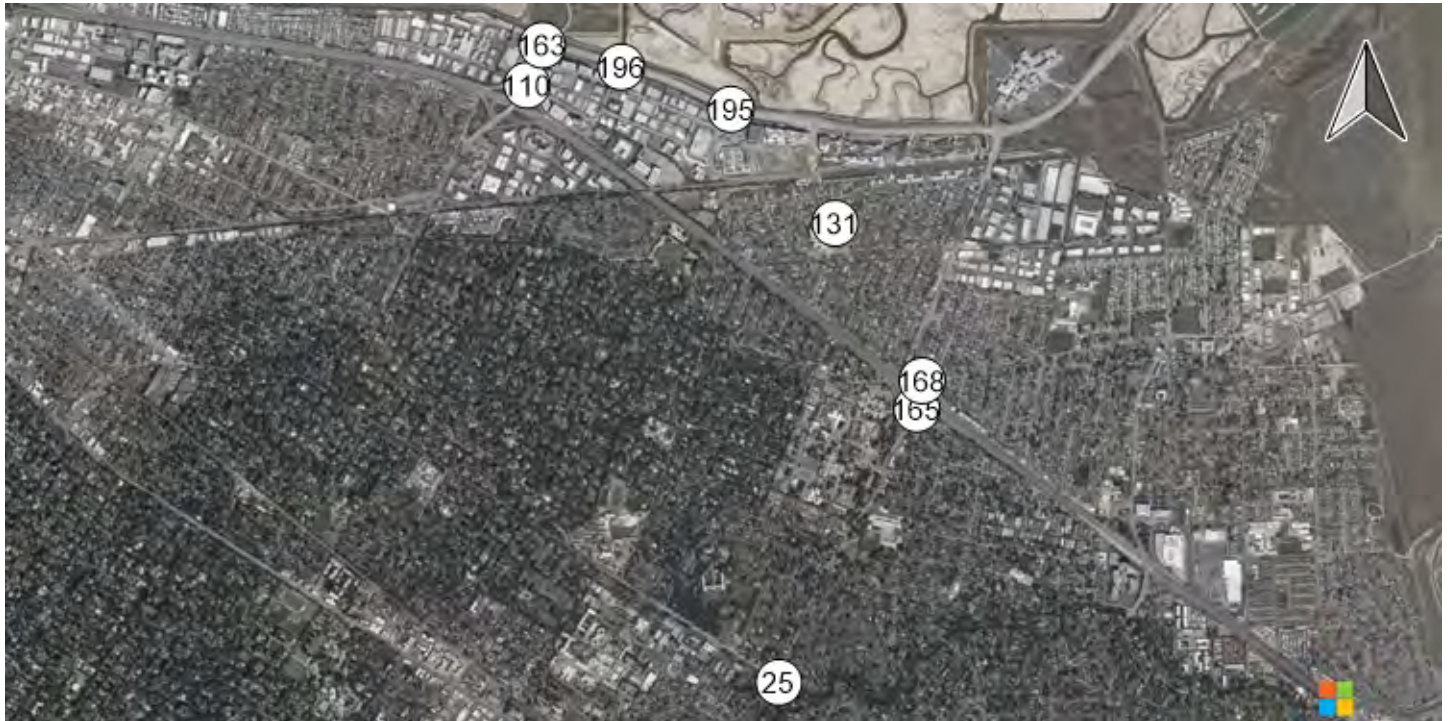
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



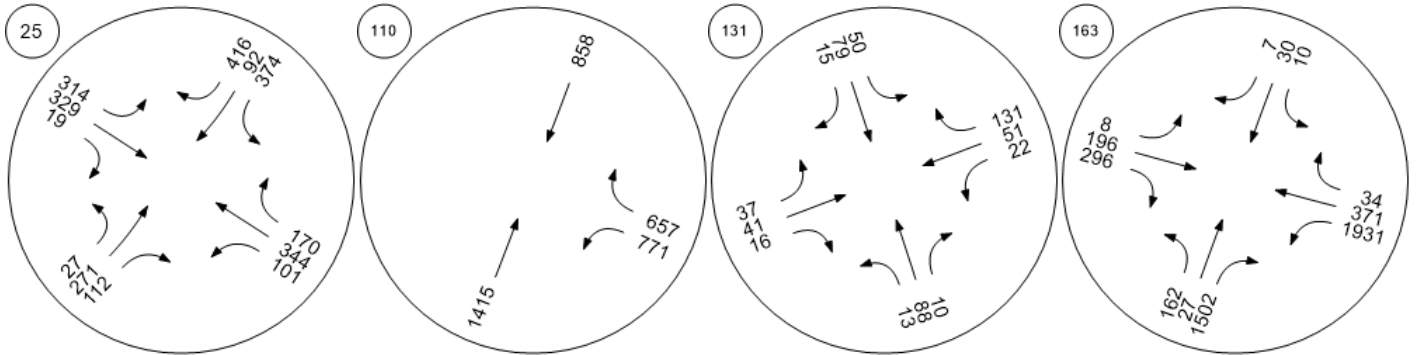
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



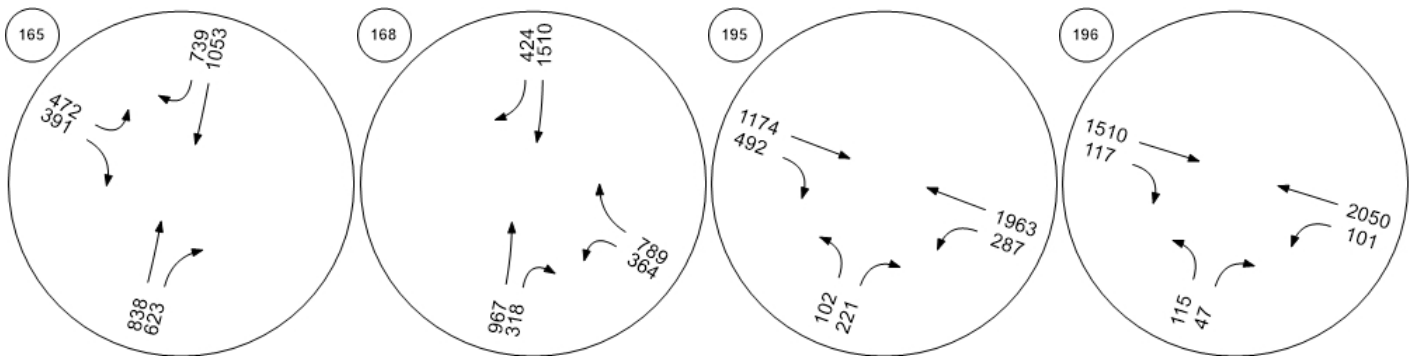
Traffic Volume - Base Volume



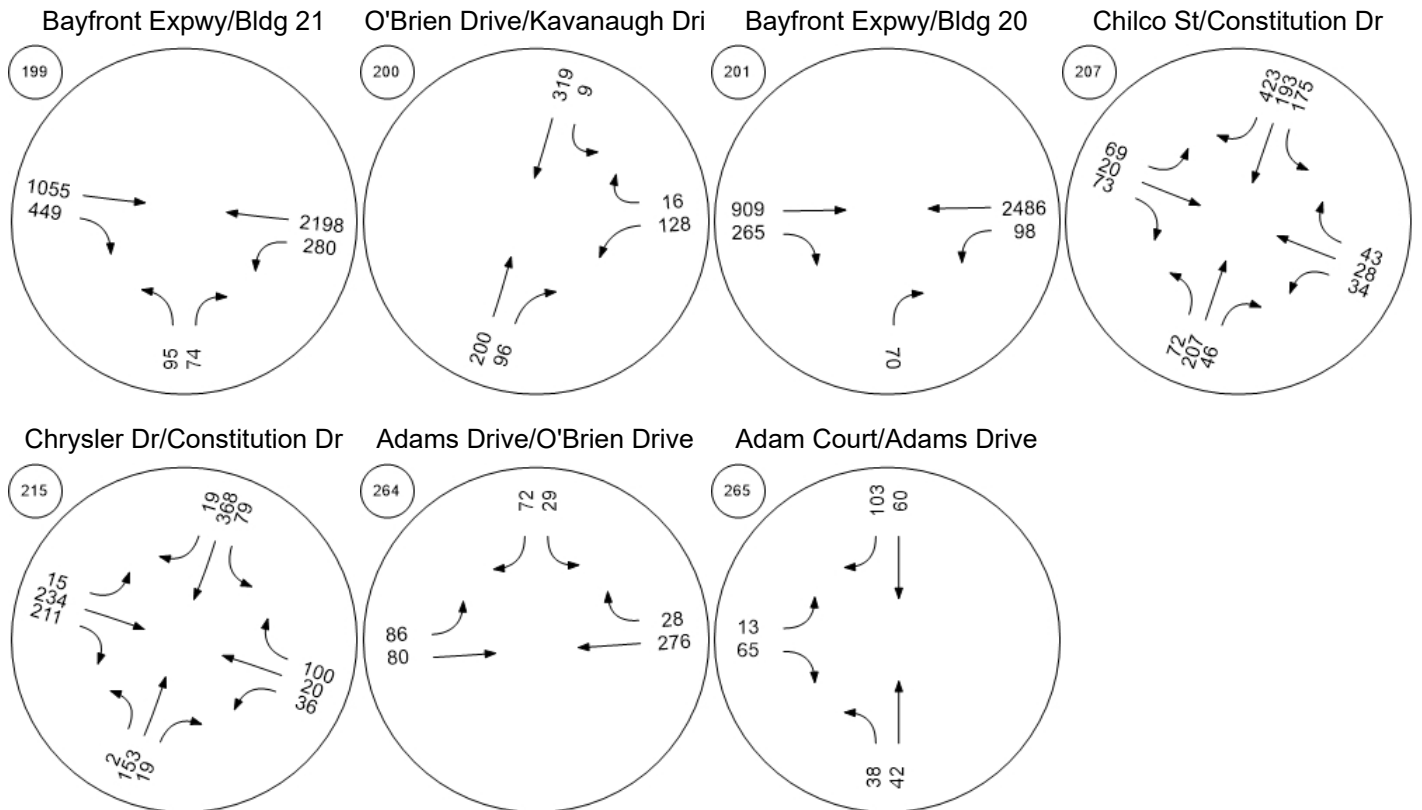
Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



Traffic Volume - Base Volume



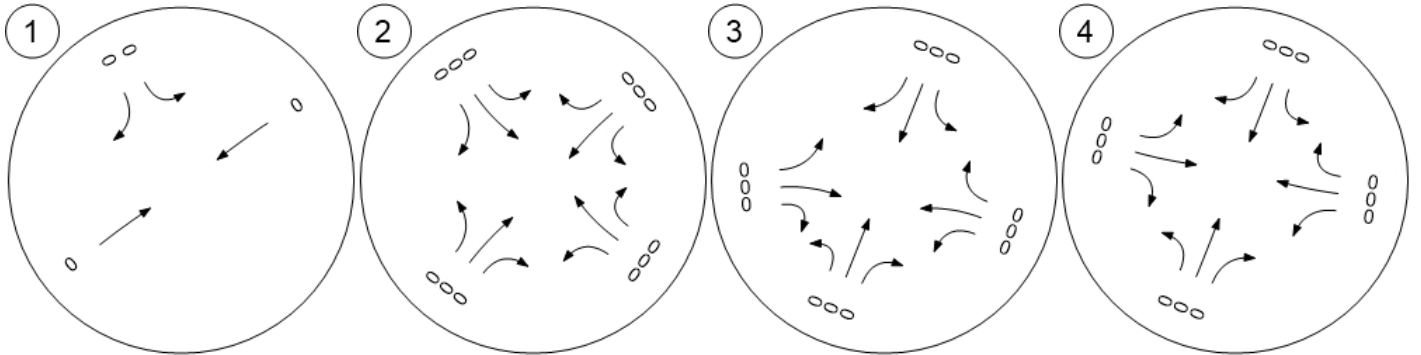


Traffic Volume - In-Process Volume

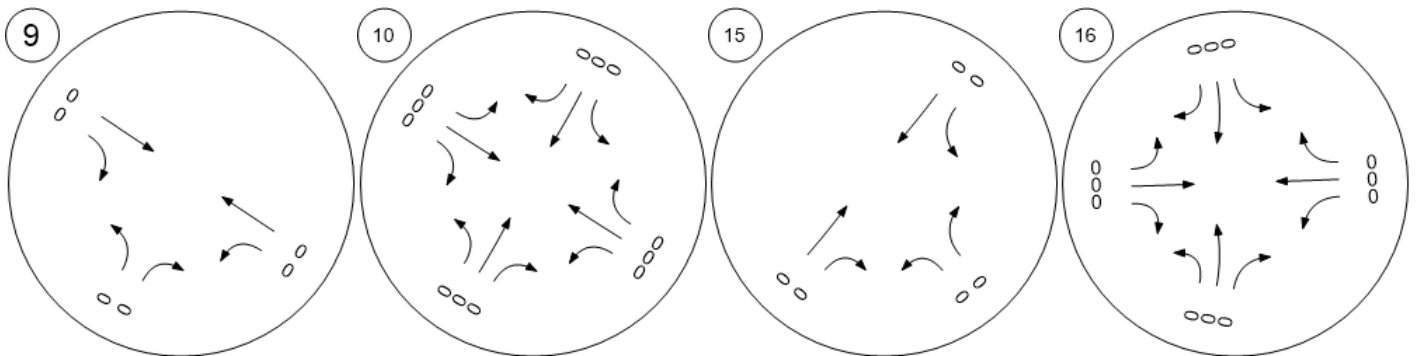


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



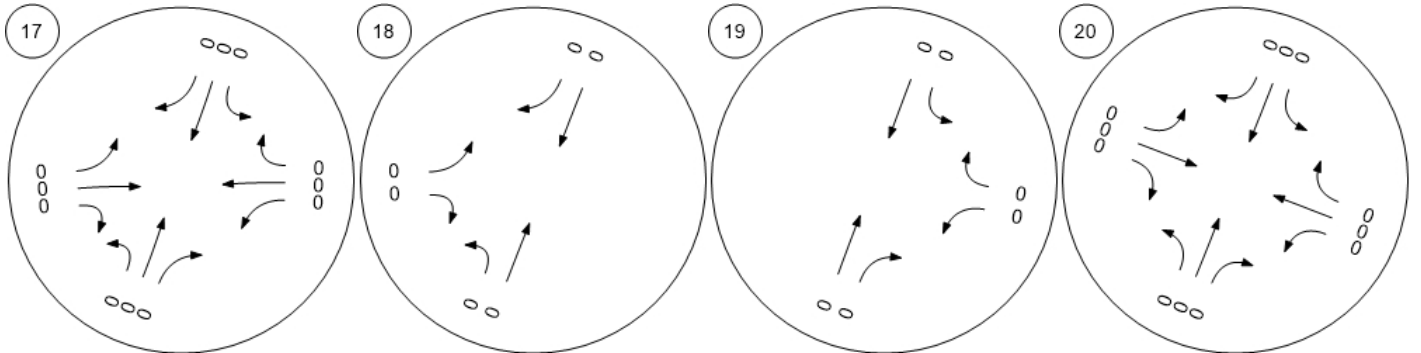
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



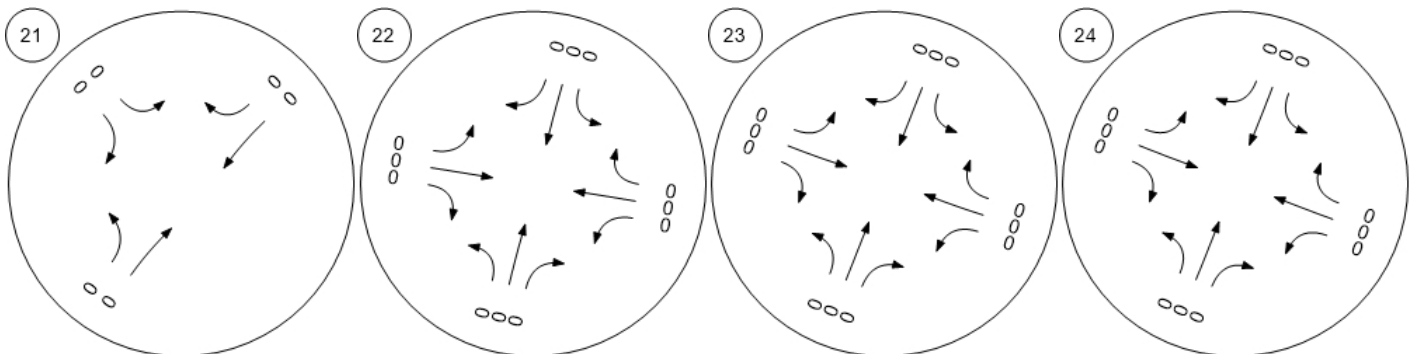
Traffic Volume - In-Process Volume



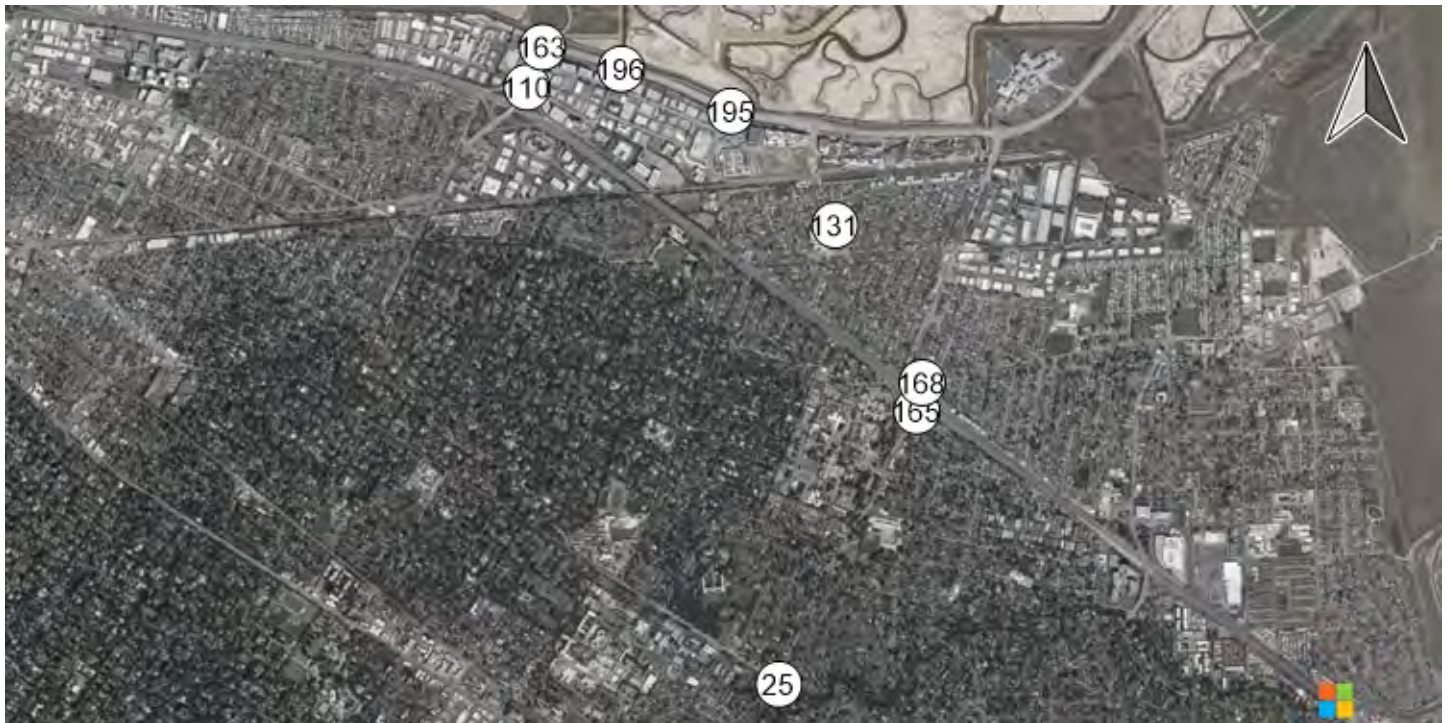
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



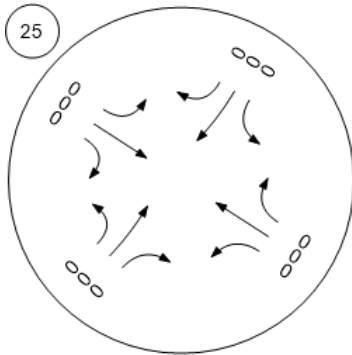
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



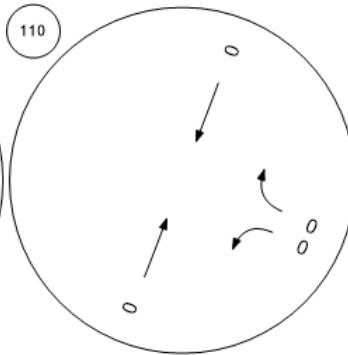
Traffic Volume - In-Process Volume



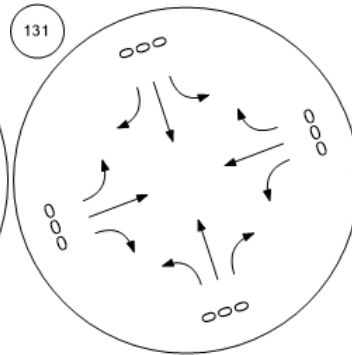
Middlefield Rd-Willow Rd



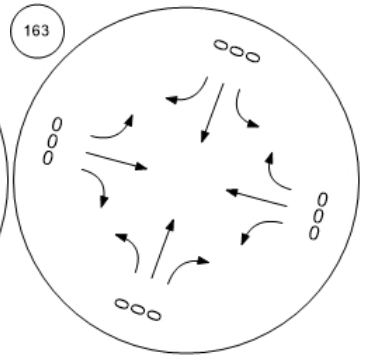
Marsh Road and US 101 NB



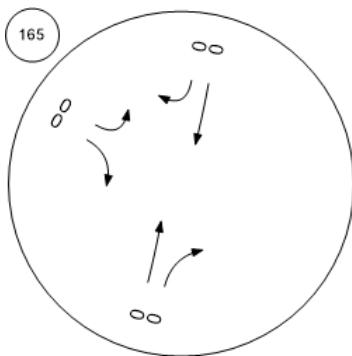
Chilco Street/Hamilton Avenue



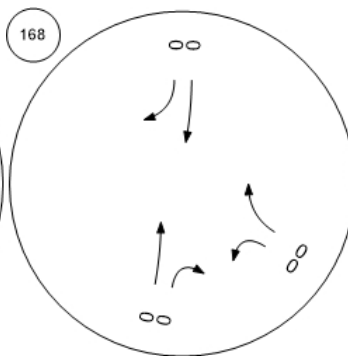
Bayfront Expy/Marsh Rd



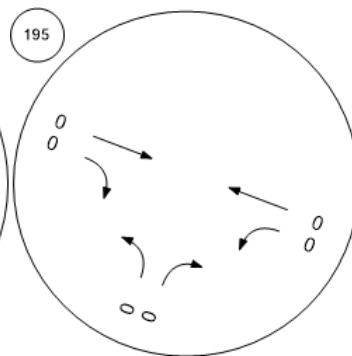
Willow Rd/US-101 SB Ramps



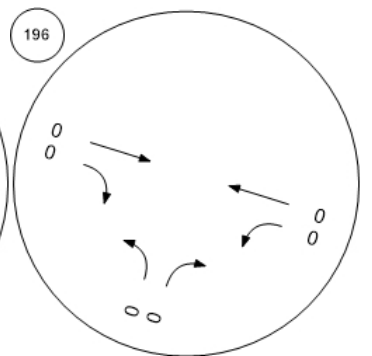
Willow Rd/US-101 NB Ramp



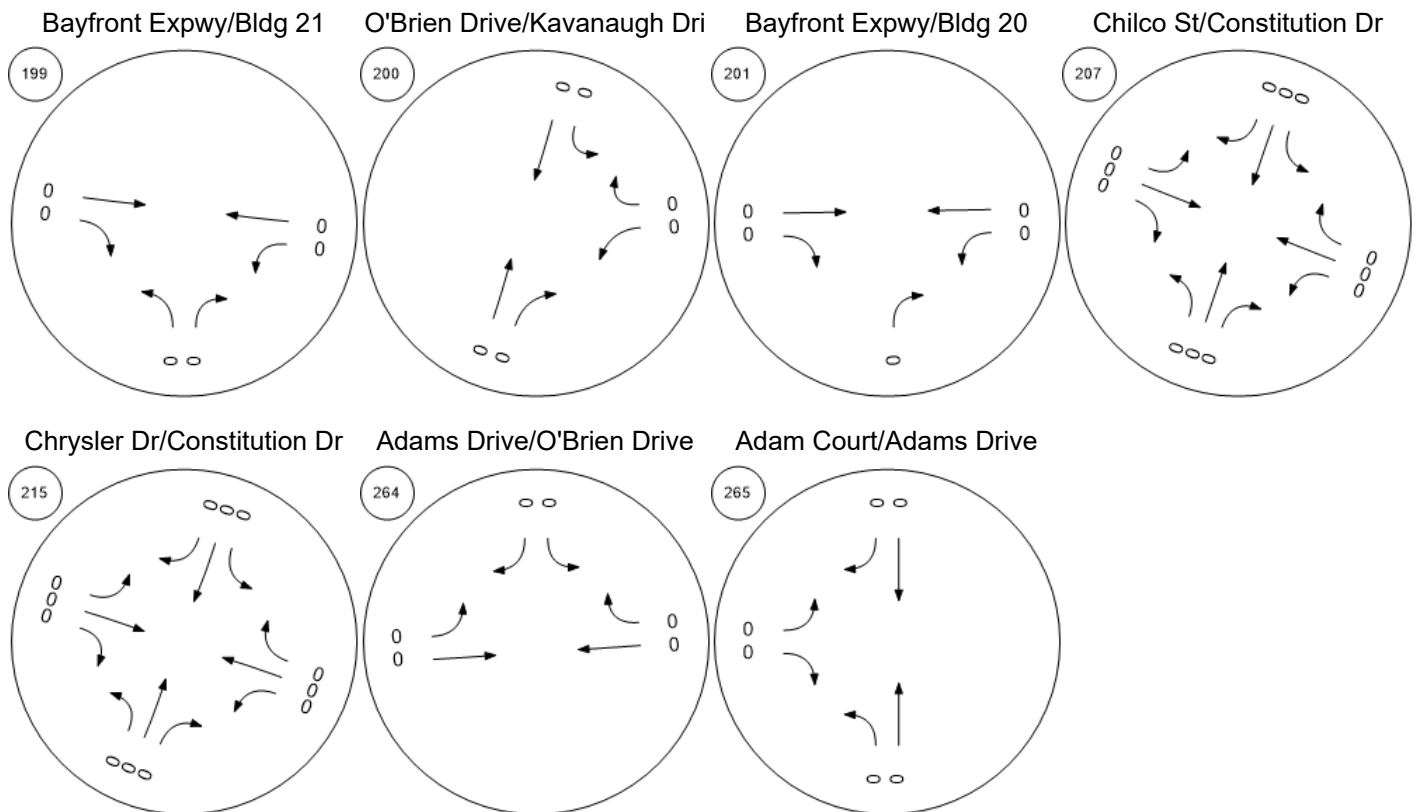
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



Traffic Volume - In-Process Volume

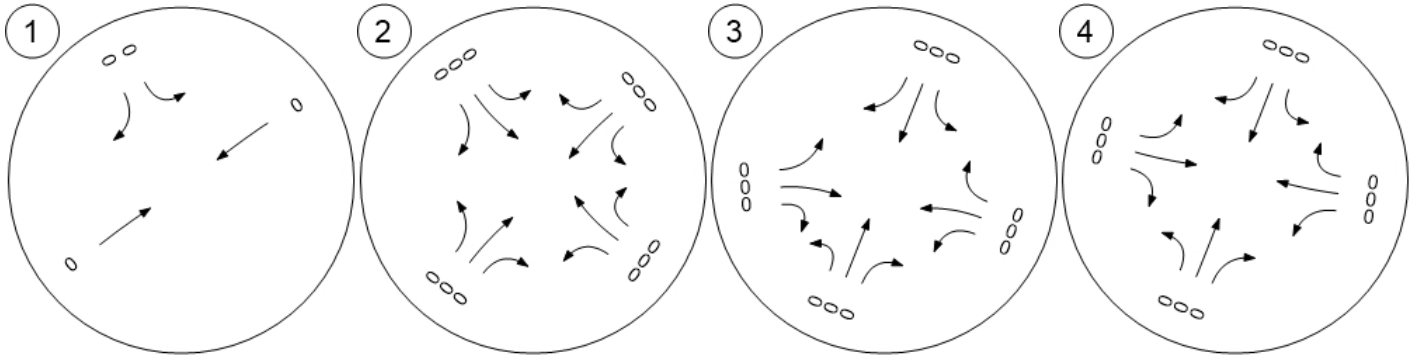


Traffic Volume - Net New Site Trips



Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd

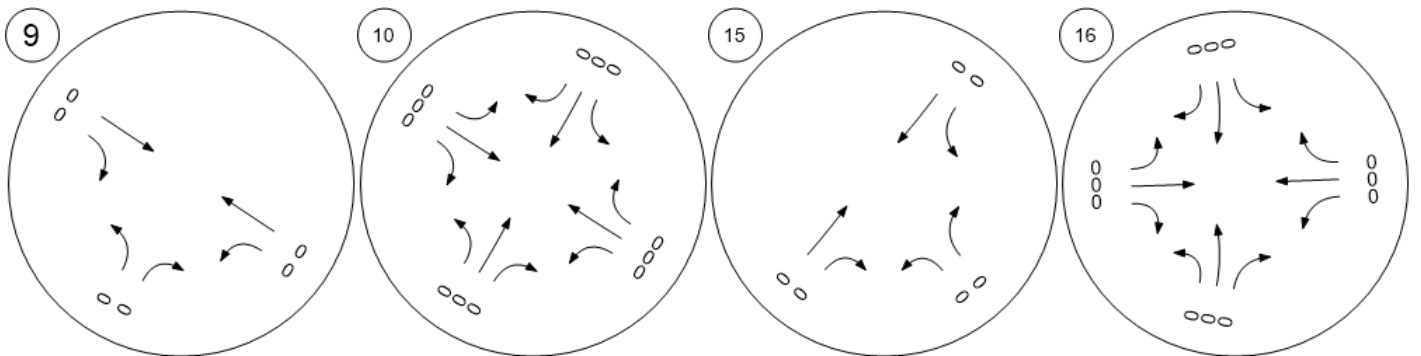


Middlefield Rd/Ravenswood

Middlefield Rd/Ringswood Av

Bayfront Expy (SR 84)/Univer

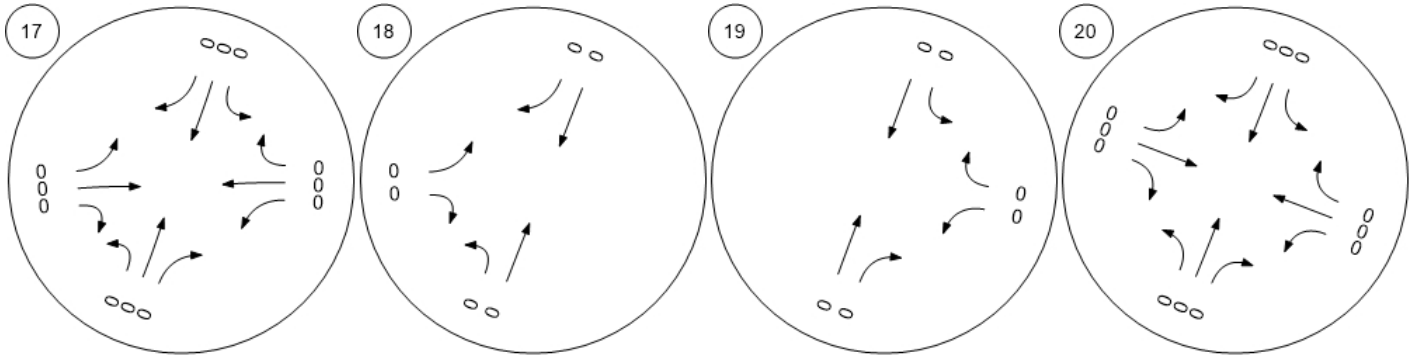
Bayfront Expy (SR 84)/Willow



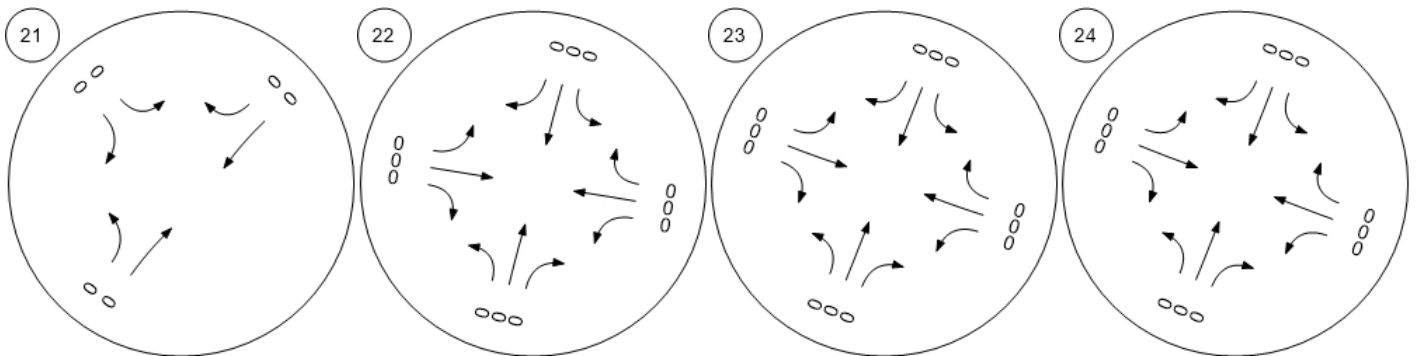
Traffic Volume - Net New Site Trips



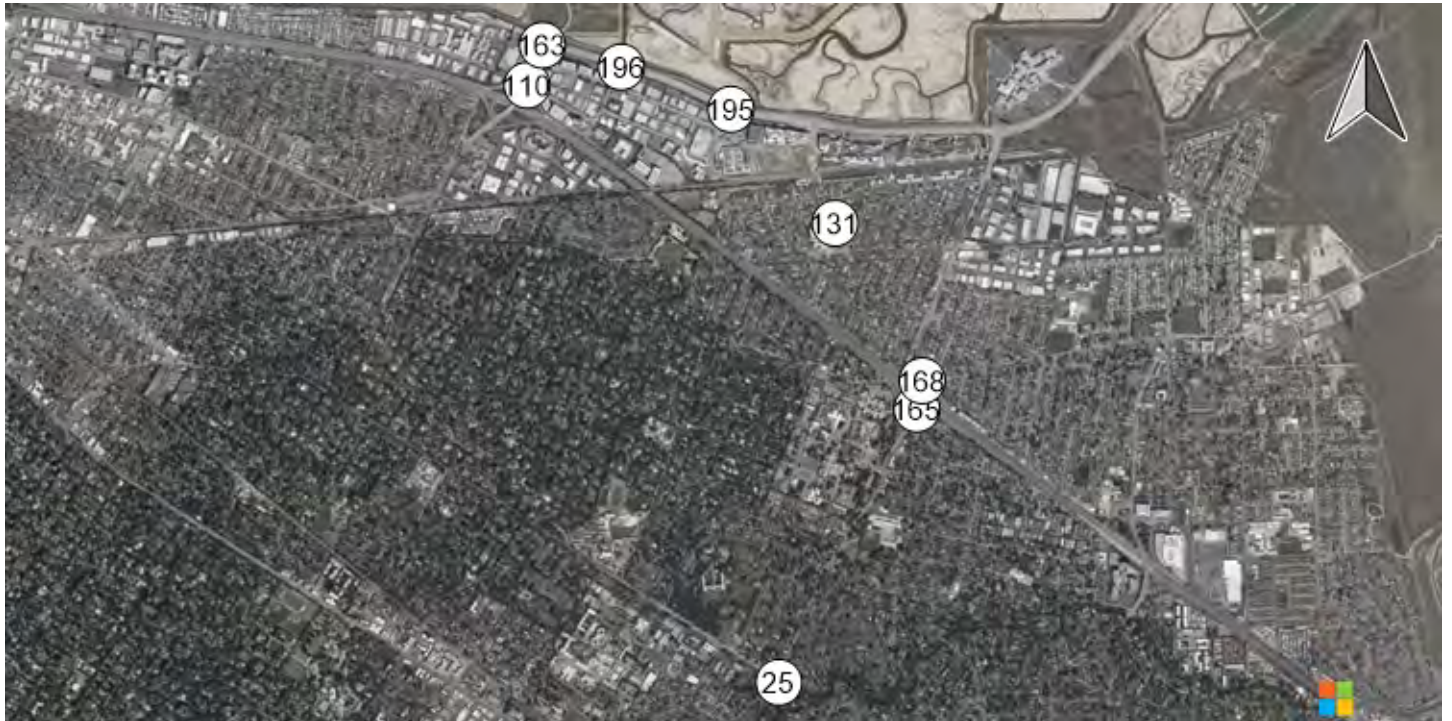
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



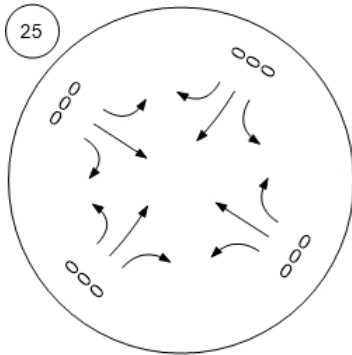
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



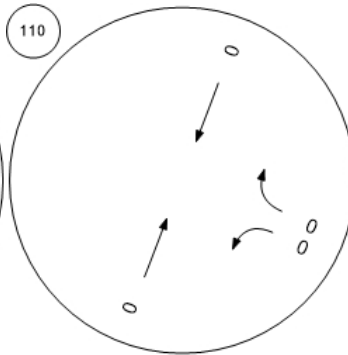
Traffic Volume - Net New Site Trips



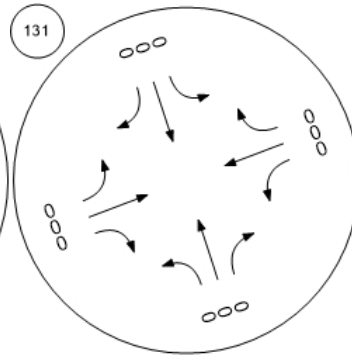
Middlefield Rd-Willow Rd



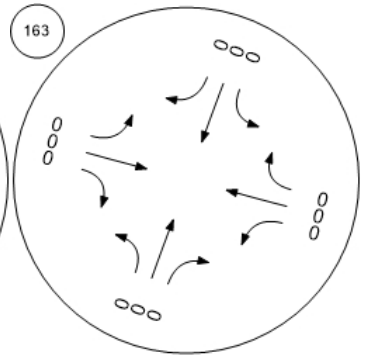
Marsh Road and US 101 NB



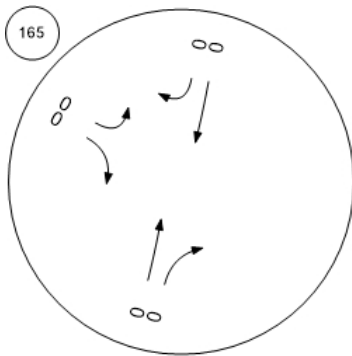
Chilco Street/Hamilton Avenue



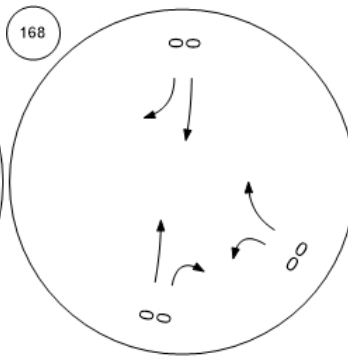
Bayfront Expy/Marsh Rd



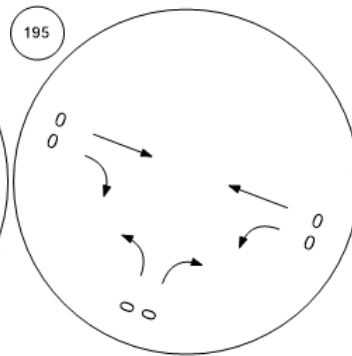
Willow Rd/US-101 SB Ramps



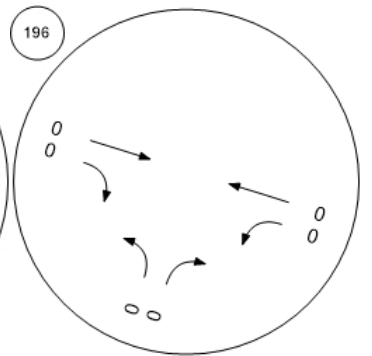
Willow Rd/US-101 NB Ramp



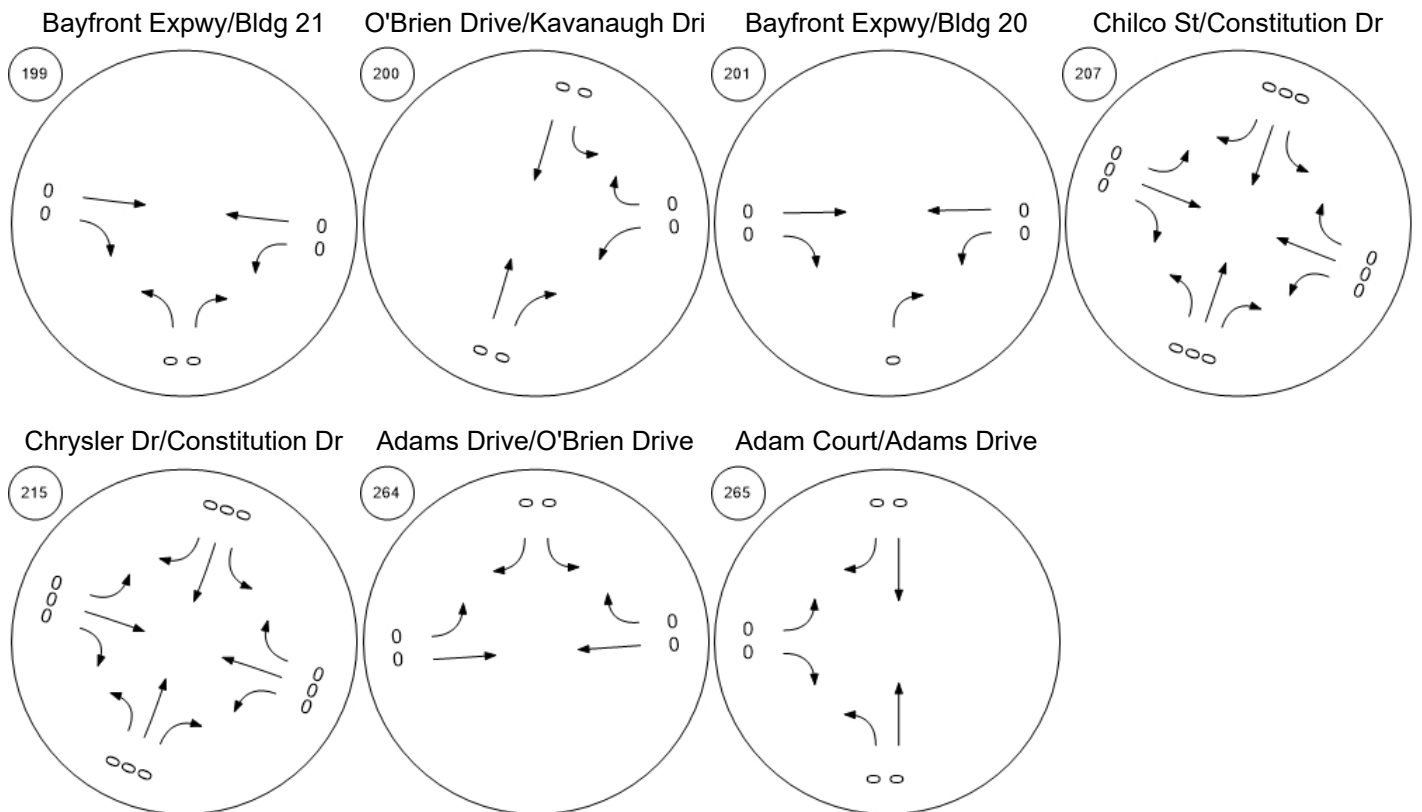
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



Traffic Volume - Net New Site Trips



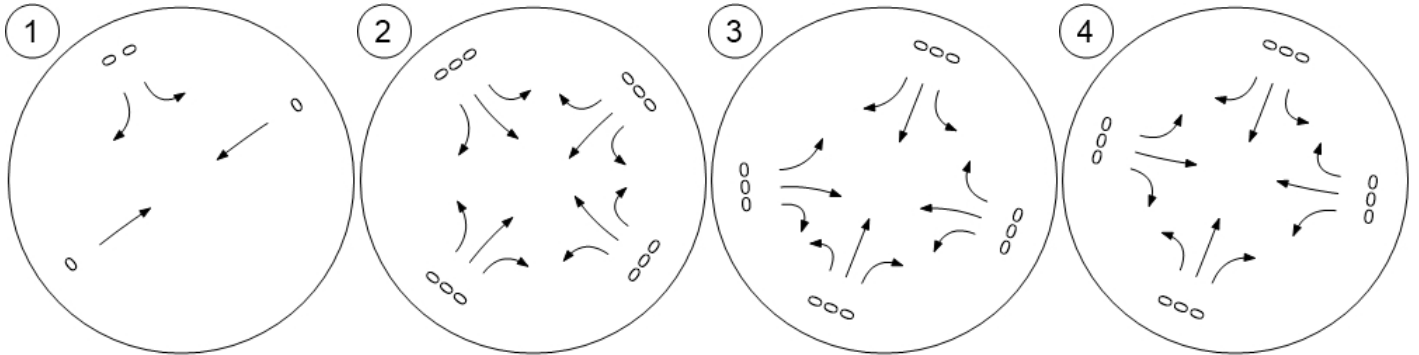


Traffic Volume - Other Volume

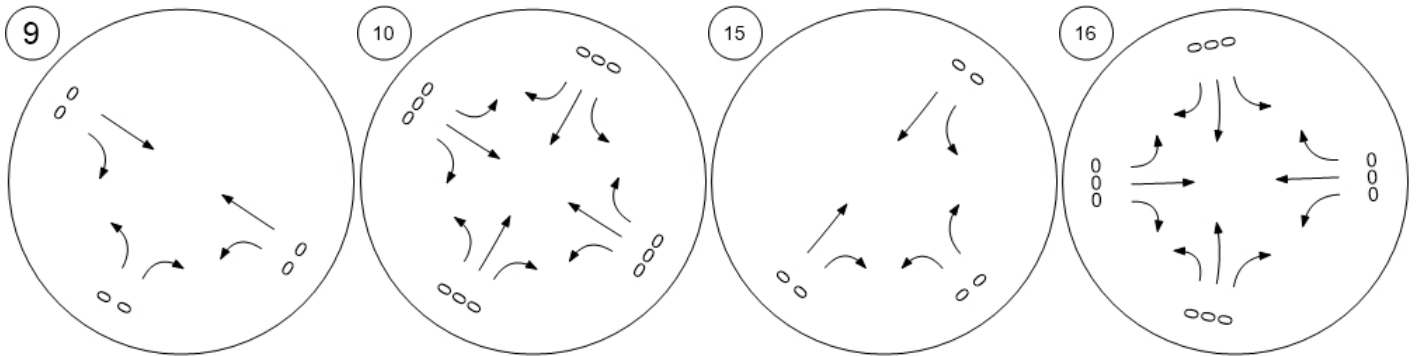


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



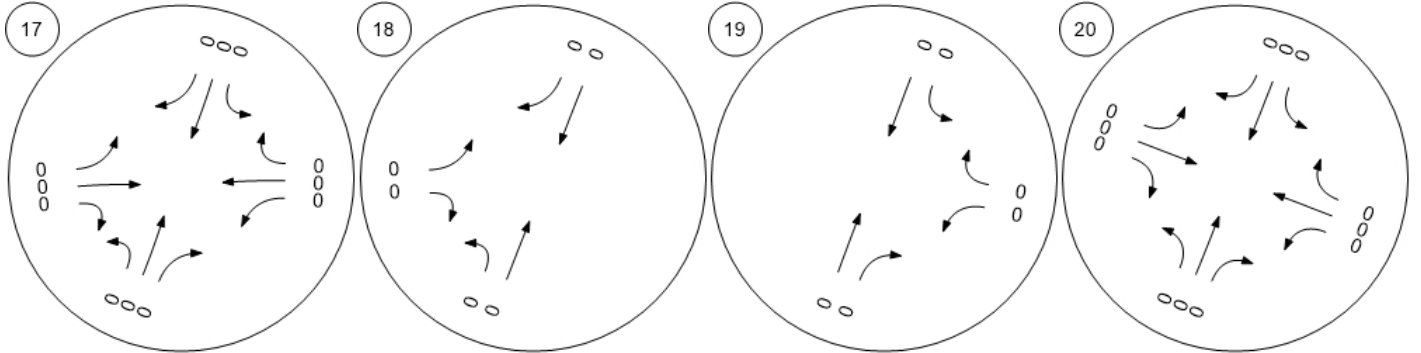
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



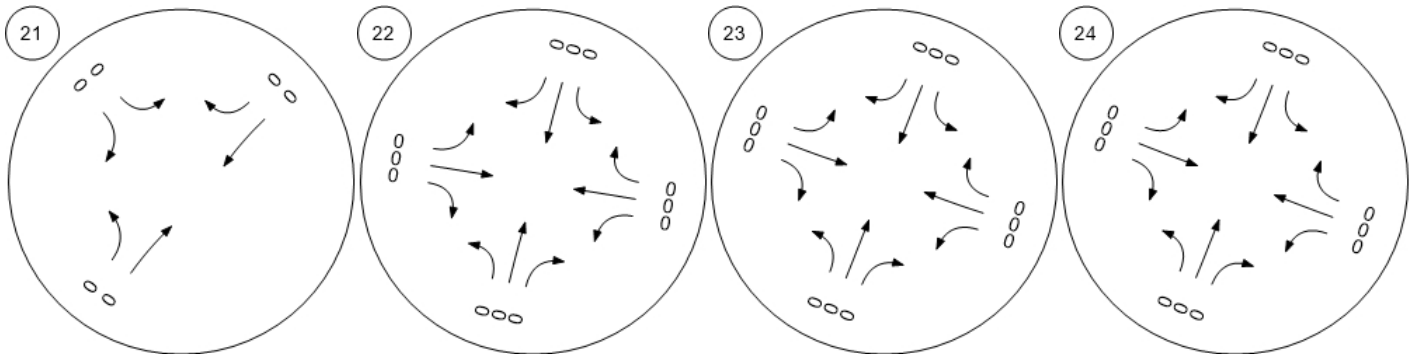
Traffic Volume - Other Volume



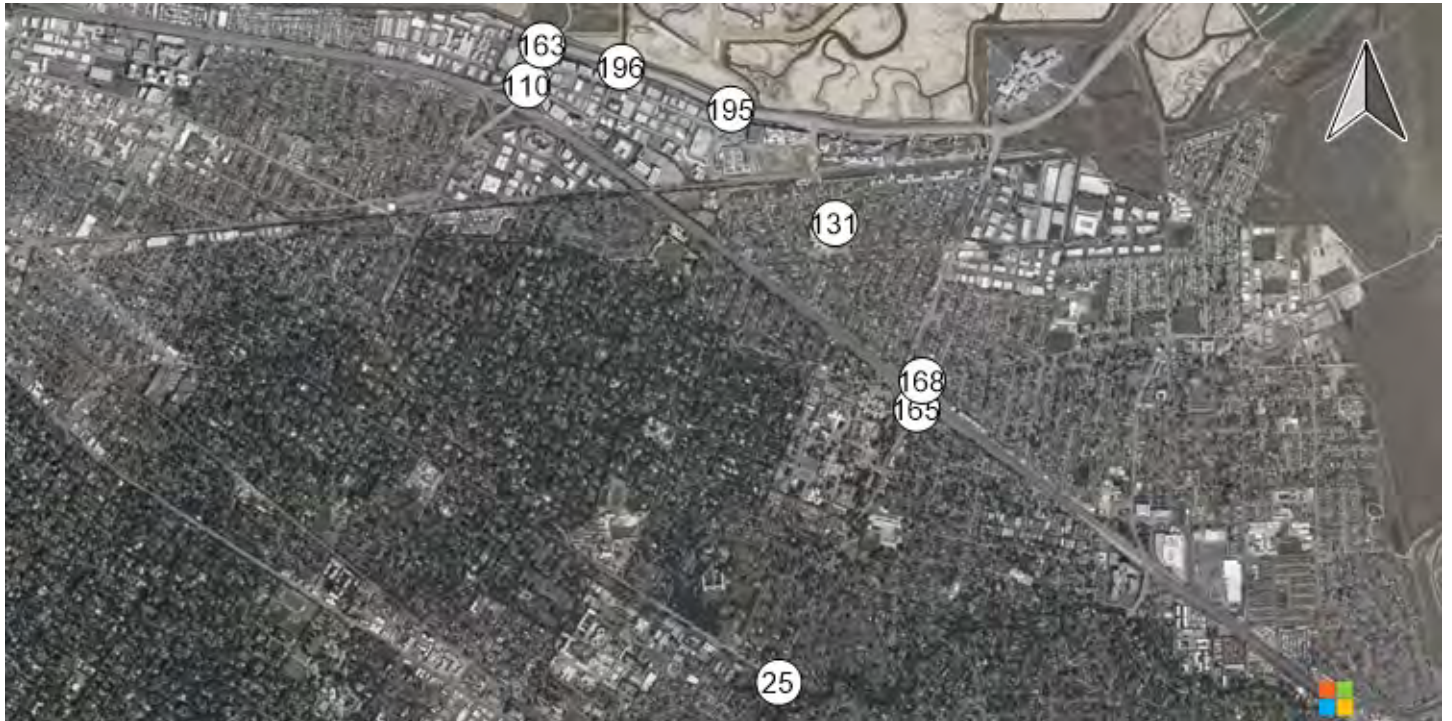
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



Traffic Volume - Other Volume

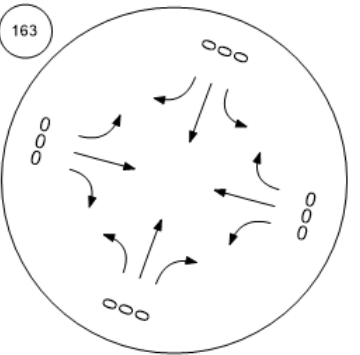
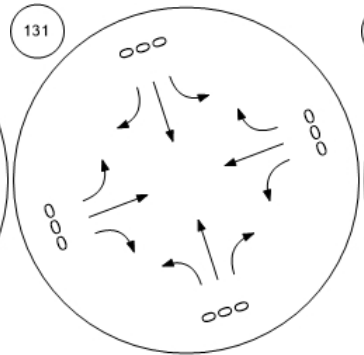
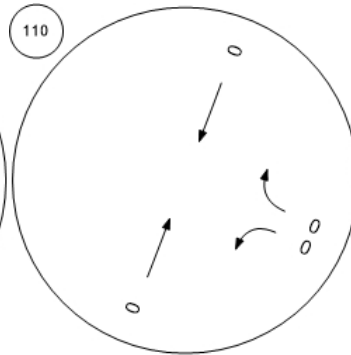
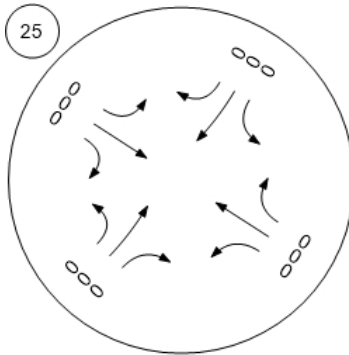


Middlefield Rd-Willow Rd

Marsh Road and US 101 NB

Chilco Street/Hamilton Avenue

Bayfront Expy/Marsh Rd

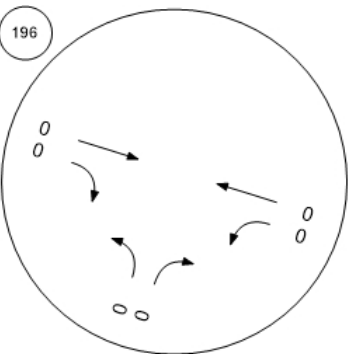
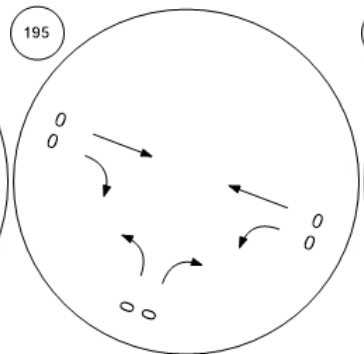
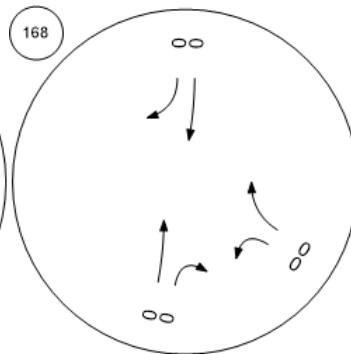
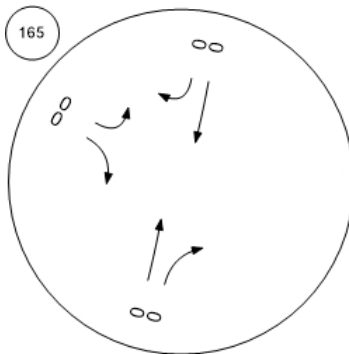


Willow Rd/US-101 SB Ramps

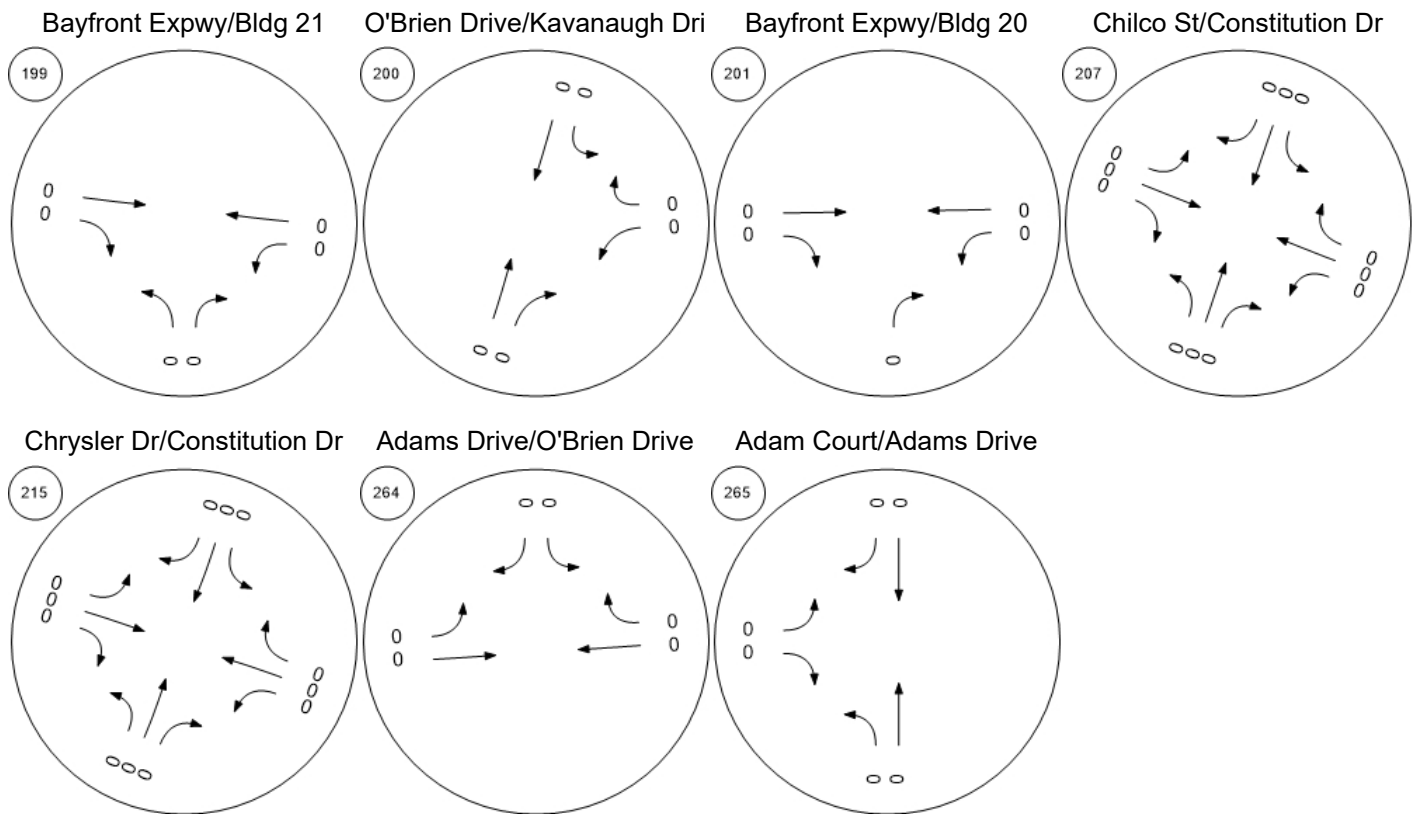
Willow Rd/US-101 NB Ramp

Bayfront Expy/Chilco St

Bayfront Expy/Chrysler Drive



Traffic Volume - Other Volume

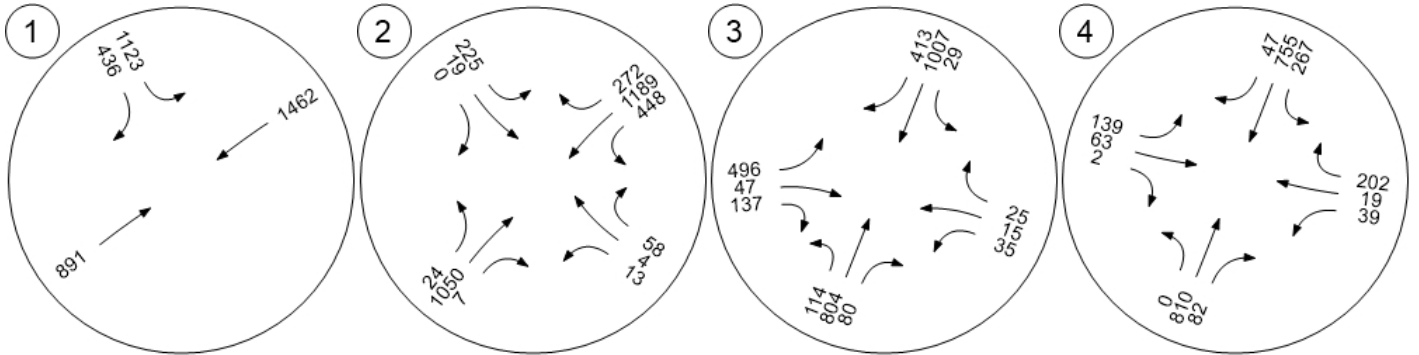


Traffic Volume - Future Total Volume

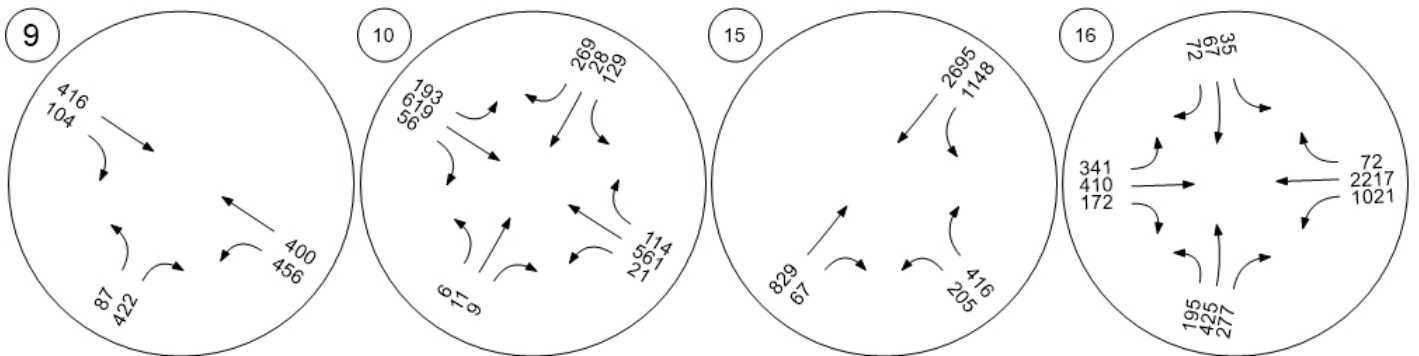


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



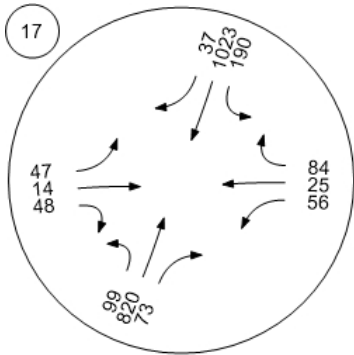
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



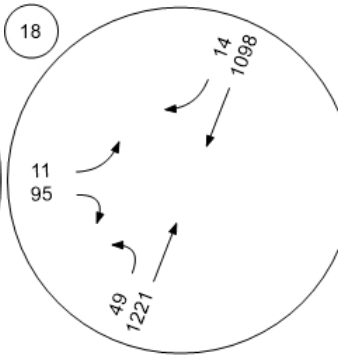
Traffic Volume - Future Total Volume



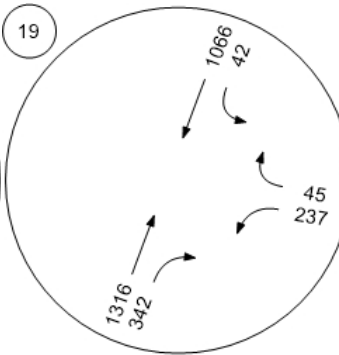
Willow Rd (SR 114)/Hamilton



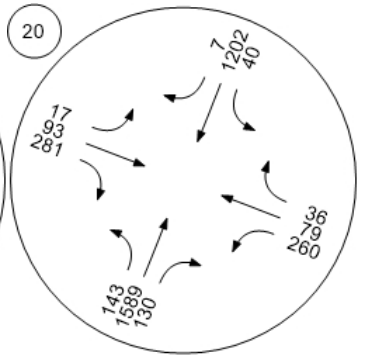
Willow Rd (SR 114)/Ivy Dr



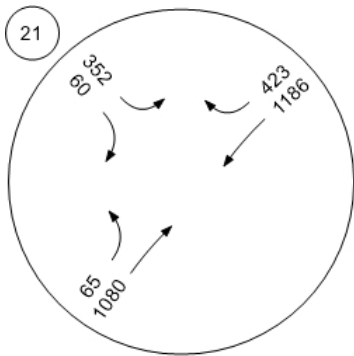
Willow Rd (SR 114)/O'Brien



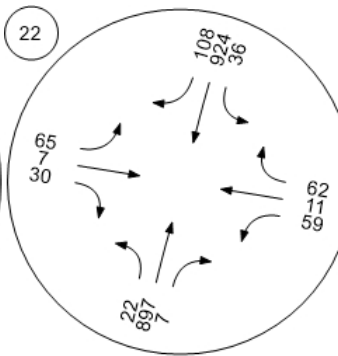
Willow Rd (SR 114)/Newbrid



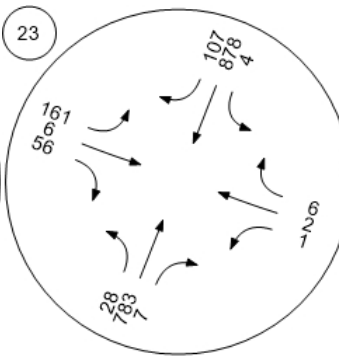
Willow Rd/Bay Rd



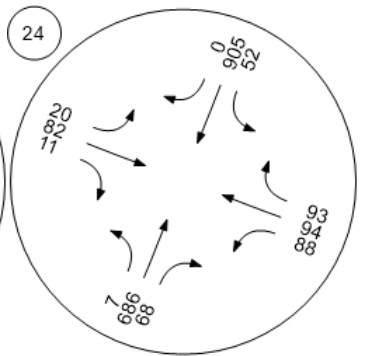
Willow Rd/Durham St-VA Me



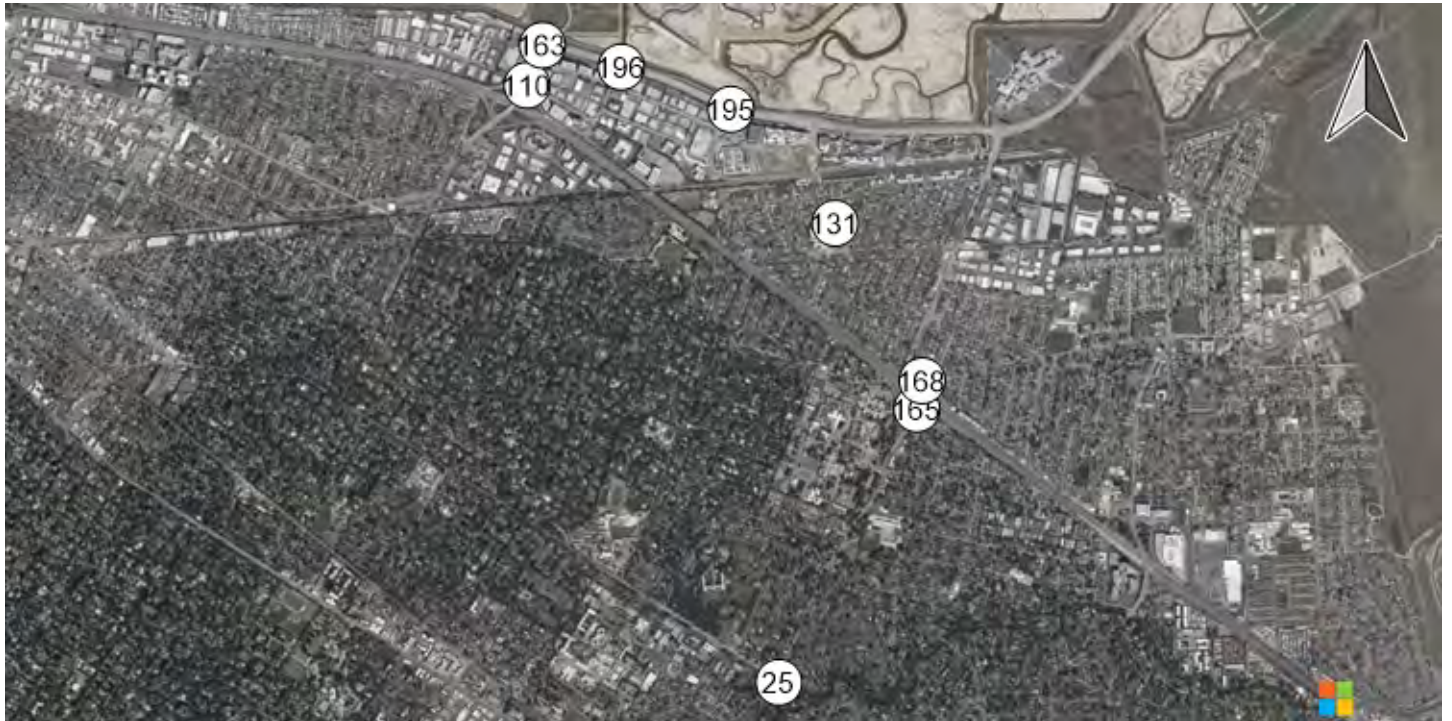
Willow Rd/Coleman Ave



Willow Rd/Gilbert Ave



Traffic Volume - Future Total Volume

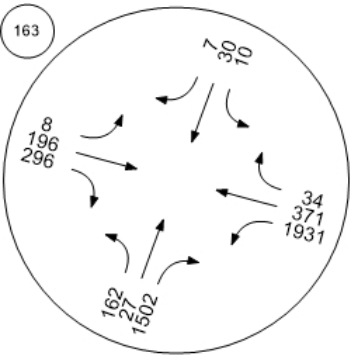
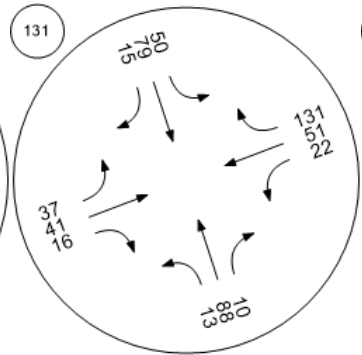
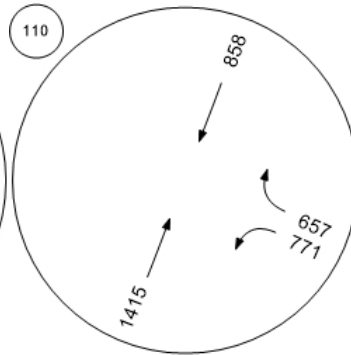
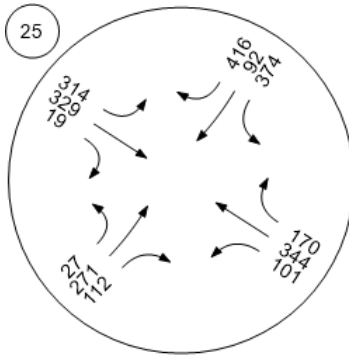


Middlefield Rd-Willow Rd

Marsh Road and US 101 NB

Chilco Street/Hamilton Avenue

Bayfront Expy/Marsh Rd

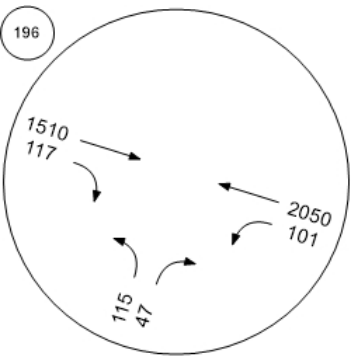
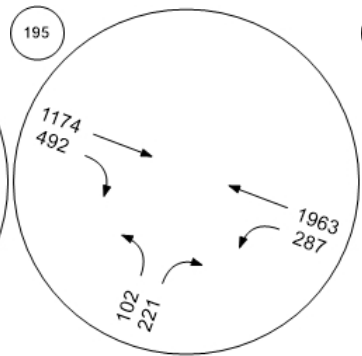
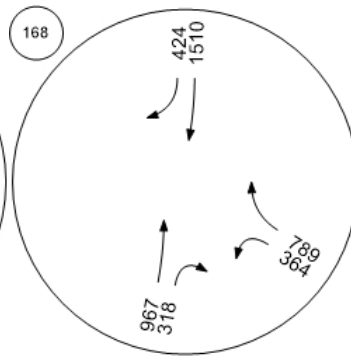
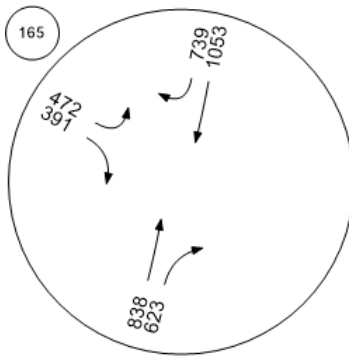


Willow Rd/US-101 SB Ramps

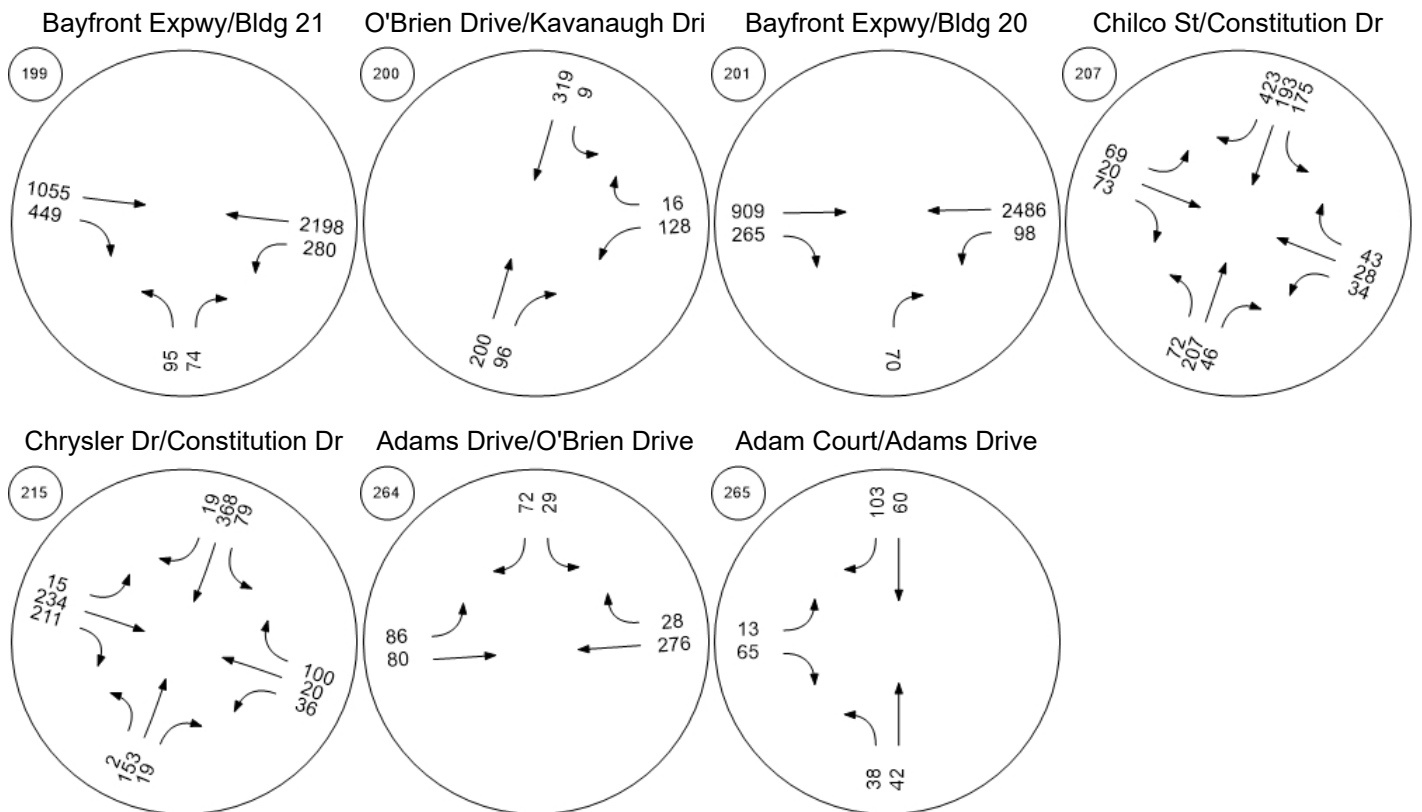
Willow Rd/US-101 NB Ramp

Bayfront Expy/Chilco St

Bayfront Expy/Chrysler Drive



Traffic Volume - Future Total Volume



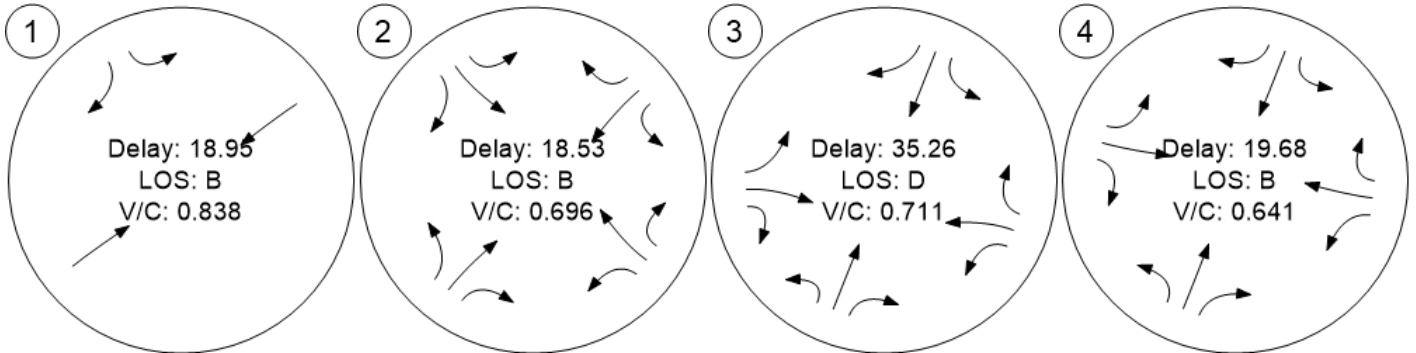


Traffic Conditions

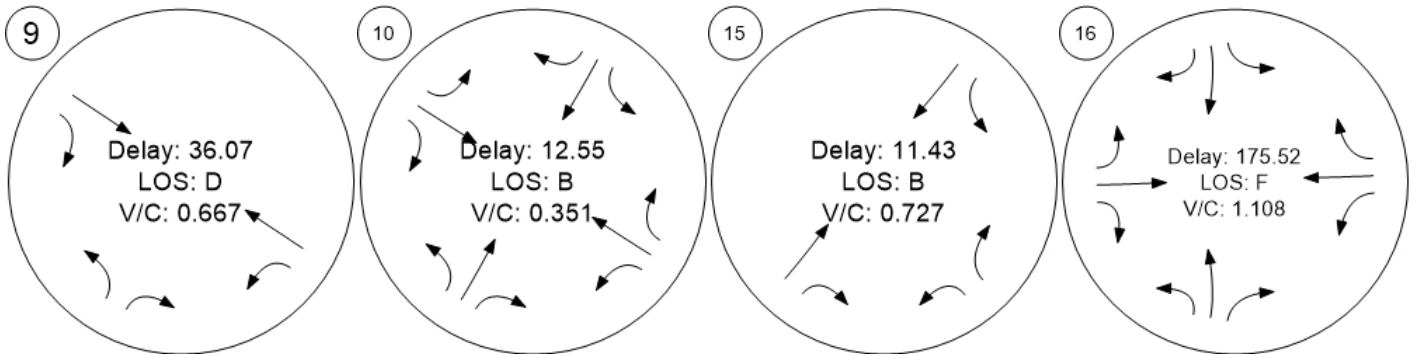


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



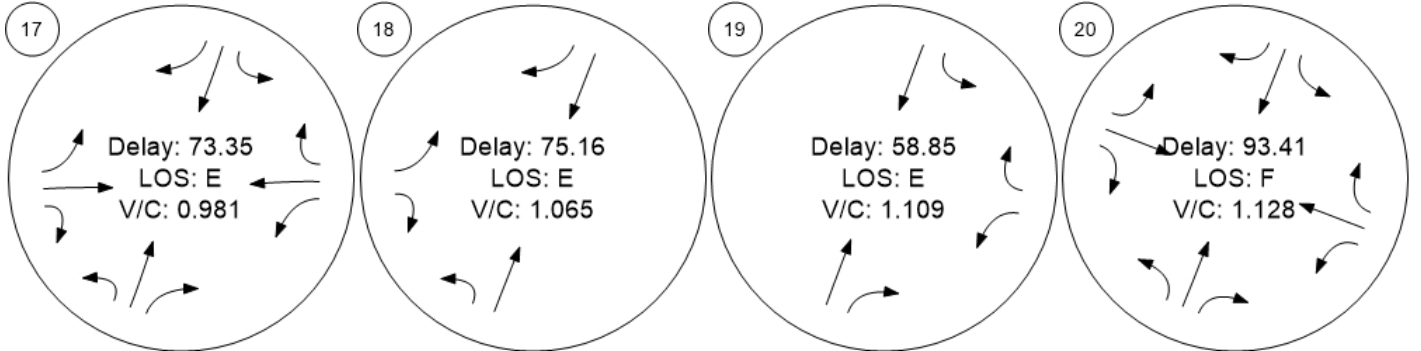
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



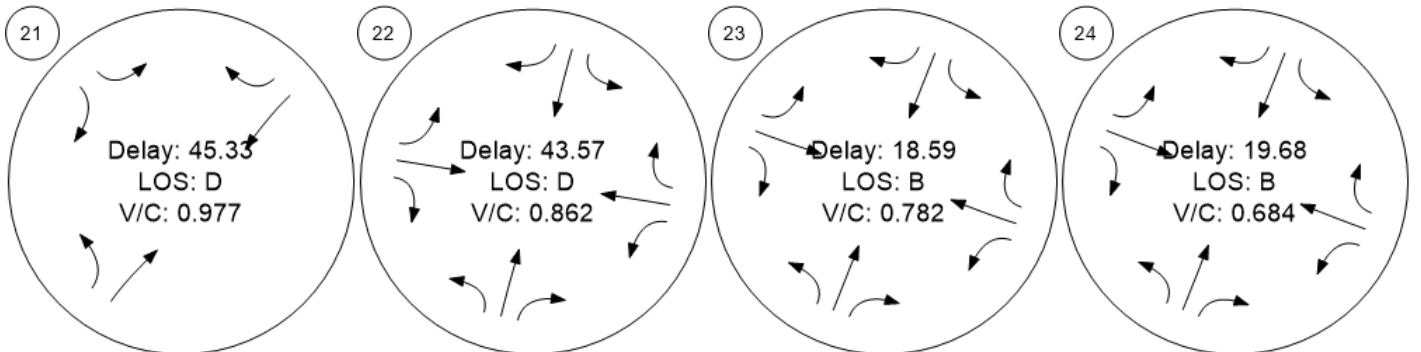
Traffic Conditions



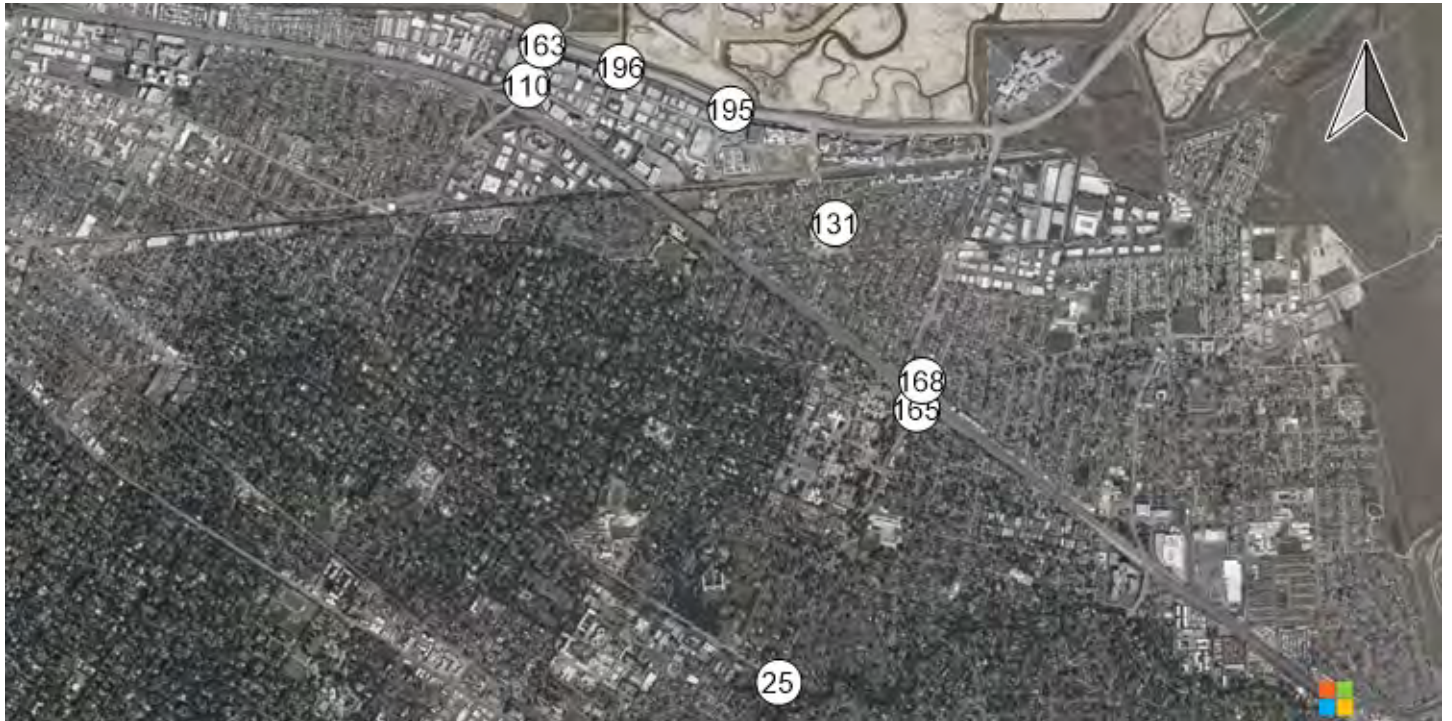
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



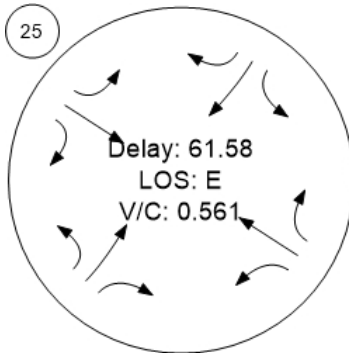
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



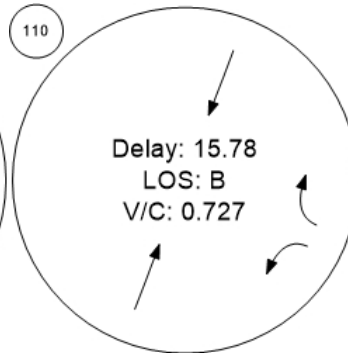
Traffic Conditions



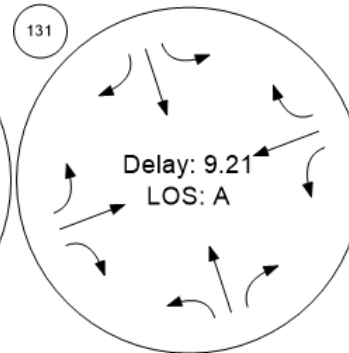
Middlefield Rd-Willow Rd



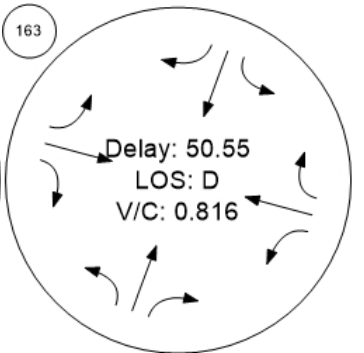
Marsh Road and US 101 NB



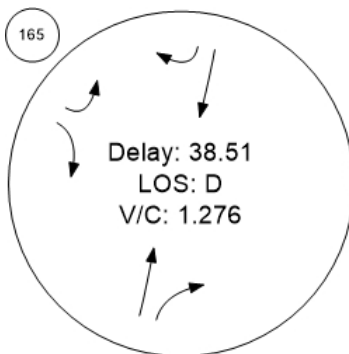
Chilco Street/Hamilton Avenue



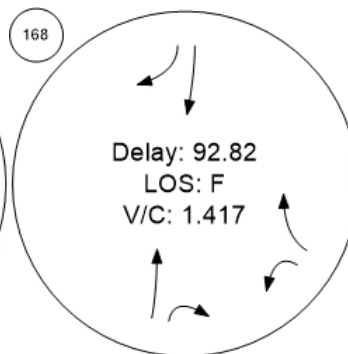
Bayfront Expy/Marsh Rd



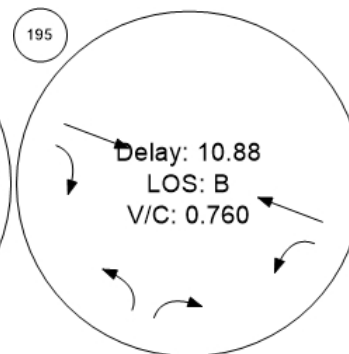
Willow Rd/US-101 SB Ramps



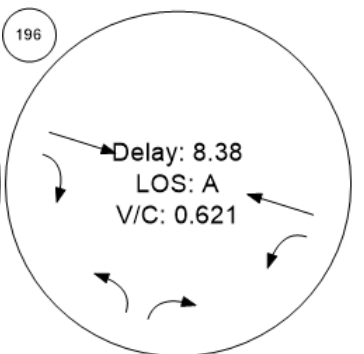
Willow Rd/US-101 NB Ramp



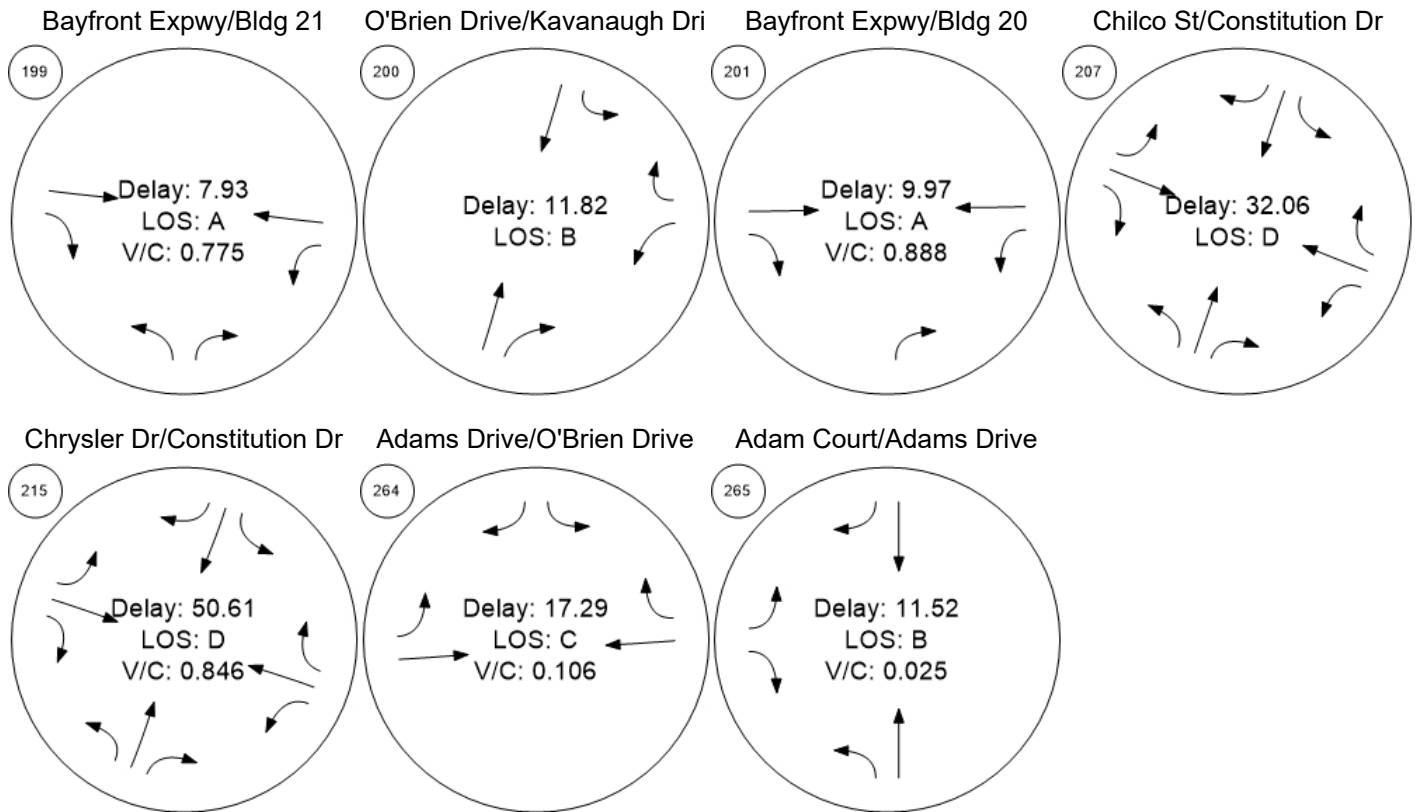
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive

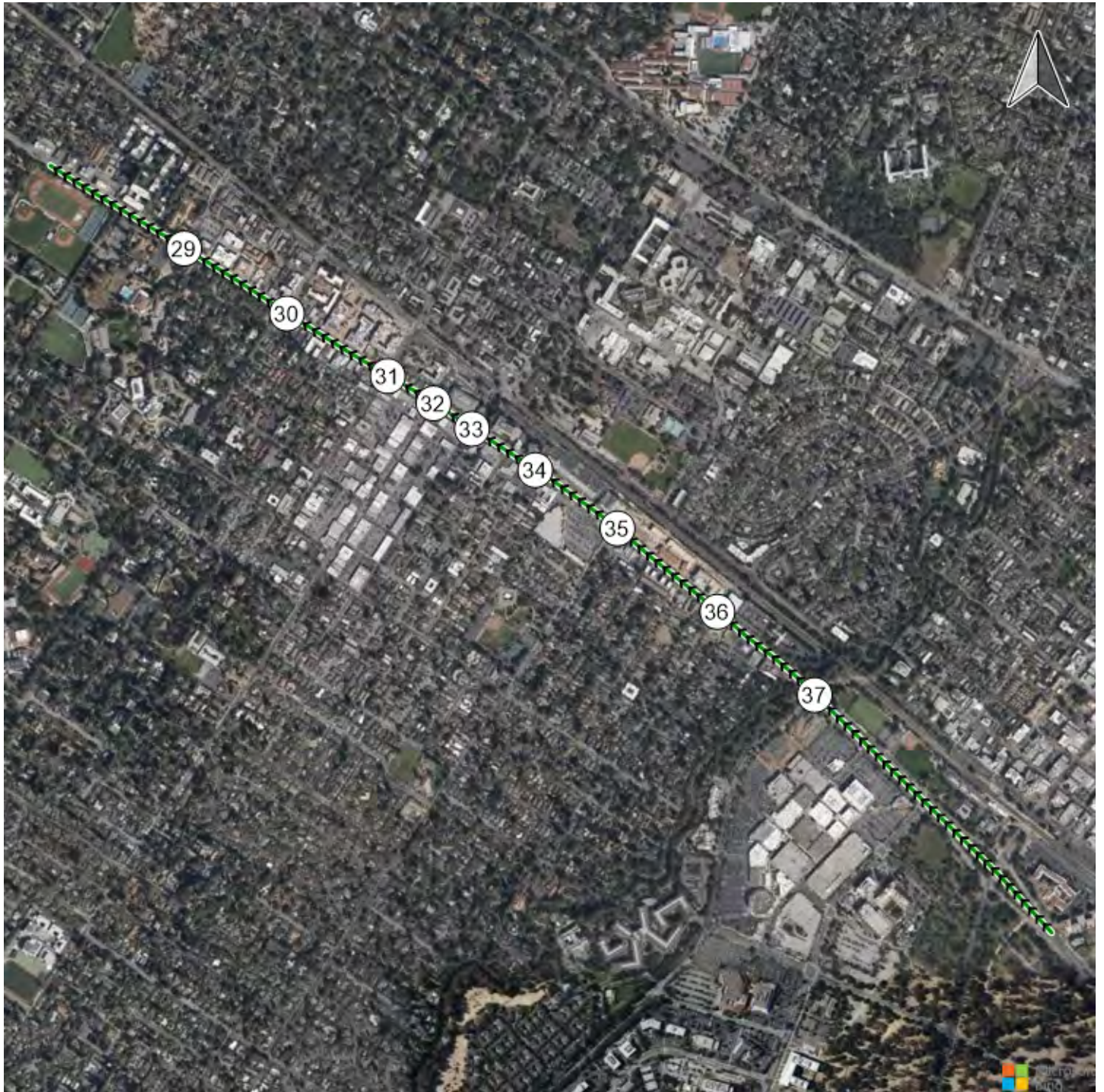


Traffic Conditions



Time Space Diagram - Flowing Off

Route 1: ECR NB



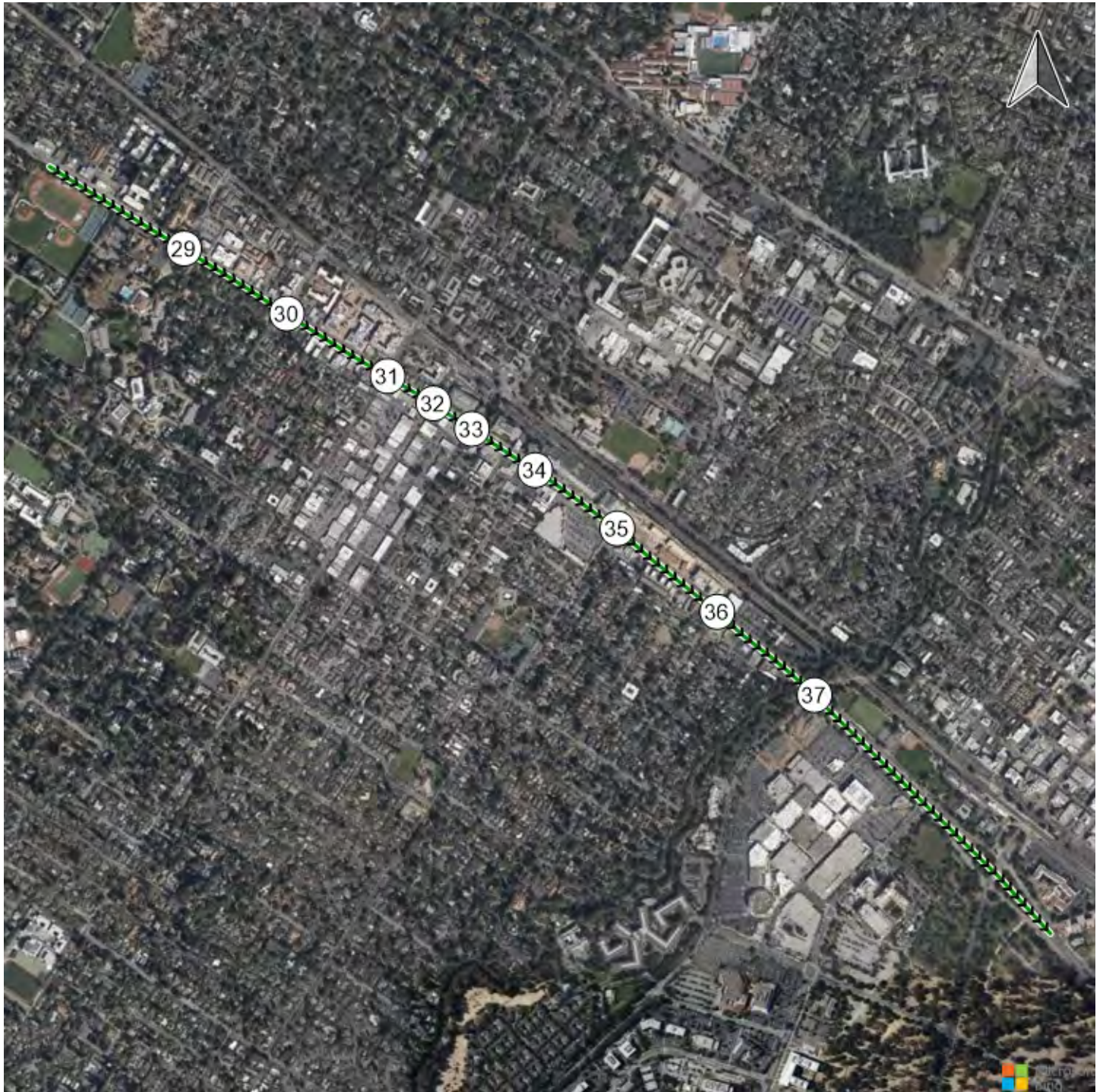
Generated with 

Version 2021 (SP 0-4)

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Route 1: ECR NB

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Generated with  PTV VISTRO

Version 2021 (SP 0-4)

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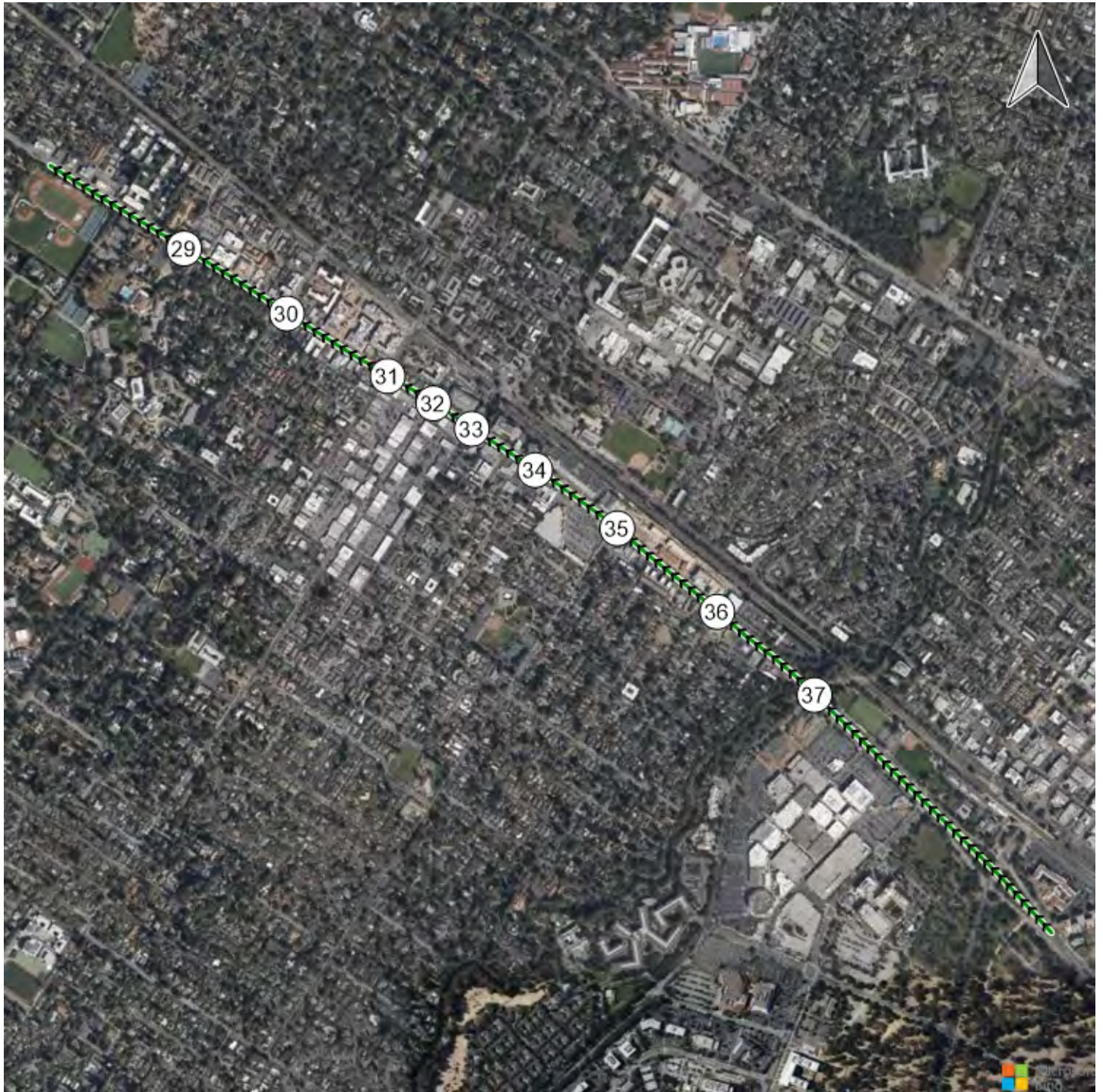
Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



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Version 2021 (SP 0-4)

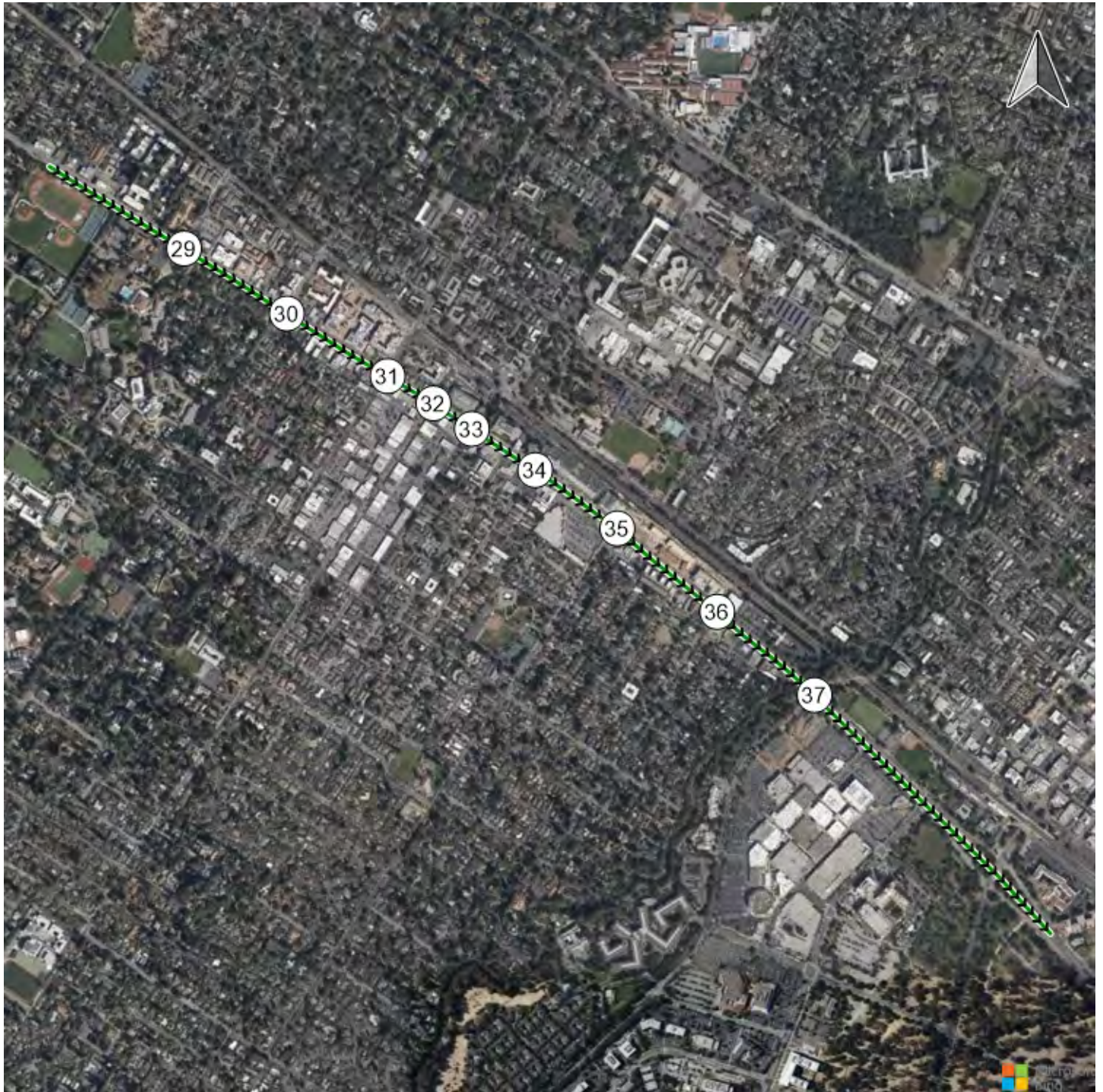
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



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Version 2021 (SP 0-4)

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Route 2: ECR SB

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Vistro File: \\...\\Vistro\_AllScenarios\_PM - 12.1.2021.vistro

Scenario 16 Existing PM (2019 vols)

Report File: \\...\\Existing PM.pdf

12/9/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Left	0.701	17.0	B
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.460	15.3	B
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.682	34.6	C
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.634	18.6	B
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NEB Left	2.394	16.1	B
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 6th Edition	NEB Left	0.366	13.7	B
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Right	1.043	94.1	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	EB Thru	0.948	142.1	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	WB Left	1.209	155.4	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	NB Left	0.979	39.5	D
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	WB Right	1.291	147.5	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.222	133.7	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.233	113.5	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.166	167.7	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.610	9.2	A
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	EB Left	0.514	10.3	B
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NWB Right	0.569	31.5	C
110	Marsh Road/101 NB Ramps	Signalized	HCM 6th Edition	WB Left	0.771	13.3	B

131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	SB Thru	0.752	16.8	C
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	SB Right	0.839	31.6	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.612	98.9	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.073	83.9	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.808	13.1	B
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.779	13.1	B
199	Bayfront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.732	10.2	B
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	0.727	15.2	C
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.759	8.2	A
207	Chilco St/Constitution Dr	All-way stop	HCM 6th Edition	SB Thru	0.916	32.5	D
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	WB Right	0.666	28.0	C
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	0.366	27.6	D
265	Adam Court/ Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.064	11.9	B
267	Willow Road (SR 114)/Park Street	Signalized	HCM 6th Edition		0.000	0.0	A
269	O'Brien Drive/Loop Road	Signalized	HCM 6th Edition		0.000	0.0	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	17.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↶↷↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	959	1000	279	1176	296
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	959	1000	279	1176	296
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	245	255	70	300	76
Total Analysis Volume [veh/h]	0	979	1020	279	1200	302
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	7	0	5	0
Pedestrian Clearance [s]	0	0	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	45	43	31	31
g / C, Green / Cycle	0.56	0.53	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.24	0.29	0.35	0.19
s, saturation flow rate [veh/h]	4000	3540	3414	1609
c, Capacity [veh/h]	2236	1886	1313	619
d1, Uniform Delay [s]	10.29	12.25	23.32	18.62
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	1.12	1.13	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.44	0.54	0.91	0.49
d, Delay for Lane Group [s/veh]	10.91	13.37	24.44	18.84
Lane Group LOS	B	B	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.53	5.50	10.17	4.04
50th-Percentile Queue Length [ft/ln]	113.27	137.61	254.25	101.06
95th-Percentile Queue Length [veh/ln]	8.02	9.35	15.40	7.28
95th-Percentile Queue Length [ft/ln]	200.55	233.80	385.00	181.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	10.91	13.37	0.00	24.44	18.84
Movement LOS		B	B		C	B
d_A, Approach Delay [s/veh]	10.91		13.37		23.32	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	16.95					
Intersection LOS	B					
Intersection V/C	0.701					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	29.73
I_p,int, Pedestrian LOS Score for Intersection	2.781	0.000	2.422
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.81	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.367	2.401	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	15.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	34	1326	7	55	815	193	15	5	388	256	6	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	3.70	0.00	1.70	1.30	7.70	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	326	0	0	0
Total Hourly Volume [veh/h]	34	1326	7	55	815	193	15	5	62	256	6	4
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	345	2	14	212	50	4	1	16	67	2	1
Total Analysis Volume [veh/h]	35	1381	7	57	849	201	16	5	65	267	6	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			0			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			0			1	
v_co, Outbound Pedestrian Volume crossing		0			0			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			1			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	51	0	12	48	0	0	41	0	0	36	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	102	102	102	102	102	8	8	16	16
g / C, Green / Cycle	0.04	0.73	0.73	0.73	0.73	0.73	0.06	0.06	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.26	0.26	0.06	0.29	0.29	0.01	0.02	0.08	0.08
s, saturation flow rate [veh/h]	1761	3549	1859	886	1877	1738	1830	2820	1791	1697
c, Capacity [veh/h]	70	2591	1357	672	1371	1270	105	162	206	196
d1, Uniform Delay [s]	65.82	6.85	6.85	6.81	7.15	7.18	62.86	63.60	59.47	59.47
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	0.38	0.72	0.02	0.86	0.94	0.68	1.19	3.03	3.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.50	0.35	0.35	0.08	0.40	0.40	0.20	0.40	0.69	0.69
d, Delay for Lane Group [s/veh]	69.90	7.23	7.57	6.83	8.00	8.12	63.54	64.79	62.50	62.67
Lane Group LOS	E	A	A	A	A	A	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.30	4.65	5.00	0.24	5.94	5.61	0.74	1.16	5.08	4.82
50th-Percentile Queue Length [ft/ln]	32.53	116.27	125.03	5.98	148.49	140.20	18.55	28.94	126.89	120.49
95th-Percentile Queue Length [veh/ln]	2.34	8.19	8.67	0.43	9.94	9.49	1.34	2.08	8.77	8.42
95th-Percentile Queue Length [ft/ln]	58.56	204.69	216.72	10.77	248.41	237.29	33.39	52.08	219.26	210.50

**Movement, Approach, & Intersection Results**

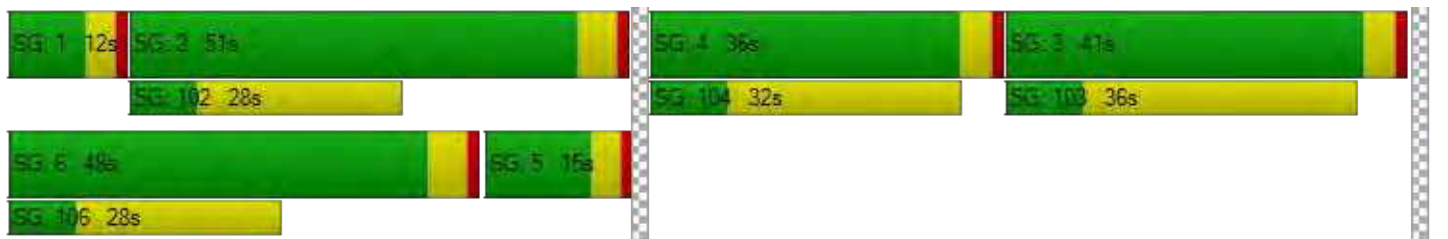
d_M, Delay for Movement [s/veh]	69.90	7.34	7.57	6.83	8.05	8.12	63.54	63.54	64.79	62.58	62.67	62.67
Movement LOS	E	A	A	A	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	8.88			8.00			64.49			62.58		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	15.34											
Intersection LOS	B											
Intersection V/C	0.460											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	58.49			58.49			59.41			59.41		
I_p,int, Pedestrian LOS Score for Intersection	2.908			3.126			2.919			2.102		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	657			615			526			454		
d_b, Bicycle Delay [s]	31.53			33.60			38.01			41.79		
I_b,int, Bicycle LOS Score for Intersection	2.342			2.473			2.239			2.017		
Bicycle LOS	B			B			B			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	34.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	180	675	38	13	773	354	436	18	157	109	50	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	174	0	0	0
Total Hourly Volume [veh/h]	180	675	38	13	773	354	436	18	0	109	50	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	181	10	3	208	95	117	5	0	29	13	11
Total Analysis Volume [veh/h]	194	726	41	14	831	381	469	19	0	117	54	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			1			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			2			1	
v_co, Outbound Pedestrian Volume crossing		0			3			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			2			3			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	55	55	12	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	19	90	90	4	75	75	24	24	24	14	14
g / C, Green / Cycle	0.13	0.64	0.64	0.03	0.53	0.53	0.17	0.17	0.17	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.11	0.21	0.21	0.01	0.34	0.35	0.14	0.14	0.00	0.07	0.06
s, saturation flow rate [veh/h]	1771	1852	1812	1714	1867	1640	1774	1816	1605	1751	1745
c, Capacity [veh/h]	238	1191	1166	45	998	877	303	310	274	180	179
d1, Uniform Delay [s]	58.82	11.26	11.26	66.87	22.98	23.30	55.68	55.68	0.00	60.34	59.62
k, delay calibration	0.36	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.45	0.73	0.74	1.45	3.12	3.81	3.60	3.51	0.00	2.93	1.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.32	0.33	0.31	0.64	0.66	0.80	0.80	0.00	0.65	0.54
d, Delay for Lane Group [s/veh]	78.27	11.98	12.01	68.31	26.10	27.11	59.27	59.19	0.00	63.26	61.50
Lane Group LOS	E	B	B	E	C	C	E	E	A	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.94	5.51	5.42	0.51	15.38	14.20	8.55	8.75	0.00	4.19	3.40
50th-Percentile Queue Length [ft/ln]	198.43	137.86	135.51	12.71	384.50	354.92	213.85	218.79	0.00	104.63	85.05
95th-Percentile Queue Length [veh/ln]	12.56	9.37	9.24	0.92	21.81	20.38	13.35	13.60	0.00	7.53	6.12
95th-Percentile Queue Length [ft/ln]	313.93	234.14	230.97	22.88	545.29	509.40	333.77	340.08	0.00	188.33	153.10

**Movement, Approach, & Intersection Results**

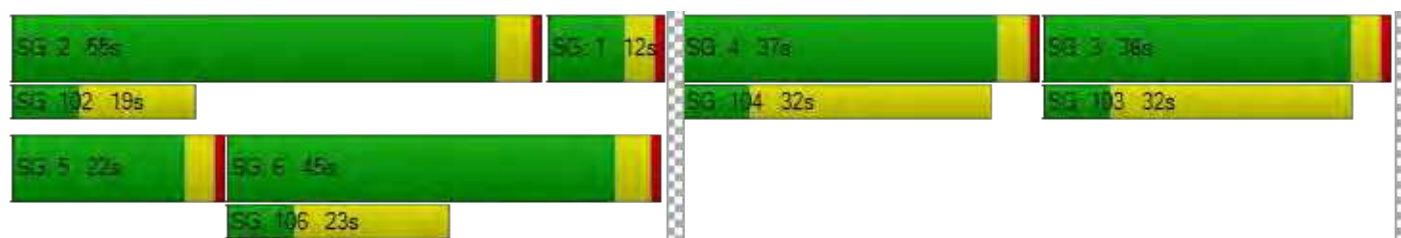
d_M, Delay for Movement [s/veh]	78.27	11.99	12.01	68.31	26.34	27.11	59.23	59.19	0.00	63.26	61.50	61.50
Movement LOS	E	B	B	E	C	C	E	E	A	E	E	E
d_A, Approach Delay [s/veh]	25.37			27.06			59.23			62.46		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	34.55											
Intersection LOS	C											
Intersection V/C	0.682											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	59.40			59.40			59.40			59.40		
I_p,int, Pedestrian LOS Score for Intersection	2.869			3.015			2.662			2.039		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	720			577			457			469		
d_b, Bicycle Delay [s]	28.66			35.44			41.69			41.03		
I_b,int, Bicycle LOS Score for Intersection	2.352			2.571			2.652			1.913		
Bicycle LOS	B			B			B			A		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	745	50	167	661	56	45	14	2	65	11	267
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	745	50	167	661	56	45	14	2	65	11	267
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	209	14	47	186	16	13	4	1	18	3	75
Total Analysis Volume [veh/h]	2	837	56	188	743	63	51	16	2	73	12	300
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			6			0			6	
v_di, Inbound Pedestrian Volume crossing in		0			6			0			6	
v_co, Outbound Pedestrian Volume crossing		0			3			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			1			5			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	35	35	12	50	50	25	25
g / C, Green / Cycle	0.44	0.44	0.15	0.63	0.63	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.10	0.22	0.22	0.09	0.24
s, saturation flow rate [veh/h]	1863	1653	1795	1885	1825	788	1587
c, Capacity [veh/h]	859	722	273	1181	1143	327	555
d1, Uniform Delay [s]	17.02	17.05	32.18	7.14	7.15	20.20	24.53
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.31
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.54	3.43	3.09	0.80	0.84	0.68	4.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.55	0.58	0.69	0.35	0.35	0.21	0.69
d, Delay for Lane Group [s/veh]	19.56	20.47	35.27	7.94	7.98	20.88	28.93
Lane Group LOS	B	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.56	6.00	3.54	2.97	2.90	1.01	6.91
50th-Percentile Queue Length [ft/ln]	164.05	149.94	88.60	74.20	72.49	25.18	172.87
95th-Percentile Queue Length [veh/ln]	10.76	10.01	6.38	5.34	5.22	1.81	11.23
95th-Percentile Queue Length [ft/ln]	269.07	250.35	159.48	133.56	130.48	45.33	280.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	19.56	19.96	20.47	35.27	7.96	7.98	20.88	20.88	20.88	28.93	28.93	28.93
Movement LOS	B	B	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	19.99			13.13			20.88			28.93		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.58											
Intersection LOS	B											
Intersection V/C	0.634											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			29.79			29.79			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.862			1.770			0.000		
Crosswalk LOS	F			C			A			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	597			1072			682			682		
d_b, Bicycle Delay [s]	19.71			8.63			17.43			17.40		
I_b,int, Bicycle LOS Score for Intersection	2.298			2.380			1.673			2.195		
Bicycle LOS	B			B			A			B		

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.394

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	137	460	380	526	369	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.10	1.30	0.60	1.40	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	137	0	380	526	369	104
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	0	98	136	95	27
Total Analysis Volume [veh/h]	141	0	392	542	380	107
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing in	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	58.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	5	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.0	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	76	76	76	76	76
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	12	12	21	58	38
g / C, Green / Cycle	0.15	0.15	0.27	0.76	0.49
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.22	0.29	0.27
s, saturation flow rate [veh/h]	1781	1588	1791	1891	1791
c, Capacity [veh/h]	277	247	489	1433	883
d1, Uniform Delay [s]	29.54	0.00	25.81	3.13	13.46
k, delay calibration	0.08	0.08	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.08	0.00	3.12	0.16	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.51	0.00	0.80	0.38	0.55
d, Delay for Lane Group [s/veh]	30.61	0.00	28.93	3.29	15.93
Lane Group LOS	C	A	C	A	B
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.38	0.00	6.58	1.58	5.68
50th-Percentile Queue Length [ft/ln]	59.43	0.00	164.61	39.61	142.06
95th-Percentile Queue Length [veh/ln]	4.28	0.00	10.79	2.85	9.59
95th-Percentile Queue Length [ft/ln]	106.97	0.00	269.82	71.30	239.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.61	0.00	28.93	3.29	15.93	15.93
Movement LOS	C	A	C	A	B	B
d_A, Approach Delay [s/veh]	30.61		14.05		15.93	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	16.13					
Intersection LOS	B					
Intersection V/C	2.394					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.85	27.85	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.886	2.780	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1203	1718	799
d_b, Bicycle Delay [s]	6.07	0.76	13.79
I_b,int, Bicycle LOS Score for Intersection	1.560	3.101	2.363
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringwood Ave**

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.366

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↑			↑↵			↵↵↵			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	34	32	32	67	0	168	2	662	107	254	561	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	0.00	0.00	0.00	0.00	2.20	0.00	1.70	0.00	2.10	1.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	8	0	0	57	0	0	0
Total Hourly Volume [veh/h]	34	32	32	67	0	160	2	662	50	254	561	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	8	8	18	0	42	1	174	13	67	148	1
Total Analysis Volume [veh/h]	36	34	34	71	0	168	2	697	53	267	591	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing in	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	58.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.0	2.9	3.0	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	22	22	22	22	94	82	82	92	88	88
g / C, Green / Cycle	0.18	0.18	0.18	0.18	0.79	0.69	0.69	0.77	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.07	0.11	0.00	0.20	0.03	0.31	0.16	0.16
s, saturation flow rate [veh/h]	1419	1710	975	1524	860	3569	1564	862	1873	1870
c, Capacity [veh/h]	158	307	235	274	722	2447	1072	689	1367	1365
d1, Uniform Delay [s]	53.38	42.04	47.82	45.15	3.48	7.37	6.13	4.49	5.21	5.21
k, delay calibration	0.10	0.10	0.10	0.10	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	0.34	0.68	2.12	0.00	0.29	0.09	1.64	0.36	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.23	0.22	0.30	0.61	0.00	0.28	0.05	0.39	0.22	0.22
d, Delay for Lane Group [s/veh]	54.07	42.38	48.50	47.27	3.49	7.66	6.22	6.13	5.57	5.57
Lane Group LOS	D	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.09	1.79	2.00	4.76	0.01	3.28	0.43	1.79	2.21	2.21
50th-Percentile Queue Length [ft/ln]	27.19	44.85	50.01	118.98	0.24	82.00	10.71	44.79	55.33	55.27
95th-Percentile Queue Length [veh/ln]	1.96	3.23	3.60	8.34	0.02	5.90	0.77	3.22	3.98	3.98
95th-Percentile Queue Length [ft/ln]	48.93	80.73	90.02	208.42	0.44	147.60	19.28	80.62	99.59	99.49

**Movement, Approach, & Intersection Results**

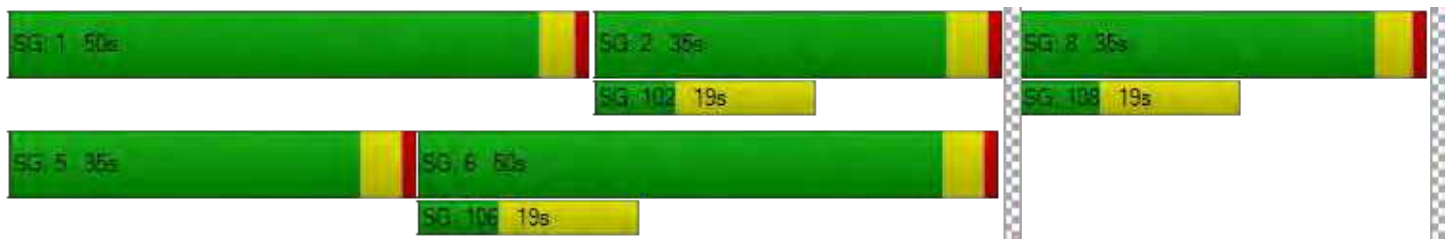
d_M, Delay for Movement [s/veh]	54.07	42.38	42.38	48.50	48.50	47.27	3.49	7.66	6.22	6.13	5.57	5.57
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	46.43			47.64			7.55			5.74		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	13.72											
Intersection LOS	B											
Intersection V/C	0.366											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersection	1.980	2.438	2.934	2.767
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	513	513	757	507
d_b, Bicycle Delay [s]	33.24	33.50	23.40	33.69
I_b,int, Bicycle LOS Score for Intersection	1.731	1.967	2.227	2.269
Bicycle LOS	A	A	B	B

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	94.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.043

**Intersection Setup**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3307	20	359	970	68	1803
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	16.10	4.90	3.80	9.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3307	20	359	970	68	1803
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	844	5	92	247	17	460
Total Analysis Volume [veh/h]	3374	20	366	990	69	1840
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	90	140	50	140	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	5.8	1.5	5.8	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	152	152	152	152	152	152
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	7.80	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	5.80	2.00	0.00
g_i, Effective Green Time [s]	90	90	34	125	15	53
g / C, Green / Cycle	0.59	0.59	0.22	0.82	0.10	0.35
(v / s)_i Volume / Saturation Flow Rate	0.66	0.01	0.11	0.20	0.02	0.43
s, saturation flow rate [veh/h]	5077	1399	3378	5020	3264	4237
c, Capacity [veh/h]	2999	826	751	4137	321	1470
d1, Uniform Delay [s]	31.18	12.94	51.69	2.94	63.25	49.75
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	57.57	0.01	0.18	0.04	0.12	113.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.12	0.02	0.49	0.24	0.21	1.25
d, Delay for Lane Group [s/veh]	88.74	12.96	51.87	2.97	63.37	163.57
Lane Group LOS	F	B	D	A	E	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	48.44	0.27	5.95	1.42	1.24	33.89
50th-Percentile Queue Length [ft/ln]	1211.03	6.82	148.74	35.53	31.00	847.26
95th-Percentile Queue Length [veh/ln]	65.94	0.49	9.95	2.56	2.23	49.83
95th-Percentile Queue Length [ft/ln]	1648.39	12.27	248.75	63.95	55.80	1245.64



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	88.74	12.96	51.87	2.97	63.37	163.57
Movement LOS	F	B	D	A	E	F
d_A, Approach Delay [s/veh]	88.29		16.17		159.95	
Approach LOS	F		B		F	
d_I, Intersection Delay [s/veh]	94.15					
Intersection LOS	F					
Intersection V/C	1.043					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.42	0.00	67.42
I_p,int, Pedestrian LOS Score for Intersection	3.757	0.000	3.078
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	552	578	197
d_b, Bicycle Delay [s]	39.94	38.52	61.89
I_b,int, Bicycle LOS Score for Intersection	3.426	2.305	1.670
Bicycle LOS	C	B	A

**Sequence**

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	142.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
	88	95	1112	159	204	133	76	1899	118	559	704	34
Base Volume Input [veh/h]	88	95	1112	159	204	133	76	1899	118	559	704	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	70	0	0	45	0	0	1
Total Hourly Volume [veh/h]	88	95	1112	159	204	63	76	1899	73	559	704	33
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	24	287	41	53	16	20	489	19	144	181	9
Total Analysis Volume [veh/h]	91	98	1146	164	210	65	78	1958	75	576	726	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			11			11			0	
v_di, Inbound Pedestrian Volume crossing in		0			11			11			0	
v_co, Outbound Pedestrian Volume crossing		8			0			8			0	
v_ci, Inbound Pedestrian Volume crossing mi		8			0			8			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			3			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.0	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	0	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	2.5	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	4.50	4.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	2.50	2.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	7	13	39	9	16	16	67	40	40	67	57	57
g / C, Green / Cycle	0.07	0.13	0.38	0.09	0.16	0.16	0.64	0.38	0.38	0.64	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.28	0.09	0.13	0.04	0.07	0.63	0.08	0.39	0.15	0.02
s, saturation flow rate [veh/h]	1749	1479	4142	1748	1606	1503	1070	3084	889	1494	4959	1615
c, Capacity [veh/h]	119	186	1566	151	253	237	699	1186	342	926	2728	889
d1, Uniform Delay [s]	47.76	42.65	27.74	47.62	42.55	38.56	7.53	32.08	21.57	23.80	12.36	10.77
k, delay calibration	0.11	0.11	0.15	0.35	0.18	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.72	2.30	0.93	86.28	10.97	0.62	0.07	293.84	0.32	0.69	0.05	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.76	0.53	0.73	1.09	0.83	0.27	0.11	1.65	0.22	0.62	0.27	0.04
d, Delay for Lane Group [s/veh]	57.48	44.95	28.67	133.90	53.52	39.18	7.60	325.92	21.88	24.49	12.41	10.79
Lane Group LOS	E	D	C	F	D	D	A	F	C	C	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	2.59	1.21	7.85	7.58	3.03	1.53	0.32	41.84	1.25	2.72	2.88	0.36
50th-Percentile Queue Length [ft/ln]	64.75	30.27	196.14	189.47	75.78	38.13	7.94	1046.02	31.29	68.02	71.98	8.89
95th-Percentile Queue Length [veh/ln]	4.66	2.18	12.44	12.46	5.46	2.75	0.57	67.46	2.25	4.90	5.18	0.64
95th-Percentile Queue Length [ft/ln]	116.56	54.48	310.98	311.43	136.41	68.63	14.30	1686.62	56.33	122.44	129.57	15.99

**Movement, Approach, & Intersection Results**

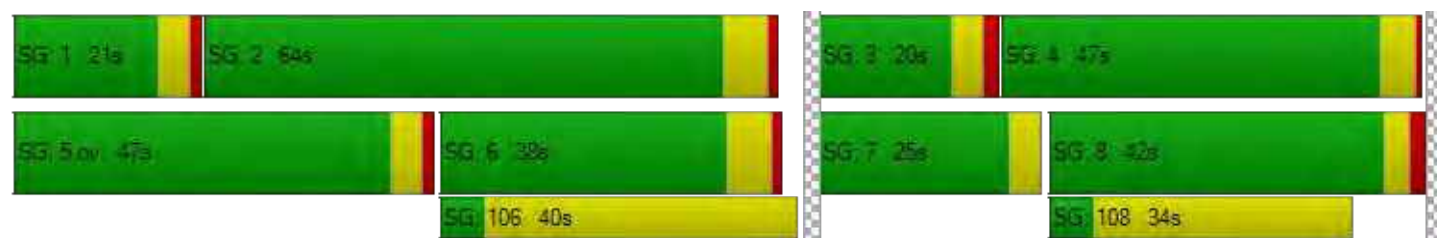
d_M, Delay for Movement [s/veh]	57.48	44.95	28.67	133.90	53.52	39.18	7.60	325.92	21.88	24.49	12.41	10.79
Movement LOS	E	D	C	F	D	D	A	F	C	C	B	B
d_A, Approach Delay [s/veh]	31.83			81.43			303.35			17.57		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	142.14											
Intersection LOS	F											
Intersection V/C	0.948											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.44	0.00	43.44	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.435	0.000	3.220	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	818	720	615	1114
d_b, Bicycle Delay [s]	18.18	21.34	24.97	10.21
I_b,int, Bicycle LOS Score for Intersection	2.661	1.980	2.745	2.295
Bicycle LOS	B	A	B	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	155.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.209

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	43	1065	7	138	707	54	83	17	35	193	18	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.50	33.30	7.70	3.50	0.00	0.60	26.70	5.10	0.70	5.90	1.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	1065	7	138	707	54	83	17	35	193	18	99
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	303	2	39	201	15	24	5	10	55	5	28
Total Analysis Volume [veh/h]	49	1210	8	157	803	61	94	19	40	219	20	113
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			86			11			85	
v_di, Inbound Pedestrian Volume crossing in		11			85			12			86	
v_co, Outbound Pedestrian Volume crossing		13			14			14			13	
v_ci, Inbound Pedestrian Volume crossing mi		13			14			14			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			18			7			15	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	90	73	73	90	83	83	33	33
g / C, Green / Cycle	0.69	0.56	0.56	0.69	0.64	0.64	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.07	0.74	0.74	0.32	0.53	0.53	0.30	0.55
s, saturation flow rate [veh/h]	705	826	824	491	826	799	510	643
c, Capacity [veh/h]	303	464	463	163	527	509	173	196
d1, Uniform Delay [s]	18.65	28.44	28.44	41.33	18.16	18.34	51.38	46.93
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	155.54	155.92	61.88	14.14	15.16	42.95	378.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.16	1.31	1.31	0.96	0.83	0.84	0.88	1.80
d, Delay for Lane Group [s/veh]	18.90	183.98	184.36	103.21	32.30	33.50	94.34	425.46
Lane Group LOS	B	F	F	F	C	C	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.41	33.28	33.24	4.42	11.55	11.49	7.18	26.87
50th-Percentile Queue Length [ft/ln]	10.31	832.12	831.08	110.58	288.74	287.15	179.57	671.65
95th-Percentile Queue Length [veh/ln]	0.74	51.39	51.35	7.87	17.12	17.04	11.58	44.57
95th-Percentile Queue Length [ft/ln]	18.55	1284.87	1283.82	196.81	428.08	426.10	289.46	1114.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	18.90	184.17	184.36	103.21	32.84	33.50	94.34	94.34	94.34	425.46	425.46	425.46
Movement LOS	B	F	F	F	C	C	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	177.78			43.70			94.34			425.46		
Approach LOS	F			D			F			F		
d_I, Intersection Delay [s/veh]	155.41											
Intersection LOS	F											
Intersection V/C	1.209											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.41	54.41
I_p,int, Pedestrian LOS Score for Intersection	3.322	3.002	1.893	2.232
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1124	1078	505	508
d_b, Bicycle Delay [s]	12.47	13.93	36.42	36.41
I_b,int, Bicycle LOS Score for Intersection	2.605	2.402	1.812	2.140
Bicycle LOS	B	B	A	B

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	39.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.979

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	44	933	1106	24	32	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	3.30	2.80	0.00	0.00	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	933	1106	24	32	114
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	251	297	6	9	31
Total Analysis Volume [veh/h]	47	1003	1189	26	34	123
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing in	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	24	106	90	90	24	24
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	6	103	95	95	20	20
g / C, Green / Cycle	0.04	0.79	0.73	0.73	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.04	0.64	0.73	0.74	0.03	0.14
s, saturation flow rate [veh/h]	1270	1576	831	824	1021	897
c, Capacity [veh/h]	54	1252	606	600	155	136
d1, Uniform Delay [s]	61.78	7.55	17.62	17.62	48.30	53.91
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.15	5.46	37.36	39.79	0.26	20.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.87	0.80	1.00	1.01	0.22	0.90
d, Delay for Lane Group [s/veh]	75.93	13.01	54.98	57.41	48.56	74.89
Lane Group LOS	E	B	F	F	D	E
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.74	6.60	20.71	20.93	0.99	4.73
50th-Percentile Queue Length [ft/ln]	43.40	164.99	517.76	523.33	24.65	118.21
95th-Percentile Queue Length [veh/ln]	3.12	10.81	28.25	28.74	1.77	8.29
95th-Percentile Queue Length [ft/ln]	78.12	270.32	706.35	718.56	44.36	207.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	75.93	13.01	56.17	57.41	48.56	74.89
Movement LOS	E	B	E	E	D	E
d_A, Approach Delay [s/veh]	15.83		56.19		69.19	
Approach LOS	B		E		E	
d_I, Intersection Delay [s/veh]	39.54					
Intersection LOS	D					
Intersection V/C	0.979					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	2.933	2.882	2.033
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.00	7.44	45.70
I_b,int, Bicycle LOS Score for Intersection	2.426	2.562	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	147.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.291

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1000	352	57	1065	274	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	6.50	2.80	2.70	1.80	6.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1000	352	57	1065	274	45
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	269	95	15	286	74	12
Total Analysis Volume [veh/h]	1075	378	61	1145	295	48
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	16.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	84	84	13	100	23	23
g / C, Green / Cycle	0.65	0.65	0.10	0.77	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.83	0.70	0.09	0.89	0.27	0.28
s, saturation flow rate [veh/h]	1293	540	643	1286	648	601
c, Capacity [veh/h]	838	350	63	989	114	105
d1, Uniform Delay [s]	22.83	21.66	58.46	15.00	53.56	53.56
k, delay calibration	0.50	0.50	0.10	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	136.04	70.86	43.45	82.54	291.72	296.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.28	1.08	0.97	1.16	1.56	1.57
d, Delay for Lane Group [s/veh]	158.87	92.53	101.91	97.54	345.28	349.74
Lane Group LOS	F	F	F	F	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	27.00	15.74	2.73	22.03	12.92	12.11
50th-Percentile Queue Length [ft/ln]	674.98	393.45	68.17	550.82	322.92	302.78
95th-Percentile Queue Length [veh/ln]	42.34	23.59	4.91	33.43	22.13	20.95
95th-Percentile Queue Length [ft/ln]	1058.46	589.86	122.71	835.68	553.32	523.64

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	158.87	92.53	101.91	97.54	347.07	349.74
Movement LOS	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	141.61		97.76		347.43	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	147.51					
Intersection LOS	F					
Intersection V/C	1.291					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.212
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.14	3.46	44.22
I_b,int, Bicycle LOS Score for Intersection	2.758	2.555	2.126
Bicycle LOS	C	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	133.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.222

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐			⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	268	1310	138	78	1171	26	27	170	206	160	255	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	268	1310	138	78	1171	26	27	170	31	160	255	11
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	360	38	21	322	7	7	47	9	44	70	3
Total Analysis Volume [veh/h]	295	1440	152	86	1287	29	30	187	34	176	280	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	64	64	8	59	59	27	27	27	16	16	16
g / C, Green / Cycle	0.10	0.49	0.49	0.06	0.45	0.45	0.21	0.21	0.21	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.23	0.43	0.43	0.09	0.47	0.47	0.02	0.19	0.02	0.05	0.21	0.01
s, saturation flow rate [veh/h]	1273	2481	1239	952	1853	959	1810	965	1535	3409	1303	1414
c, Capacity [veh/h]	127	1223	611	59	842	436	377	201	320	414	158	172
d1, Uniform Delay [s]	58.48	29.18	29.29	60.98	35.45	35.45	41.39	50.49	41.59	52.90	57.10	50.55
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.04	0.14	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	615.74	8.40	15.70	221.06	38.54	51.50	0.03	20.14	0.05	0.26	370.87	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.32	0.87	0.87	1.46	1.03	1.03	0.08	0.93	0.11	0.43	1.77	0.07
d, Delay for Lane Group [s/veh]	674.22	37.57	44.99	282.04	73.99	86.96	41.43	70.63	41.64	53.16	427.97	50.61
Lane Group LOS	F	D	D	F	F	F	D	E	D	D	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	25.92	15.30	16.65	5.57	17.68	19.88	0.79	7.08	0.90	2.69	21.49	0.35
50th-Percentile Queue Length [ft/ln]	648.06	382.54	416.30	139.19	441.99	496.91	19.68	177.12	22.43	67.21	537.17	8.78
95th-Percentile Queue Length [veh/ln]	41.88	21.72	23.34	10.02	25.09	27.82	1.42	11.45	1.61	4.84	34.79	0.63
95th-Percentile Queue Length [ft/ln]	1046.89	542.92	583.61	250.54	627.17	695.61	35.42	286.25	40.37	120.98	869.67	15.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	674.22	39.53	44.99	282.04	78.23	86.96	41.43	70.63	41.64	53.16	427.97	50.61
Movement LOS	F	D	D	F	F	F	D	E	D	D	F	D
d_A, Approach Delay [s/veh]	139.20			90.91			63.21			277.34		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	133.68											
Intersection LOS	F											
Intersection V/C	1.222											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.46	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.274	2.953	2.649	2.688
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	939	862	462	246
d_b, Bicycle Delay [s]	18.31	21.11	38.53	50.13
I_b,int, Bicycle LOS Score for Intersection	2.597	2.331	2.263	2.406
Bicycle LOS	B	B	B	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	113.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.233

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	20	1201	678	100	241	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	20	1201	678	0	241	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	310	175	0	62	0
Total Analysis Volume [veh/h]	21	1238	699	0	248	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	1	36	31	31	21	21
g / C, Green / Cycle	0.02	0.54	0.47	0.47	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.01	0.74	0.42	0.00	0.29	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	1615	850	1596
c, Capacity [veh/h]	36	906	788	755	268	503
d1, Uniform Delay [s]	32.48	15.37	16.18	0.00	22.12	0.00
k, delay calibration	0.04	0.24	0.15	0.15	0.05	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.68	168.42	5.05	0.00	6.86	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.59	1.37	0.89	0.00	0.93	0.00
d, Delay for Lane Group [s/veh]	38.16	183.79	21.23	0.00	28.98	0.00
Lane Group LOS	D	F	C	A	C	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.38	26.73	4.58	0.00	3.95	0.00
50th-Percentile Queue Length [ft/ln]	9.52	668.35	114.49	0.00	98.69	0.00
95th-Percentile Queue Length [veh/ln]	0.69	42.87	8.09	0.00	7.11	0.00
95th-Percentile Queue Length [ft/ln]	17.13	1071.82	202.23	0.00	177.65	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	38.16	183.79	21.23	0.00	28.98	0.00
Movement LOS	D	F	C	A	C	A
d_A, Approach Delay [s/veh]	181.36		21.23		28.98	
Approach LOS	F		C		C	
d_I, Intersection Delay [s/veh]	113.49					
Intersection LOS	F					
Intersection V/C	1.233					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	23.25
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.166
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1080	1080	1080
d_b, Bicycle Delay [s]	7.10	7.08	7.07
I_b,int, Bicycle LOS Score for Intersection	2.598	2.320	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	167.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.166

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	9	1029	4	29	522	18	132	1	31	21	6	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	2.10	0.00	0.00	2.60	27.60	4.30	0.00	17.90	0.00	0.00	6.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	0
Total Hourly Volume [veh/h]	9	1029	4	29	522	18	132	1	13	21	6	17
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	286	1	8	145	5	37	0	4	6	2	5
Total Analysis Volume [veh/h]	10	1143	4	32	580	20	147	1	14	23	7	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing in	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	142	142	142	142	142	142	142	142	142	142
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	1	100	100	3	102	10	10	10	10	10
g / C, Green / Cycle	0.01	0.70	0.70	0.02	0.72	0.07	0.07	0.07	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.01	0.90	0.90	0.02	1.01	0.04	0.04	0.03	0.01	0.05
s, saturation flow rate [veh/h]	1095	688	589	1810	593	1748	1811	441	1810	559
c, Capacity [veh/h]	11	484	414	44	426	130	134	33	130	40
d1, Uniform Delay [s]	70.29	21.08	21.08	68.92	20.09	63.56	63.56	62.74	62.05	64.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	100.20	139.57	142.06	21.12	197.86	3.75	3.62	8.58	0.65	16.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.90	1.28	1.28	0.74	1.41	0.56	0.56	0.43	0.18	0.65
d, Delay for Lane Group [s/veh]	170.49	160.65	163.14	90.04	217.95	67.31	67.18	71.32	62.69	80.49
Lane Group LOS	F	F	F	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.67	33.44	28.90	1.42	36.10	2.75	2.85	0.58	0.81	1.11
50th-Percentile Queue Length [ft/ln]	16.87	835.93	722.48	35.56	902.39	68.85	71.18	14.40	20.36	27.67
95th-Percentile Queue Length [veh/ln]	1.21	51.46	45.11	2.56	58.18	4.96	5.12	1.04	1.47	1.99
95th-Percentile Queue Length [ft/ln]	30.36	1286.57	1127.69	64.01	1454.44	123.94	128.12	25.91	36.64	49.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	170.49	161.79	163.14	90.04	217.95	217.95	67.24	67.18	71.32	62.69	80.49	80.49
Movement LOS	F	F	F	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	161.87			211.47			67.59			72.14		
Approach LOS	F			F			E			E		
d_I, Intersection Delay [s/veh]	167.71											
Intersection LOS	F											
Intersection V/C	1.166											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.37	60.37	60.37	60.37
I_p,int, Pedestrian LOS Score for Intersection	2.517	2.737	2.196	1.985
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	282	282	423	423
d_b, Bicycle Delay [s]	52.44	52.59	44.14	44.14
I_b,int, Bicycle LOS Score for Intersection	2.514	2.602	1.857	1.640
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.610

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue					
Base Volume Input [veh/h]	13	693	5	2	685	100	73	2	36	15	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.10	0.00	0.00	3.70	2.40	3.90	0.00	3.20	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	693	5	2	685	100	73	2	36	15	4	6
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	190	1	1	188	27	20	1	10	4	1	2
Total Analysis Volume [veh/h]	14	762	5	2	753	110	80	2	40	16	4	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		19			15			19			15	
v_di, Inbound Pedestrian Volume crossing in		19			15			19			15	
v_co, Outbound Pedestrian Volume crossing		10			8			8			11	
v_ci, Inbound Pedestrian Volume crossing mi		11			8			8			10	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		8			4			4			4	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	78	78	78	78	14	14
g / C, Green / Cycle	0.78	0.78	0.78	0.78	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.02	0.41	0.00	0.48	0.09	0.02
s, saturation flow rate [veh/h]	651	1851	712	1795	1407	1464
c, Capacity [veh/h]	424	1437	493	1394	259	265
d1, Uniform Delay [s]	10.75	4.27	8.40	4.82	39.90	37.39
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	1.43	0.01	2.08	1.33	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.03	0.53	0.00	0.62	0.47	0.10
d, Delay for Lane Group [s/veh]	10.90	5.70	8.41	6.89	41.23	37.56
Lane Group LOS	B	A	A	A	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.16	5.20	0.02	6.31	2.88	0.59
50th-Percentile Queue Length [ft/ln]	4.03	130.05	0.48	157.67	72.00	14.84
95th-Percentile Queue Length [veh/ln]	0.29	8.94	0.03	10.43	5.18	1.07
95th-Percentile Queue Length [ft/ln]	7.25	223.56	0.86	260.63	129.59	26.71



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	10.90	5.70	5.70	8.41	6.89	6.89	41.23	41.23	41.23	37.56	37.56	37.56
Movement LOS	B	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	5.79			6.90			41.23			37.56		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	9.21											
Intersection LOS	A											
Intersection V/C	0.610											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.59			39.59			39.59			39.59		
I_p,int, Pedestrian LOS Score for Intersection	2.398			2.616			1.861			1.737		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.85			4.84			29.77			29.77		
I_b,int, Bicycle LOS Score for Intersection	2.848			2.987			1.761			1.604		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	10.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.514

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇑⇐			⇐⇑⇓⇑⇐			⇐⇑⇓⇑⇐			⇐⇑⇓⇑⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	656	63	54	657	10	14	31	5	75	50	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	2.70	0.00	3.30	2.00	10.10	0.00	2.30	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	656	63	54	657	10	14	31	5	75	50	58
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	171	16	14	171	3	4	8	1	20	13	15
Total Analysis Volume [veh/h]	3	683	66	56	684	10	15	32	5	78	52	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		3			1			2			4	
v_di, Inbound Pedestrian Volume crossing in		4			2			1			3	
v_co, Outbound Pedestrian Volume crossing		1			2			1			2	
v_ci, Inbound Pedestrian Volume crossing mi		1			2			1			2	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		15			12			5			7	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	79	79	79	79	13	13	13	13
g / C, Green / Cycle	0.79	0.79	0.79	0.79	0.13	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.00	0.41	0.08	0.37	0.01	0.02	0.06	0.07
s, saturation flow rate [veh/h]	762	1821	724	1854	1261	1814	1384	1671
c, Capacity [veh/h]	568	1439	528	1466	125	231	192	213
d1, Uniform Delay [s]	6.14	3.73	7.43	3.51	46.44	38.86	44.19	40.80
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	1.35	0.40	1.10	0.42	0.32	1.38	2.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.52	0.11	0.47	0.12	0.16	0.41	0.53
d, Delay for Lane Group [s/veh]	6.15	5.08	7.83	4.61	46.86	39.18	45.57	42.80
Lane Group LOS	A	A	A	A	D	D	D	D
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	4.56	0.52	3.96	0.38	0.84	1.95	2.71
50th-Percentile Queue Length [ft/ln]	0.60	114.07	13.05	98.88	9.46	20.89	48.76	67.72
95th-Percentile Queue Length [veh/ln]	0.04	8.07	0.94	7.12	0.68	1.50	3.51	4.88
95th-Percentile Queue Length [ft/ln]	1.08	201.65	23.50	177.98	17.02	37.60	87.77	121.89

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	6.15	5.08	5.08	7.83	4.61	4.61	46.86	39.18	39.18	45.57	42.80	42.80
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	5.08			4.85			41.39			43.94		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	10.30											
Intersection LOS	B											
Intersection V/C	0.514											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.60			39.60			39.60			39.60		
I_p,int, Pedestrian LOS Score for Intersection	2.467			2.464			1.981			2.118		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.87			4.86			29.79			29.82		
I_b,int, Bicycle LOS Score for Intersection	2.800			2.797			1.645			1.873		
Bicycle LOS	C			C			A			A		

**Sequence**





Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	31.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	30	198	203	372	86	277	101	439	184	277	416	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	1.10	0.00	1.70	0.00	2.40	1.10	0.50	2.30	6.40	0.00	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	120	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	30	198	83	372	86	0	101	439	184	277	416	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	52	22	98	23	0	27	116	48	73	109	4
Total Analysis Volume [veh/h]	32	208	87	392	91	0	106	462	194	292	438	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			6			12			6	
v_di, Inbound Pedestrian Volume crossing in		12			6			12			6	
v_co, Outbound Pedestrian Volume crossing		5			5			4			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			4			5			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		50			19			4			14	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	20	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	78	78	78	78	78	78	78	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	15	15	15	15	15	15	14	14	14	14	16	16	16
g / C, Green / Cycle	0.19	0.19	0.19	0.20	0.20	0.20	0.18	0.18	0.18	0.18	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.11	0.06	0.13	0.13	0.00	0.06	0.12	0.12	0.13	0.14	0.14	0.14
s, saturation flow rate [veh/h]	1778	1883	1446	1785	1842	1584	1794	1892	1892	1541	1718	1882	1701
c, Capacity [veh/h]	334	354	271	351	363	312	323	341	341	277	346	379	342
d1, Uniform Delay [s]	26.40	29.14	27.40	29.25	29.25	0.00	28.08	30.09	30.10	30.11	29.18	29.17	29.19
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	1.56	0.67	2.28	2.21	0.00	0.59	2.35	2.37	3.19	2.56	2.32	2.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.10	0.59	0.32	0.68	0.68	0.00	0.33	0.68	0.68	0.70	0.70	0.70	0.70
d, Delay for Lane Group [s/veh]	26.52	30.70	28.08	31.52	31.46	0.00	28.67	32.45	32.48	33.29	31.73	31.49	31.80
Lane Group LOS	C	C	C	C	C	A	C	C	C	C	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.49	3.61	1.41	4.28	4.41	0.00	1.74	4.15	4.16	3.55	4.31	4.69	4.29
50th-Percentile Queue Length [ft/ln]	12.33	90.23	35.25	107.11	110.35	0.00	43.43	103.7	104.1	88.76	107.87	117.27	107.32
95th-Percentile Queue Length [veh/ln]	0.89	6.50	2.54	7.68	7.86	0.00	3.13	7.47	7.50	6.39	7.72	8.24	7.69
95th-Percentile Queue Length [ft/ln]	22.19	162.41	63.45	191.97	196.48	0.00	78.17	186.7	187.4	159.7	193.03	206.07	192.26

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	26.52	30.70	28.08	31.50	31.46	0.00	28.67	32.46	33.29	31.69	31.65	31.80
Movement LOS	C	C	C	C	C	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	29.59			31.49			32.15			31.67		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	31.50											
Intersection LOS	C											
Intersection V/C	0.569											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.06	28.06	28.06	28.06
I_p,int, Pedestrian LOS Score for Intersection	2.453	4.230	4.321	2.727
Crosswalk LOS	B	D	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	1055	697	876
d_b, Bicycle Delay [s]	16.10	8.82	16.63	12.44
I_b,int, Bicycle LOS Score for Intersection	2.297	4.007	3.013	2.174
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road/101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.771

**Intersection Setup**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑		←←→→	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	1842	0	0	824	570	420
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1842	0	0	824	570	420
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	465	0	0	208	144	106
Total Analysis Volume [veh/h]	1861	0	0	832	576	424
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	0	5	0
Pedestrian Clearance [s]	12	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	58	58	17	17
g / C, Green / Cycle	0.73	0.73	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.53	0.24	0.17	0.16
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2549	2578	721	552
d1, Uniform Delay [s]	6.23	3.81	29.75	29.51
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.88	0.33	0.79	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.73	0.32	0.80	0.77
d, Delay for Lane Group [s/veh]	8.11	4.14	30.54	30.36
Lane Group LOS	A	A	C	C
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.87	1.81	5.14	3.76
50th-Percentile Queue Length [ft/ln]	171.66	45.31	128.43	93.96
95th-Percentile Queue Length [veh/ln]	11.16	3.26	8.85	6.77
95th-Percentile Queue Length [ft/ln]	279.09	81.57	221.35	169.14

**Movement, Approach, & Intersection Results**

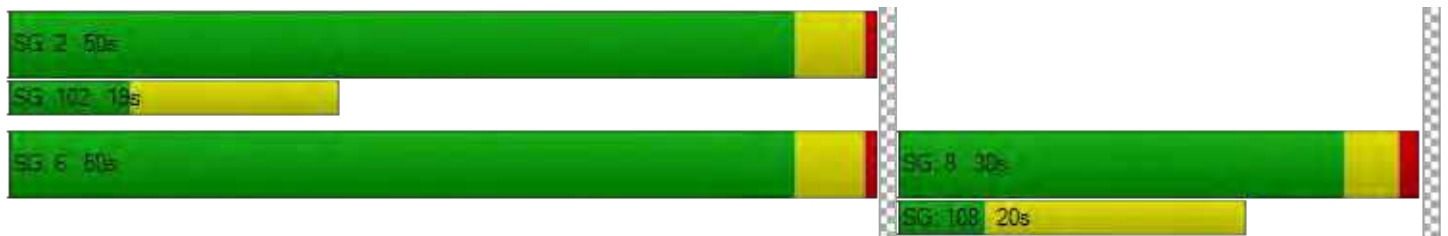
d_M, Delay for Movement [s/veh]	8.11	0.00	0.00	4.14	30.54	30.36
Movement LOS	A			A	C	C
d_A, Approach Delay [s/veh]	8.11		4.14		30.46	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	13.27					
Intersection LOS	B					
Intersection V/C	0.771					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.886	2.368
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.47	18.31
I_b,int, Bicycle LOS Score for Intersection	3.095	2.246	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	16.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	19	63	18	71	407	36	21	124	21	7	16	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	63	18	71	407	36	21	124	21	7	16	47
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	17	5	19	110	10	6	35	6	2	4	13
Total Analysis Volume [veh/h]	21	68	19	77	440	39	24	140	24	8	17	51
Pedestrian Volume [ped/h]	3			4			2			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	663	739	629	639
Degree of Utilization, x	0.16	0.75	0.30	0.12

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.58	6.98	1.25	0.40
95th-Percentile Queue Length [ft]	14.48	174.47	31.29	10.07
Approach Delay [s/veh]	9.49	21.09	11.15	9.39
Approach LOS	A	C	B	A
Intersection Delay [s/veh]	16.77			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	31.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	179	40	1834	12	31	5	9	505	208	1822	119	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	40	1834	12	31	5	9	505	208	1822	119	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	10	478	3	8	1	2	132	54	474	31	4
Total Analysis Volume [veh/h]	186	42	1910	13	32	5	9	526	217	1898	124	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			4			4			0	
v_di, Inbound Pedestrian Volume crossing in		0			4			4			0	
v_co, Outbound Pedestrian Volume crossing		0			13			0			13	
v_ci, Inbound Pedestrian Volume crossing mi		0			13			0			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			13			8			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	6	4	6	4	1	4	1	2	8
Auxiliary Signal Groups			2,3									
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	10	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	10	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	58	11	11	25	32	25	32	59	32	59	58	0
Vehicle Extension [s]	4.5	2.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0	4.5	0.0
Walk [s]	5	0	0	10	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	10	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.1	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	38	128	10	10	26	26	26	76	76
g / C, Green / Cycle	0.24	0.80	0.06	0.06	0.16	0.16	0.16	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.12	0.46	0.02	0.01	0.15	0.15	0.14	0.37	0.08
s, saturation flow rate [veh/h]	1826	4190	1707	1588	1891	1724	1551	5150	1644
c, Capacity [veh/h]	436	3257	137	97	311	284	255	2450	782
d1, Uniform Delay [s]	52.96	7.29	71.59	71.56	65.54	65.54	64.69	34.82	24.02
k, delay calibration	0.10	0.50	0.04	0.04	0.04	0.04	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.88	0.78	0.27	0.45	3.84	4.18	3.08	2.47	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.59	0.20	0.23	0.90	0.90	0.85	0.77	0.18
d, Delay for Lane Group [s/veh]	53.85	8.07	71.86	72.00	69.38	69.72	67.77	37.29	24.52
Lane Group LOS	D	A	E	E	E	E	E	D	C
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.18	8.44	1.10	0.89	11.58	10.58	8.83	20.99	3.20
50th-Percentile Queue Length [ft/ln]	204.39	211.03	27.52	22.30	289.56	264.57	220.67	524.82	80.12
95th-Percentile Queue Length [veh/ln]	12.86	13.21	1.98	1.61	17.16	15.92	13.70	28.51	5.77
95th-Percentile Queue Length [ft/ln]	321.62	330.15	49.54	40.15	429.10	397.95	342.48	712.67	144.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	53.85	53.85	8.07	71.86	71.94	72.00	69.38	69.54	67.77	37.29	24.52	24.52
Movement LOS	D	D	A	E	E	E	E	E	E	D	C	C
d_A, Approach Delay [s/veh]	12.95			71.92			69.03			36.42		
Approach LOS	B			E			E			D		
d_I, Intersection Delay [s/veh]	31.62											
Intersection LOS	C											
Intersection V/C	0.839											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.420			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			693			654		
d_b, Bicycle Delay [s]	73.73			54.89			34.33			36.27		
I_b,int, Bicycle LOS Score for Intersection	5.087			1.601			2.180			4.921		
Bicycle LOS	F			A			B			E		

**Sequence**

Ring 1	-	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	98.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.612

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		



**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	651	199	0	766	633	0	0	0	285	0	352
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	4.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	651	199	0	766	633	0	0	0	285	0	352
Peak Hour Factor	1.0000	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	175	50	0	206	170	0	0	0	71	0	98
Total Analysis Volume [veh/h]	0	700	199	0	824	681	0	0	0	285	0	391
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	21	0	0	21	0	0	0	0	59	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		Yes			Yes					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	44	44	44		27	27
g / C, Green / Cycle	0.56	0.56	0.56		0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.14	0.16	0.98		0.08	0.31
s, saturation flow rate [veh/h]	5094	5012	694		3514	1271
c, Capacity [veh/h]	2836	2791	386		1205	436
d1, Uniform Delay [s]	9.08	9.38	17.11		18.75	24.88
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.21	0.27	353.91		0.10	6.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.25	0.30	1.76		0.24	0.90
d, Delay for Lane Group [s/veh]	9.29	9.65	371.02		18.85	31.65
Lane Group LOS	A	A	F		B	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	1.94	2.36	43.84		1.83	3.71
50th-Percentile Queue Length [ft/ln]	48.47	58.99	1096.08		45.71	92.71
95th-Percentile Queue Length [veh/ln]	3.49	4.25	73.81		3.29	6.67
95th-Percentile Queue Length [ft/ln]	87.25	106.18	1845.17		82.27	166.87

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	9.29	0.00	0.00	9.65	371.02	0.00	0.00	0.00	18.85	0.00	31.65
Movement LOS		A			A	F				B		C
d_A, Approach Delay [s/veh]	9.29		173.17				0.00		26.25			
Approach LOS	A		F				A		C			
d_I, Intersection Delay [s/veh]	98.88											
Intersection LOS	F											
Intersection V/C	1.612											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.856	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	426	426	0	1377
d_b, Bicycle Delay [s]	24.77	24.88	39.95	3.88
I_b,int, Bicycle LOS Score for Intersection	1.945	2.387	4.132	1.560
Bicycle LOS	A	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	83.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.073

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)			Eastbound			Northwestbound		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	827	122	0	1194	495	0	0	0	196	0	859
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	827	122	0	1194	495	0	0	0	196	0	859
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	211	31	0	305	124	0	0	0	49	0	239
Total Analysis Volume [veh/h]	0	844	124	0	1218	495	0	0	0	196	0	954
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	20	0	0	20	0	0	0	0	60	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	L	R
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	24	48	48
g / C, Green / Cycle	0.30	0.30	0.30	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.28	0.08	0.40	0.06	0.57
s, saturation flow rate [veh/h]	3051	1579	3051	3514	1685
c, Capacity [veh/h]	920	476	920	2102	1008
d1, Uniform Delay [s]	26.93	21.10	27.90	6.83	14.87
k, delay calibration	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.33	1.33	153.14	0.02	5.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.92	0.26	1.32	0.09	0.95
d, Delay for Lane Group [s/veh]	42.26	22.43	181.03	6.85	20.41
Lane Group LOS	D	C	F	A	C
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.22	1.87	18.60	0.63	7.41
50th-Percentile Queue Length [ft/ln]	155.44	46.79	464.95	15.79	185.23
95th-Percentile Queue Length [veh/ln]	10.31	3.37	29.70	1.14	11.87
95th-Percentile Queue Length [ft/ln]	257.68	84.22	742.49	28.43	296.84



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	42.26	22.43	0.00	181.03	0.00	0.00	0.00	0.00	6.85	0.00	20.41
Movement LOS		D	C		F					A		C
d_A, Approach Delay [s/veh]	39.72			181.03			0.00			18.10		
Approach LOS	D			F			A			B		
d_I, Intersection Delay [s/veh]	83.86											
Intersection LOS	F											
Intersection V/C	1.073											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	31.48	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.010	1.419	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400	0	1401
d_b, Bicycle Delay [s]	25.60	25.63	39.97	3.59
I_b,int, Bicycle LOS Score for Intersection	2.092	2.230	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.808

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←↔→		↑↑↑↔		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	234	245	2182	206	129	1011
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	234	245	2182	206	129	1011
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	66	587	55	35	272
Total Analysis Volume [veh/h]	252	263	2346	222	139	1087
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	10	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	56	56	56	56	56	56
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	11	11	27	27	35	35
g / C, Green / Cycle	0.20	0.20	0.48	0.48	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.07	0.17	0.46	0.14	0.38	0.22
s, saturation flow rate [veh/h]	3361	1542	5049	1579	365	4979
c, Capacity [veh/h]	664	305	2449	766	352	3124
d1, Uniform Delay [s]	19.68	21.85	14.00	8.70	11.83	5.02
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	2.86	1.26	0.08	0.27	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.38	0.86	0.96	0.29	0.40	0.35
d, Delay for Lane Group [s/veh]	19.81	24.71	15.26	8.78	12.10	5.04
Lane Group LOS	B	C	B	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.33	3.30	7.87	1.35	0.48	1.38
50th-Percentile Queue Length [ft/ln]	33.32	82.56	196.66	33.86	11.97	34.43
95th-Percentile Queue Length [veh/ln]	2.40	5.94	12.47	2.44	0.86	2.48
95th-Percentile Queue Length [ft/ln]	59.97	148.62	311.65	60.95	21.54	61.98

**Movement, Approach, & Intersection Results**

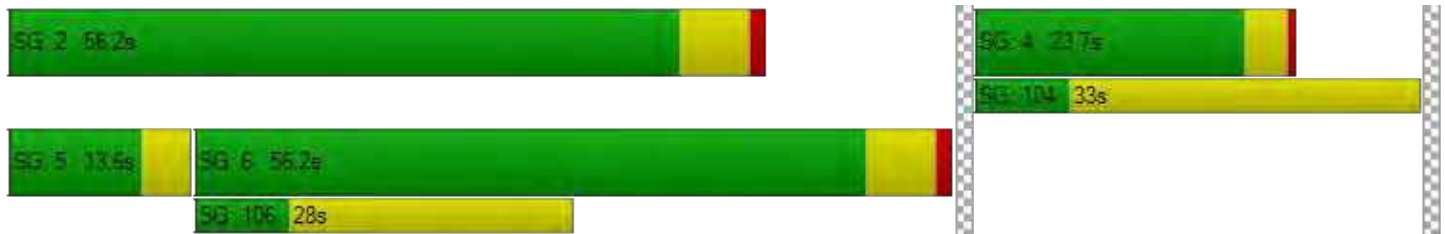
d_M, Delay for Movement [s/veh]	19.81	24.71	15.26	8.78	12.10	5.04
Movement LOS	B	C	B	A	B	A
d_A, Approach Delay [s/veh]	22.31		14.70		5.84	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	13.09					
Intersection LOS	B					
Intersection V/C	0.808					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.28	18.28	18.28
I_p,int, Pedestrian LOS Score for Intersection	2.547	3.112	3.102
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	709	1773	1773
d_b, Bicycle Delay [s]	11.80	0.36	0.36
I_b,int, Bicycle LOS Score for Intersection	1.560	2.972	2.234
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	605	59	2220	125	38	1242
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	605	59	2220	125	38	1242
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	154	15	566	32	10	317
Total Analysis Volume [veh/h]	617	60	2265	128	39	1267
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	11	11	25	25	2	31
g / C, Green / Cycle	0.21	0.21	0.47	0.47	0.04	0.59
(v / s)_i Volume / Saturation Flow Rate	0.18	0.04	0.45	0.08	0.02	0.25
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	728	339	2377	753	75	2924
d1, Uniform Delay [s]	20.28	17.31	13.60	8.16	25.08	6.09
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.09	0.09	1.16	0.04	2.07	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	0.18	0.95	0.17	0.52	0.43
d, Delay for Lane Group [s/veh]	21.37	17.40	14.76	8.20	27.15	6.13
Lane Group LOS	C	B	B	A	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.50	0.57	6.12	0.61	0.47	1.45
50th-Percentile Queue Length [ft/ln]	87.60	14.30	153.06	15.13	11.67	36.26
95th-Percentile Queue Length [veh/ln]	6.31	1.03	10.18	1.09	0.84	2.61
95th-Percentile Queue Length [ft/ln]	157.68	25.74	254.51	27.24	21.00	65.27

**Movement, Approach, & Intersection Results**

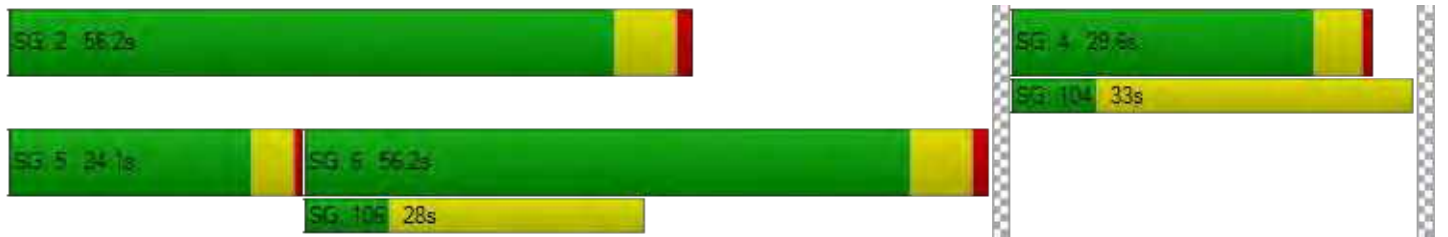
d_M, Delay for Movement [s/veh]	21.37	17.40	14.76	8.20	27.15	6.13
Movement LOS	C	B	B	A	C	A
d_A, Approach Delay [s/veh]	21.02		14.41		6.75	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	13.15					
Intersection LOS	B					
Intersection V/C	0.779					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	16.79	16.79	16.79
I_p,int, Pedestrian LOS Score for Intersection	2.273	3.478	3.323
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	1876	1876
d_b, Bicycle Delay [s]	7.52	0.10	0.10
I_b,int, Bicycle LOS Score for Intersection	1.560	2.876	2.278
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bafront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

**Intersection Setup**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑↑		⇐⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	237	67	2049	73	59	1017
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.80	14.80	4.10	4.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	237	67	2049	73	59	1017
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	17	523	19	15	259
Total Analysis Volume [veh/h]	242	68	2091	74	60	1038
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	10	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	45	45	45	45	45	45
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	7	7	22	22	28	28
g / C, Green / Cycle	0.15	0.15	0.49	0.49	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.46	0.05	0.08	0.23
s, saturation flow rate [veh/h]	1438	1364	4507	1406	743	4470
c, Capacity [veh/h]	214	203	2207	689	617	2814
d1, Uniform Delay [s]	18.18	18.19	10.85	6.14	8.42	3.99
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.89	2.04	1.13	0.03	0.03	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.74	0.75	0.95	0.11	0.10	0.37
d, Delay for Lane Group [s/veh]	20.06	20.23	11.98	6.17	8.45	4.02
Lane Group LOS	C	C	B	A	A	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.48	1.42	4.70	0.27	0.05	0.78
50th-Percentile Queue Length [ft/ln]	36.90	35.46	117.50	6.83	1.36	19.42
95th-Percentile Queue Length [veh/ln]	2.66	2.55	8.26	0.49	0.10	1.40
95th-Percentile Queue Length [ft/ln]	66.42	63.82	206.39	12.30	2.45	34.95

**Movement, Approach, & Intersection Results**

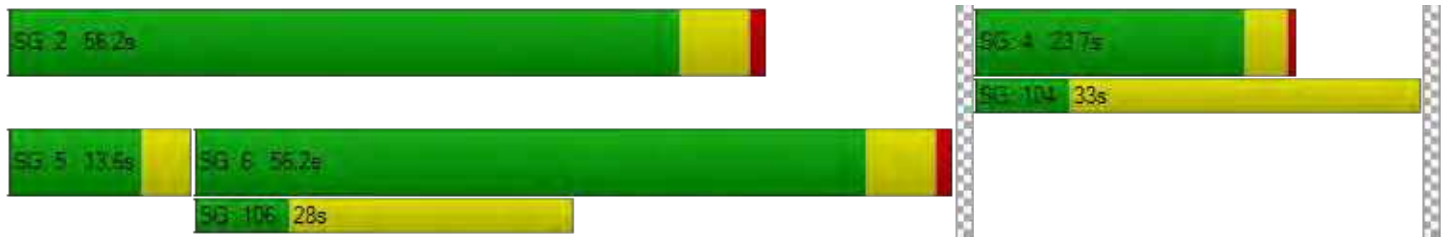
d_M, Delay for Movement [s/veh]	20.12	20.23	11.98	6.17	8.45	4.02
Movement LOS	C	C	B	A	A	A
d_A, Approach Delay [s/veh]	20.15		11.78		4.27	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	10.20					
Intersection LOS	B					
Intersection V/C	0.732					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.63	12.63	12.63
I_p,int, Pedestrian LOS Score for Intersection	2.244	3.033	3.081
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	898	2244	2244
d_b, Bicycle Delay [s]	6.77	0.33	0.33
I_b,int, Bicycle LOS Score for Intersection	2.071	2.750	2.164
Bicycle LOS	B	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↬		↵		↵	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	376	153	18	185	45	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	376	153	18	185	45	17
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	44	5	53	13	5
Total Analysis Volume [veh/h]	432	176	21	213	52	20
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	836	741	620
Degree of Utilization, x	0.73	0.32	0.12

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	6.51	1.36	0.39
95th-Percentile Queue Length [ft]	162.87	33.89	9.80
Approach Delay [s/veh]	17.89	10.08	9.57
Approach LOS	C	B	A
Intersection Delay [s/veh]	15.23		
Intersection LOS	C		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	8.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.759

**Intersection Setup**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	0	73	2101	29	60	1085
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	19.20	3.80	3.80	8.60	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	73	2101	29	60	1085
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	20	577	8	16	298
Total Analysis Volume [veh/h]	0	80	2309	32	66	1192
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	10	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	0.5	0.5	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	41	41	41	41	41
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	3	22	22	28	28
g / C, Green / Cycle	0.07	0.54	0.54	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.06	0.51	0.02	0.19	0.27
s, saturation flow rate [veh/h]	1233	4518	1410	343	4342
c, Capacity [veh/h]	90	2424	756	417	2987
d1, Uniform Delay [s]	19.05	9.11	4.56	8.76	2.78
k, delay calibration	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.29	1.13	0.01	0.06	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.89	0.95	0.04	0.16	0.40
d, Delay for Lane Group [s/veh]	29.34	10.25	4.57	8.83	2.81
Lane Group LOS	C	B	A	A	A
Critical Lane Group	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.92	4.11	0.08	0.06	0.40
50th-Percentile Queue Length [ft/ln]	23.07	102.74	2.05	1.41	9.89
95th-Percentile Queue Length [veh/ln]	1.66	7.40	0.15	0.10	0.71
95th-Percentile Queue Length [ft/ln]	41.52	184.92	3.69	2.53	17.80

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	29.34	10.25	4.57	8.83	2.81
Movement LOS		C	B	A	A	A
d_A, Approach Delay [s/veh]	29.34		10.17		3.13	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	8.18					
Intersection LOS	A					
Intersection V/C	0.759					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	-6.2	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.35	11.15	11.15
I_p,int, Pedestrian LOS Score for Intersection	1.846	3.040	3.056
Crosswalk LOS	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	2417	2417
d_b, Bicycle Delay [s]	5.52	0.90	0.90
I_b,int, Bicycle LOS Score for Intersection	1.560	2.847	2.252
Bicycle LOS	A	C	B

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	All-way stop	Delay (sec / veh):	32.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.916

**Intersection Setup**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Base Volume Input [veh/h]	13	237	51	22	327	36	221	37	240	33	18	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	21.40	1.50	20.00	11.80	3.80	0.00	3.60	50.00	2.60	2.50	50.00	1.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	237	51	22	327	36	221	37	240	33	18	109
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	67	14	6	93	10	63	11	68	9	5	31
Total Analysis Volume [veh/h]	15	269	58	25	372	41	251	42	273	38	20	124
Pedestrian Volume [ped/h]	38			0			80			0		



**Intersection Settings**

**Lanes**

Capacity per Entry Lane [veh/h]	393	439	413	451	415	488	411
Degree of Utilization, x	0.04	0.75	0.06	0.92	0.71	0.56	0.44

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.12	6.12	0.19	10.31	5.34	3.39	2.22
95th-Percentile Queue Length [ft]	2.97	153.10	4.82	257.72	133.45	84.74	55.46
Approach Delay [s/veh]	30.56		49.96		24.57		18.58
Approach LOS	D		E		C		C
Intersection Delay [s/veh]	32.47						
Intersection LOS	D						

**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	28.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.666

**Intersection Setup**

Name	Northbound			Chrysler Drive			Eastbound			Constitution Drive		
	Approach			Southbound			Westbound					
Lane Configuration	⇐⇐			+			⇐⇐			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name				Chrysler Drive						Constitution Drive		
Base Volume Input [veh/h]	2	490	14	194	84	3	128	205	53	13	6	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	490	14	194	84	3	128	205	53	13	6	114
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	123	4	49	21	1	32	51	13	3	2	29
Total Analysis Volume [veh/h]	2	490	14	194	84	3	128	205	53	13	6	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		7			0			0			8	
v_di, Inbound Pedestrian Volume crossing in		8			0			0			7	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	0	4	0	0	8	0	0	6	0	0	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	41	0	0	41	0	0	27	0	0	22	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	47	47	17	17	15
g / C, Green / Cycle	0.52	0.52	0.52	0.19	0.19	0.16
(v / s)_i Volume / Saturation Flow Rate	0.16	0.16	0.36	0.08	0.16	0.15
s, saturation flow rate [veh/h]	1709	1539	783	1609	1627	895
c, Capacity [veh/h]	923	794	472	300	303	147
d1, Uniform Delay [s]	12.48	12.49	21.06	32.39	35.44	36.96
k, delay calibration	0.50	0.50	0.50	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.79	0.98	5.45	0.96	6.65	17.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.29	0.30	0.60	0.43	0.85	0.91
d, Delay for Lane Group [s/veh]	13.27	13.47	26.51	33.35	42.09	54.81
Lane Group LOS	B	B	C	C	D	D
Critical Lane Group	No	No	Yes	No	Yes	Yes
50th-Percentile Queue Length [veh/ln]	3.10	2.83	5.34	2.51	5.92	3.55
50th-Percentile Queue Length [ft/ln]	77.43	70.79	133.55	62.76	147.98	88.64
95th-Percentile Queue Length [veh/ln]	5.58	5.10	9.13	4.52	9.91	6.38
95th-Percentile Queue Length [ft/ln]	139.38	127.43	228.31	112.97	247.73	159.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.27	13.36	13.47	26.51	26.51	26.51	33.35	42.09	42.09	54.81	54.81	54.81
Movement LOS	B	B	B	C	C	C	C	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.37			26.51			39.19			54.81		
Approach LOS	B			C			D			D		
d_I, Intersection Delay [s/veh]	28.05											
Intersection LOS	C											
Intersection V/C	0.666											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.70			34.70			34.70			34.70		
l_p,int, Pedestrian LOS Score for Intersection	2.153			2.269			2.072			2.257		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	822			822			511			400		
d_b, Bicycle Delay [s]	15.63			15.63			24.96			28.82		
l_b,int, Bicycle LOS Score for Intersection	1.977			2.023			2.197			1.779		
Bicycle LOS	A			B			B			A		

**Sequence**




Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	27.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.366

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	73	63	226	214	70	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	63	226	214	70	15
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	19	68	64	21	5
Total Analysis Volume [veh/h]	88	76	272	258	84	18
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.37	0.08	0.19	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	27.62	16.41	8.01	0.00	0.00	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.22	2.22	0.68	0.68	0.00	0.00
95th-Percentile Queue Length [ft/ln]	55.50	55.50	16.98	16.98	0.00	0.00
d_A, Approach Delay [s/veh]	22.43		4.11		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	7.36					
Intersection LOS	D					



**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/ Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.064

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	30	209	35	15	30	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.90	7.90	14.00	14.00	12.70	17.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	209	35	15	30	48
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	65	11	5	9	15
Total Analysis Volume [veh/h]	37	258	43	19	37	59
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.06	0.06
d_M, Delay for Movement [s/veh]	7.45	0.00	0.00	0.00	11.86	9.36
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.00	0.00	0.42	0.42
95th-Percentile Queue Length [ft/ln]	1.89	1.89	0.00	0.00	10.60	10.60
d_A, Approach Delay [s/veh]	0.93		0.00		10.33	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.80					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 267: Willow Road (SR 114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↔↑↑		↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	0	0	0	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	0	0
Maximum Green [s]	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk						
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall						
Maximum Recall						
Pedestrian Recall						
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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**Lane Group Calculations**

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**Lane Group Results**

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**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS						
d_A, Approach Delay [s/veh]	0.00		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					
Intersection V/C	0.000					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.00	45.00	45.00
I_p,int, Pedestrian LOS Score for Intersection	2.141	2.463	2.141
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
I_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560
Bicycle LOS	A	A	A

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**Intersection Level Of Service Report**  
**Intersection 269: O'Brien Drive/Loop Road**

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	0	0	0	0	0	0	0	0	0	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk												
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall												
Maximum Recall												
Pedestrian Recall												
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations****Lane Group Results****Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS												
d_A, Approach Delay [s/veh]	0.00			0.00			0.00			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.00											
Intersection LOS	A											
Intersection V/C	0.000											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			0.0			0.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	45.00			45.00			45.00			45.00		
I_p,int, Pedestrian LOS Score for Intersection	1.950			1.950			1.950			1.950		
Crosswalk LOS	A			A			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			0			0		
d_b, Bicycle Delay [s]	45.00			45.00			45.00			45.00		
I_b,int, Bicycle LOS Score for Intersection	1.560			1.560			1.560			1.560		
Bicycle LOS	A			A			A			A		

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Scenario 16 Existing PM (2019 vols)

Report File: \\...\Existing PM.pdf

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**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	959		1000		1176	296	3431

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	34	1326	7	55	815	193	15	5	388	256	6	4	3104

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	180	675	38	13	773	354	436	18	157	109	50	40	2843

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	2	745	50	167	661	56	45	14	2	65	11	267	2085

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	137	460	380	526	369	104	1976

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	34	32	32	67	0	168	2	662	107	254	561	2	1921

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	3307	20	359	970	68	1803	6527

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	88	95	1112	159	204	133	76	1899	118	559	704	34	5181

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	43	1065	7	138	707	54	83	17	35	193	18	99	2459

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	44	933	1106	24	32	114	2253

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1000	352	57	1065	274	45	2793

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	268	1310	138	78	1171	26	27	170	206	160	255	56	3865

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	20	1201	678	100	241	40	2280

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	9	1029	4	29	522	18	132	1	31	21	6	17	1819

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	13	693	5	2	685	100	73	2	36	15	4	6	1634

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	3	656	63	54	657	10	14	31	5	75	50	58	1676

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	30	198	203	372	86	277	101	439	184	277	416	14	2597

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road/101 NB Ramps	1842		824		570	420	3656

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	19	63	18	71	407	36	21	124	21	7	16	47	850

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	179	40	1834	12	31	5	9	505	208	1822	119	14	4778

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	651	199	766	633	285	352	2886

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	827	122	1194	495	196	859	3693

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	234	245	2182	206	129	1011	4007

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	605	59	2220	125	38	1242	4289

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	237	67	2049	73	59	1017	3502

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	376	153	18	185	45	17	794

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	73		2101	29	60	1085	3348

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	13	237	51	22	327	36	221	37	240	33	18	109	1344

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	2	490	14	194	84	3	128	205	53	13	6	114	1306

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	73	63	226	214	70	15	661

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	30	209	35	15	30	48	367



**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	959		1000		1176	296	3431
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>959</b>		<b>1000</b>		<b>1176</b>	<b>296</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	34	1326	7	55	815	193	15	5	388	256	6	4	3104	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>34</b>	<b>1326</b>	<b>7</b>	<b>55</b>	<b>815</b>	<b>193</b>	<b>15</b>	<b>5</b>	<b>388</b>	<b>256</b>	<b>6</b>	<b>4</b>	<b>3104</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	180	675	38	13	773	354	436	18	157	109	50	40	2843	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>180</b>	<b>675</b>	<b>38</b>	<b>13</b>	<b>773</b>	<b>354</b>	<b>436</b>	<b>18</b>	<b>157</b>	<b>109</b>	<b>50</b>	<b>40</b>	<b>2843</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	2	745	50	167	661	56	45	14	2	65	11	267	2085	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>2</b>	<b>745</b>	<b>50</b>	<b>167</b>	<b>661</b>	<b>56</b>	<b>45</b>	<b>14</b>	<b>2</b>	<b>65</b>	<b>11</b>	<b>267</b>	<b>2085</b>



ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	137	460	380	526	369	104	1976
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>137</b>	<b>460</b>	<b>380</b>	<b>526</b>	<b>369</b>	<b>104</b>	<b>1976</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	Final Base	34	32	32	67	0	168	2	662	107	254	561	2	1921
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>34</b>	<b>32</b>	<b>32</b>	<b>67</b>	<b>0</b>	<b>168</b>	<b>2</b>	<b>662</b>	<b>107</b>	<b>254</b>	<b>561</b>	<b>2</b>	<b>1921</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	3307	20	359	970	68	1803	6527
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3307</b>	<b>20</b>	<b>359</b>	<b>970</b>	<b>68</b>	<b>1803</b>	<b>6527</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	88	95	1112	159	204	133	76	1899	118	559	704	34	5181
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>88</b>	<b>95</b>	<b>1112</b>	<b>159</b>	<b>204</b>	<b>133</b>	<b>76</b>	<b>1899</b>	<b>118</b>	<b>559</b>	<b>704</b>	<b>34</b>	<b>5181</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	43	1065	7	138	707	54	83	17	35	193	18	99	2459	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>43</b>	<b>1065</b>	<b>7</b>	<b>138</b>	<b>707</b>	<b>54</b>	<b>83</b>	<b>17</b>	<b>35</b>	<b>193</b>	<b>18</b>	<b>99</b>	<b>2459</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	44	933	1106	24	32	114	2253
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>44</b>	<b>933</b>	<b>1106</b>	<b>24</b>	<b>32</b>	<b>114</b>	<b>2253</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1000	352	57	1065	274	45	2793
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1000</b>	<b>352</b>	<b>57</b>	<b>1065</b>	<b>274</b>	<b>45</b>	<b>2793</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
20	Willow Rd (SR 114)/Newbridge St	Final Base	268	1310	138	78	1171	26	27	170	206	160	255	56	3865	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>268</b>	<b>1310</b>	<b>138</b>	<b>78</b>	<b>1171</b>	<b>26</b>	<b>27</b>	<b>170</b>	<b>206</b>	<b>160</b>	<b>255</b>	<b>56</b>	<b>3865</b>	

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	20	1201	678	100	241	40	2280
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>20</b>	<b>1201</b>	<b>678</b>	<b>100</b>	<b>241</b>	<b>40</b>	<b>2280</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	9	1029	4	29	522	18	132	1	31	21	6	17	1819
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>1029</b>	<b>4</b>	<b>29</b>	<b>522</b>	<b>18</b>	<b>132</b>	<b>1</b>	<b>31</b>	<b>21</b>	<b>6</b>	<b>17</b>	<b>1819</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	13	693	5	2	685	100	73	2	36	15	4	6	1634
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>693</b>	<b>5</b>	<b>2</b>	<b>685</b>	<b>100</b>	<b>73</b>	<b>2</b>	<b>36</b>	<b>15</b>	<b>4</b>	<b>6</b>	<b>1634</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	3	656	63	54	657	10	14	31	5	75	50	58	1676
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3</b>	<b>656</b>	<b>63</b>	<b>54</b>	<b>657</b>	<b>10</b>	<b>14</b>	<b>31</b>	<b>5</b>	<b>75</b>	<b>50</b>	<b>58</b>	<b>1676</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd- Willow Rd	Final Base	30	198	203	372	86	277	101	439	184	277	416	14	2597
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>30</b>	<b>198</b>	<b>203</b>	<b>372</b>	<b>86</b>	<b>277</b>	<b>101</b>	<b>439</b>	<b>184</b>	<b>277</b>	<b>416</b>	<b>14</b>	<b>2597</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road/101 NB Ramps	Final Base	1842		824		570	420	3656
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1842</b>		<b>824</b>		<b>570</b>	<b>420</b>	<b>3656</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	19	63	18	71	407	36	21	124	21	7	16	47	850
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>19</b>	<b>63</b>	<b>18</b>	<b>71</b>	<b>407</b>	<b>36</b>	<b>21</b>	<b>124</b>	<b>21</b>	<b>7</b>	<b>16</b>	<b>47</b>	<b>850</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	179	40	1834	12	31	5	9	505	208	1822	119	14	4778
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>179</b>	<b>40</b>	<b>1834</b>	<b>12</b>	<b>31</b>	<b>5</b>	<b>9</b>	<b>505</b>	<b>208</b>	<b>1822</b>	<b>119</b>	<b>14</b>	<b>4778</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	651	199	766	633	285	352	2886
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>651</b>	<b>199</b>	<b>766</b>	<b>633</b>	<b>285</b>	<b>352</b>	<b>2886</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	827	122	1194	495	196	859	3693
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>827</b>	<b>122</b>	<b>1194</b>	<b>495</b>	<b>196</b>	<b>859</b>	<b>3693</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	234	245	2182	206	129	1011	4007
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>234</b>	<b>245</b>	<b>2182</b>	<b>206</b>	<b>129</b>	<b>1011</b>	<b>4007</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	605	59	2220	125	38	1242	4289
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>605</b>	<b>59</b>	<b>2220</b>	<b>125</b>	<b>38</b>	<b>1242</b>	<b>4289</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	Final Base	237	67	2049	73	59	1017	3502
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>237</b>	<b>67</b>	<b>2049</b>	<b>73</b>	<b>59</b>	<b>1017</b>	<b>3502</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	376	153	18	185	45	17	794
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>376</b>	<b>153</b>	<b>18</b>	<b>185</b>	<b>45</b>	<b>17</b>	<b>794</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	73	2101	29	60	1085	3348	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>73</b>	<b>2101</b>	<b>29</b>	<b>60</b>	<b>1085</b>	<b>3348</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	13	237	51	22	327	36	221	37	240	33	18	109	1344
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>237</b>	<b>51</b>	<b>22</b>	<b>327</b>	<b>36</b>	<b>221</b>	<b>37</b>	<b>240</b>	<b>33</b>	<b>18</b>	<b>109</b>	<b>1344</b>







## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	100	514	70	166
2	97	499	68	161
3	95	488	67	158
4	89	457	62	148
5	79	406	55	131
6	78	401	55	129
7	77	396	54	128
8	70	360	49	116
9	69	355	48	115
10	68	350	48	113
11	59	303	41	98
12	55	283	39	91
13	54	278	38	90
14	40	206	28	66
15	40	206	28	66
16	28	144	20	46
17	16	82	11	27
18	16	82	11	27
19	9	46	6	15
20	5	26	4	8
21	3	15	2	5
22	1	5	1	2
23	1	5	1	2
24	1	5	1	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	614	1	166	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	1	596	1	161	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	1	583	1	158	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
4	1	546	1	148	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	1	485	1	131	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	479	1	129	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	473	1	128	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	430	1	116	No	No	Yes	Yes	No	No	No	Yes	No	No
9	1	424	1	115	No	No	Yes	Yes	No	No	No	Yes	No	No
10	1	418	1	113	No	No	Yes	Yes	No	No	No	No	No	No
11	1	362	1	98	No	No	No	Yes	No	No	No	No	No	No
12	1	338	1	91	No	No	No	Yes	No	No	No	No	No	No
13	1	332	1	90	No	No	No	Yes	No	No	No	No	No	No
14	1	246	1	66	No	No	No	No	No	No	No	No	No	No
15	1	246	1	66	No	No	No	No	No	No	No	No	No	No
16	1	172	1	46	No	No	No	No	No	No	No	No	No	No
17	1	98	1	27	No	No	No	No	No	No	No	No	No	No
18	1	98	1	27	No	No	No	No	No	No	No	No	No	No
19	1	55	1	15	No	No	No	No	No	No	No	No	No	No
20	1	31	1	8	No	No	No	No	No	No	No	No	No	No
21	1	18	1	5	No	No	No	No	No	No	No	No	No	No
22	1	6	1	2	No	No	No	No	No	No	No	No	No	No
23	1	6	1	2	No	No	No	No	No	No	No	No	No	No
24	1	6	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	1	4	9	0	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.4	11.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:10	0:30
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	70	166
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	850	850
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	203	529	62
2	197	513	60
3	193	503	59
4	181	471	55
5	160	418	49
6	158	413	48
7	156	407	48
8	142	370	43
9	140	365	43
10	138	360	42
11	120	312	37
12	112	291	34
13	110	286	33
14	81	212	25
15	81	212	25
16	57	148	17
17	32	85	10
18	32	85	10
19	18	48	6
20	10	26	3
21	6	16	2
22	2	5	1
23	2	5	1
24	2	5	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	732	1	62	No	No	No	No	No	Yes	Yes	Yes	No	No
2	1	710	1	60	No	No	No	No	No	Yes	Yes	Yes	No	No
3	1	696	1	59	No	No	No	No	No	No	Yes	Yes	No	No
4	1	652	1	55	No	No	No	No	No	No	Yes	Yes	No	No
5	1	578	1	49	No	No	No	No	No	No	No	Yes	No	No
6	1	571	1	48	No	No	No	No	No	No	No	Yes	No	No
7	1	563	1	48	No	No	No	No	No	No	No	Yes	No	No
8	1	512	1	43	No	No	No	No	No	No	No	Yes	No	No
9	1	505	1	43	No	No	No	No	No	No	No	Yes	No	No
10	1	498	1	42	No	No	No	No	No	No	No	Yes	No	No
11	1	432	1	37	No	No	No	No	No	No	No	No	No	No
12	1	403	1	34	No	No	No	No	No	No	No	No	No	No
13	1	396	1	33	No	No	No	No	No	No	No	No	No	No
14	1	293	1	25	No	No	No	No	No	No	No	No	No	No
15	1	293	1	25	No	No	No	No	No	No	No	No	No	No
16	1	205	1	17	No	No	No	No	No	No	No	No	No	No
17	1	117	1	10	No	No	No	No	No	No	No	No	No	No
18	1	117	1	10	No	No	No	No	No	No	No	No	No	No
19	1	66	1	6	No	No	No	No	No	No	No	No	No	No
20	1	36	1	3	No	No	No	No	No	No	No	No	No	No
21	1	22	1	2	No	No	No	No	No	No	No	No	No	No
22	1	7	1	1	No	No	No	No	No	No	No	No	No	No
23	1	7	1	1	No	No	No	No	No	No	No	No	No	No
24	1	7	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	2	4	10	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	62
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	794
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 207: Chilco St/Constitution Dr

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	160	498	385	301
2	155	483	373	292
3	152	473	366	286
4	142	443	343	268
5	126	393	304	238
6	125	388	300	235
7	123	383	296	232
8	112	349	270	211
9	110	344	266	208
10	109	339	262	205
11	94	294	227	178
12	88	274	212	166
13	86	269	208	163
14	64	199	154	120
15	64	199	154	120
16	45	139	108	84
17	26	80	62	48
18	26	80	62	48
19	14	45	35	27
20	8	25	19	15
21	5	15	12	9
22	2	5	4	3
23	2	5	4	3
24	2	5	4	3

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	658	2	385	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
2	2	638	2	373	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
3	2	625	2	366	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
4	2	585	2	343	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	519	2	304	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	513	2	300	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	506	2	296	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	461	2	270	No	No	Yes	Yes	No	No	No	No	No	No
9	2	454	2	266	No	No	Yes	Yes	No	No	No	No	No	No
10	2	448	2	262	No	No	Yes	Yes	No	No	No	No	No	No
11	2	388	2	227	No	No	No	Yes	No	No	No	No	No	No
12	2	362	2	212	No	No	No	Yes	No	No	No	No	No	No
13	2	355	2	208	No	No	No	Yes	No	No	No	No	No	No
14	2	263	2	154	No	No	No	No	No	No	No	No	No	No
15	2	263	2	154	No	No	No	No	No	No	No	No	No	No
16	2	184	2	108	No	No	No	No	No	No	No	No	No	No
17	2	106	2	62	No	No	No	No	No	No	No	No	No	No
18	2	106	2	62	No	No	No	No	No	No	No	No	No	No
19	2	59	2	35	No	No	No	No	No	No	No	No	No	No
20	2	33	2	19	No	No	No	No	No	No	No	No	No	No
21	2	20	2	12	No	No	No	No	No	No	No	No	No	No
22	2	7	2	4	No	No	No	No	No	No	No	No	No	No
23	2	7	2	4	No	No	No	No	No	No	No	No	No	No
24	2	7	2	4	No	No	No	No	No	No	No	No	No	No
Hours Met					3	7	10	13	0	0	2	7	2	0

## Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	50	30.6
Number of Lanes on Minor Street Approach	2	2
VehicleHours of Stopped Delay on Minor Approach (h:mm)	5:20	2:33
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	385	301
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1344	1344
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	Yes	No
<b>Warrant Met for Intersection</b>	<b>Yes</b>	

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	85	440	136
2	82	427	132
3	81	418	129
4	76	392	121
5	67	348	107
6	66	343	106
7	65	339	105
8	59	308	95
9	59	304	94
10	58	299	92
11	50	260	80
12	47	242	75
13	46	238	73
14	34	176	54
15	34	176	54
16	24	123	38
17	14	70	22
18	14	70	22
19	8	40	12
20	4	22	7
21	3	13	4
22	1	4	1
23	1	4	1
24	1	4	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	525	1	136	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
2	1	509	1	132	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	1	499	1	129	No	Yes	Yes	Yes	No	No	No	Yes	No	No
4	1	468	1	121	No	Yes	Yes	Yes	No	No	No	Yes	No	No
5	1	415	1	107	No	No	Yes	Yes	No	No	No	No	No	No
6	1	409	1	106	No	No	Yes	Yes	No	No	No	No	No	No
7	1	404	1	105	No	No	Yes	Yes	No	No	No	No	No	No
8	1	367	1	95	No	No	No	Yes	No	No	No	No	No	No
9	1	363	1	94	No	No	No	Yes	No	No	No	No	No	No
10	1	357	1	92	No	No	No	Yes	No	No	No	No	No	No
11	1	310	1	80	No	No	No	No	No	No	No	No	No	No
12	1	289	1	75	No	No	No	No	No	No	No	No	No	No
13	1	284	1	73	No	No	No	No	No	No	No	No	No	No
14	1	210	1	54	No	No	No	No	No	No	No	No	No	No
15	1	210	1	54	No	No	No	No	No	No	No	No	No	No
16	1	147	1	38	No	No	No	No	No	No	No	No	No	No
17	1	84	1	22	No	No	No	No	No	No	No	No	No	No
18	1	84	1	22	No	No	No	No	No	No	No	No	No	No
19	1	48	1	12	No	No	No	No	No	No	No	No	No	No
20	1	26	1	7	No	No	No	No	No	No	No	No	No	No
21	1	16	1	4	No	No	No	No	No	No	No	No	No	No
22	1	5	1	1	No	No	No	No	No	No	No	No	No	No
23	1	5	1	1	No	No	No	No	No	No	No	No	No	No
24	1	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	0	1	4	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	22.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:50
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	136
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	661
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 265: Adam Court/ Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	239	50	78
2	232	49	76
3	227	48	74
4	213	45	69
5	189	40	62
6	186	39	61
7	184	39	60
8	167	35	55
9	165	35	54
10	163	34	53
11	141	30	46
12	131	28	43
13	129	27	42
14	96	20	31
15	96	20	31
16	67	14	22
17	38	8	12
18	38	8	12
19	22	5	7
20	12	3	4
21	7	2	2
22	2	1	1
23	2	1	1
24	2	1	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	289	1	78	No	No	No	No	No	No	No	No	No	No
2	1	281	1	76	No	No	No	No	No	No	No	No	No	No
3	1	275	1	74	No	No	No	No	No	No	No	No	No	No
4	1	258	1	69	No	No	No	No	No	No	No	No	No	No
5	1	229	1	62	No	No	No	No	No	No	No	No	No	No
6	1	225	1	61	No	No	No	No	No	No	No	No	No	No
7	1	223	1	60	No	No	No	No	No	No	No	No	No	No
8	1	202	1	55	No	No	No	No	No	No	No	No	No	No
9	1	200	1	54	No	No	No	No	No	No	No	No	No	No
10	1	197	1	53	No	No	No	No	No	No	No	No	No	No
11	1	171	1	46	No	No	No	No	No	No	No	No	No	No
12	1	159	1	43	No	No	No	No	No	No	No	No	No	No
13	1	156	1	42	No	No	No	No	No	No	No	No	No	No
14	1	116	1	31	No	No	No	No	No	No	No	No	No	No
15	1	116	1	31	No	No	No	No	No	No	No	No	No	No
16	1	81	1	22	No	No	No	No	No	No	No	No	No	No
17	1	46	1	12	No	No	No	No	No	No	No	No	No	No
18	1	46	1	12	No	No	No	No	No	No	No	No	No	No
19	1	27	1	7	No	No	No	No	No	No	No	No	No	No
20	1	15	1	4	No	No	No	No	No	No	No	No	No	No
21	1	9	1	2	No	No	No	No	No	No	No	No	No	No
22	1	3	1	1	No	No	No	No	No	No	No	No	No	No
23	1	3	1	1	No	No	No	No	No	No	No	No	No	No
24	1	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:13
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	78
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	367
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections

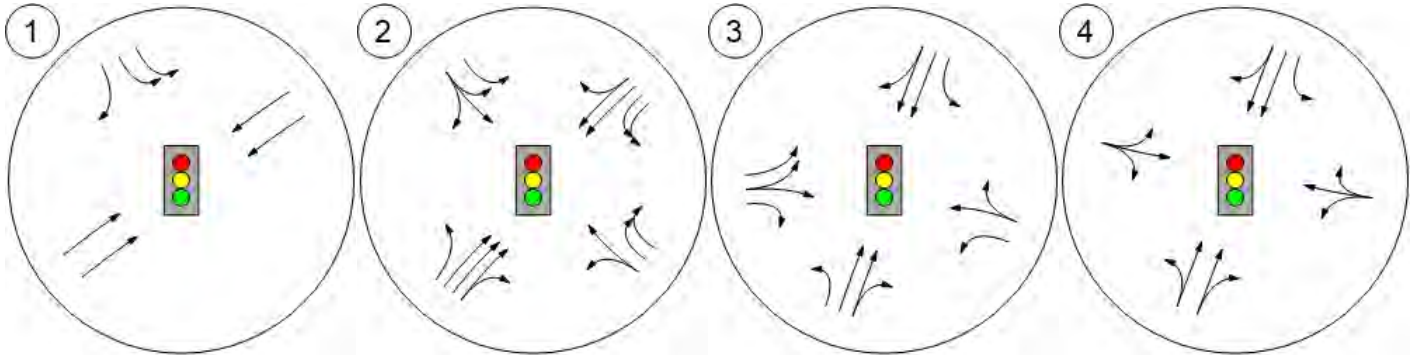


Lane Configuration and Traffic Control

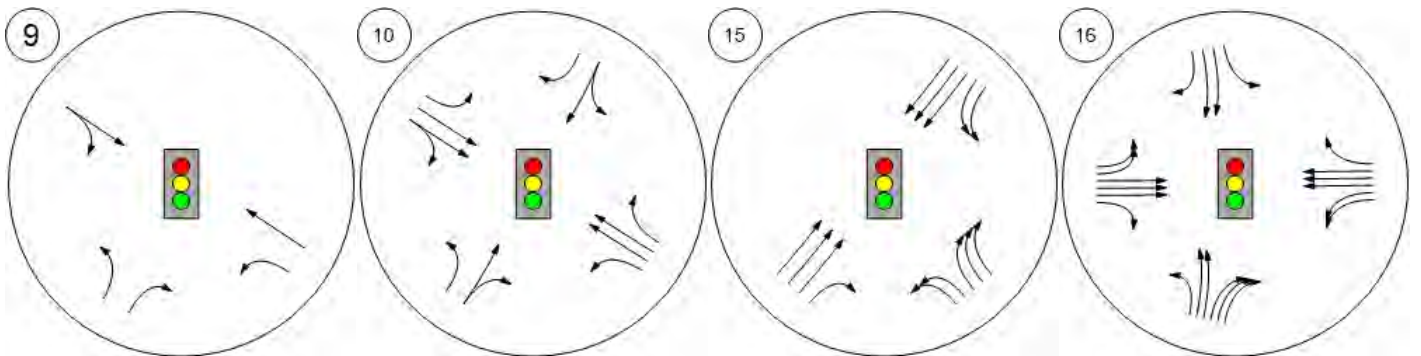


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



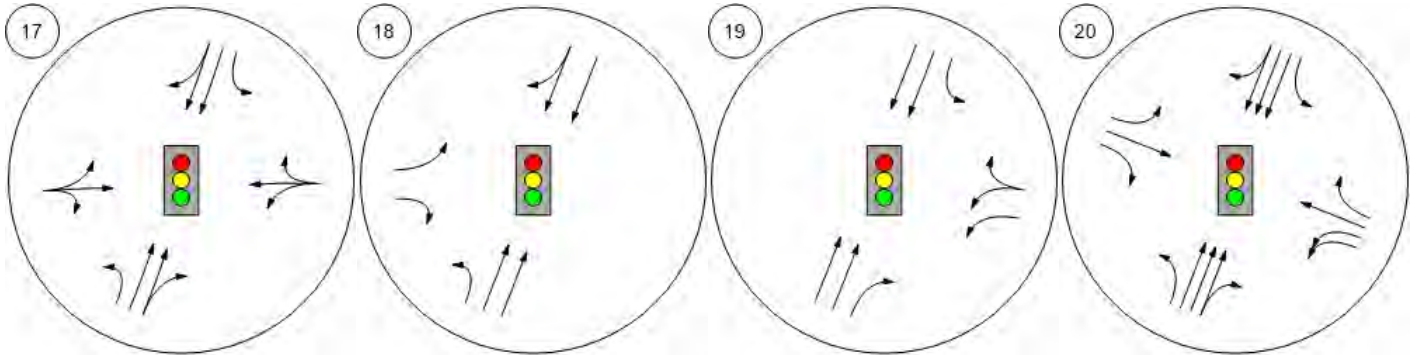
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



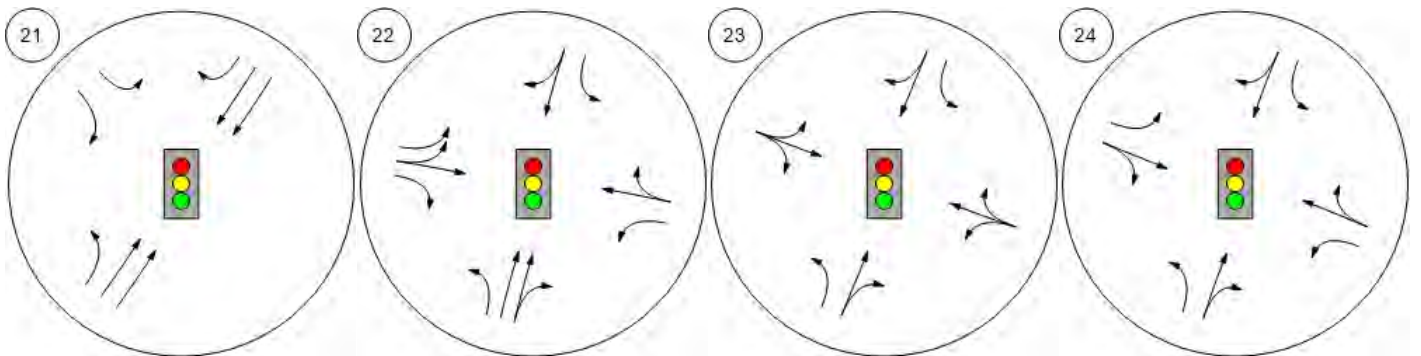
Lane Configuration and Traffic Control



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



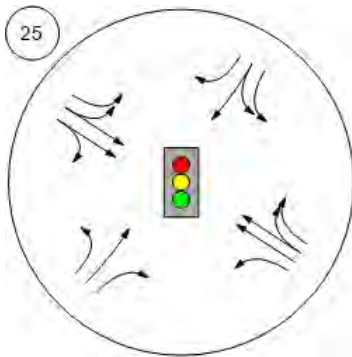
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



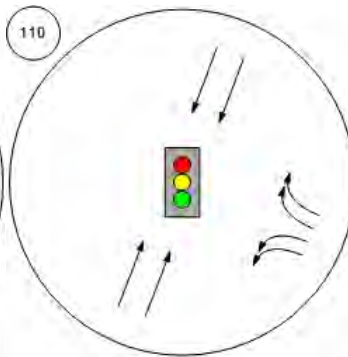
Lane Configuration and Traffic Control



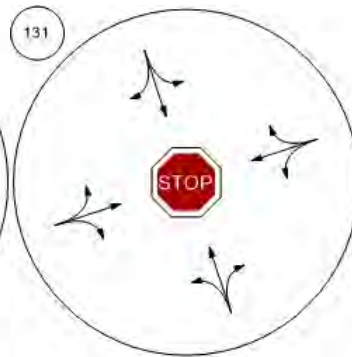
Middlefield Rd-Willow Rd



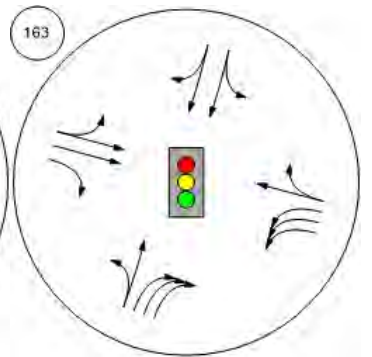
Marsh Road/101 NB Ramps



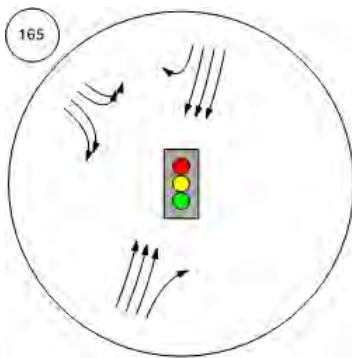
Chilco Street/Hamilton Avenue



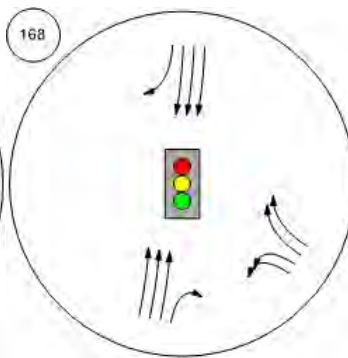
Bayfront Expy/Marsh Rd



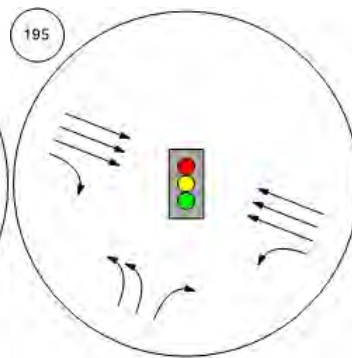
Willow Rd/US-101 SB Ramps



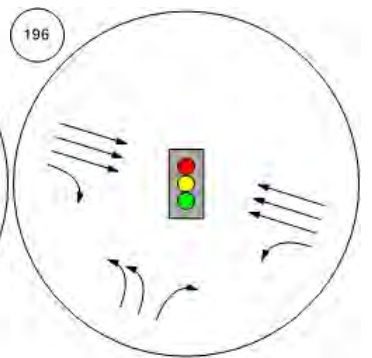
Willow Rd/US-101 NB Ramp



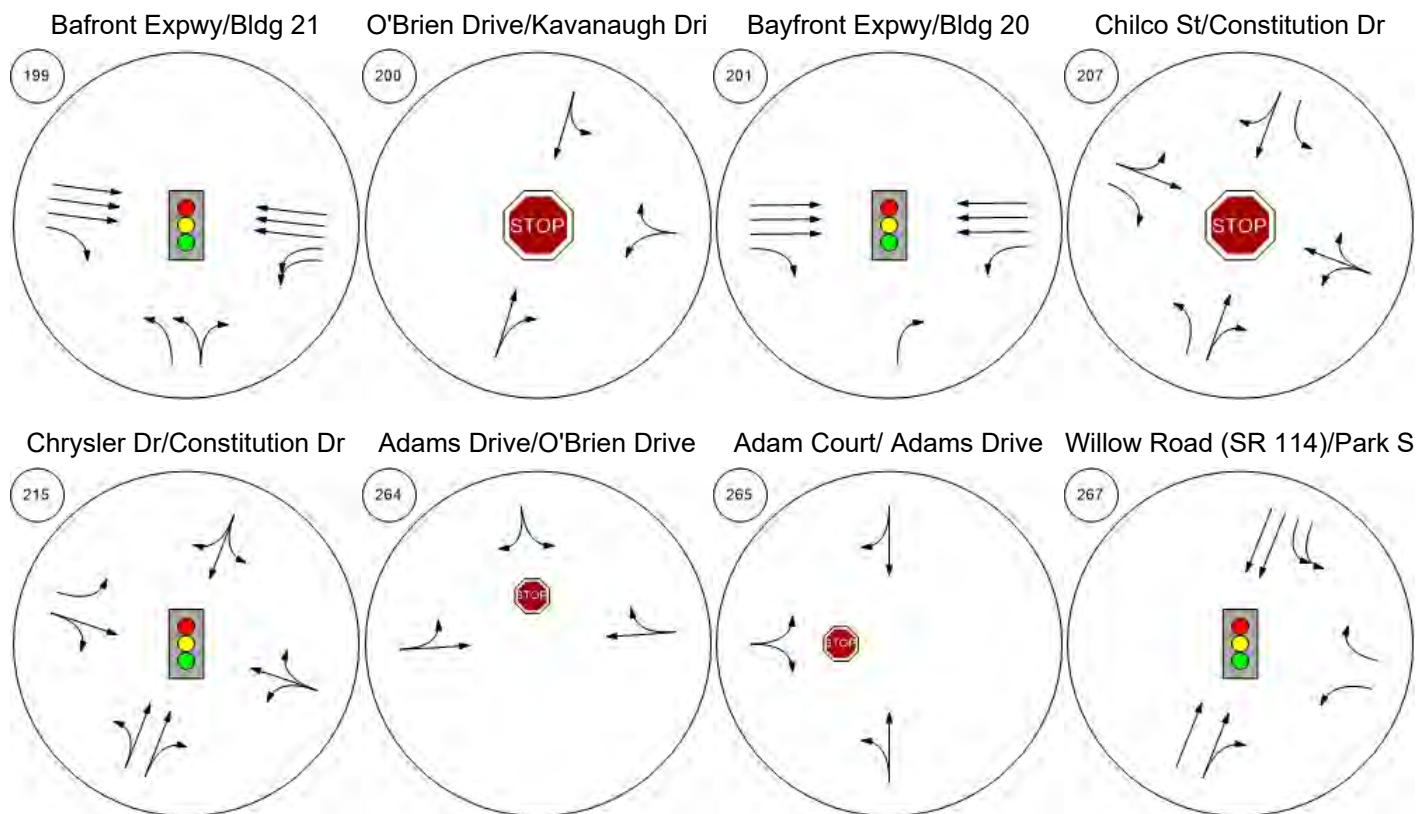
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



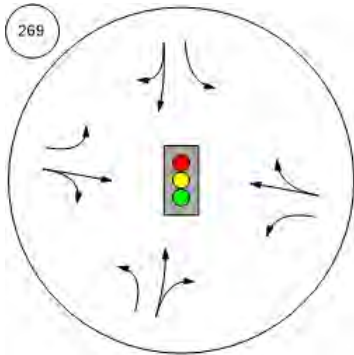
Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



O'Brien Drive/Loop Road



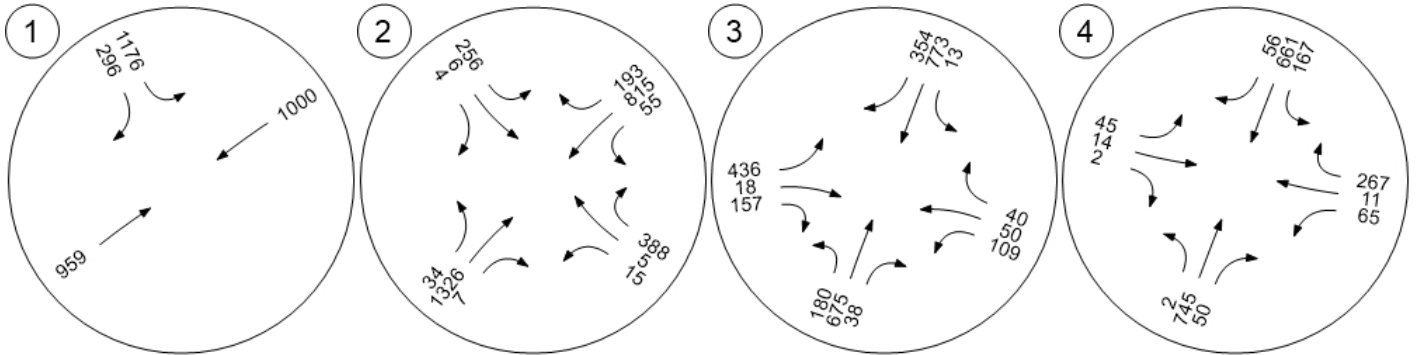


Traffic Volume - Base Volume

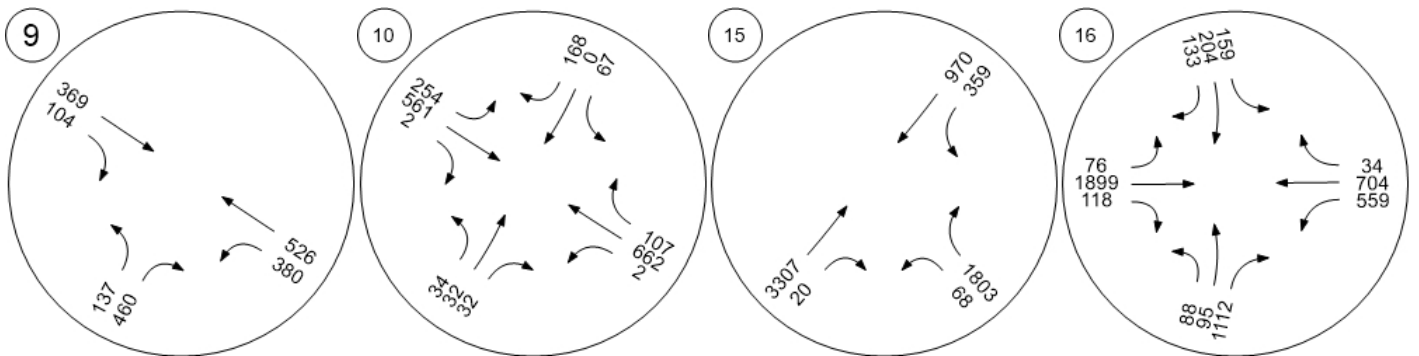


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



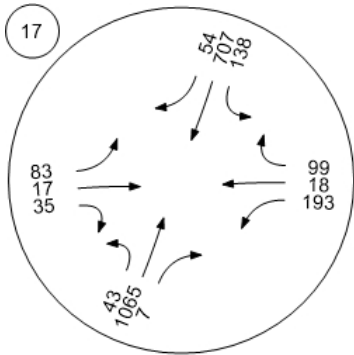
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



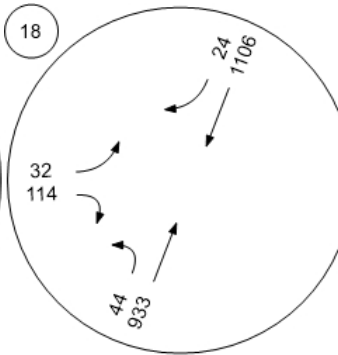
Traffic Volume - Base Volume



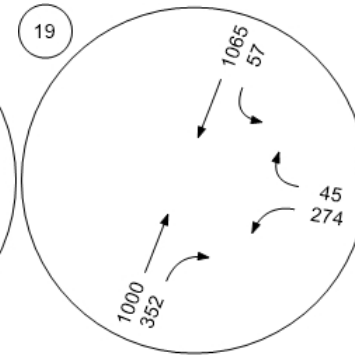
Willow Rd (SR 114)/Hamilton



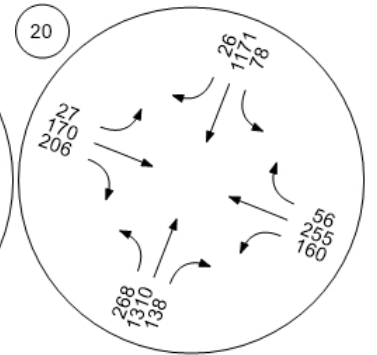
Willow Rd (SR 114)/Ivy Dr



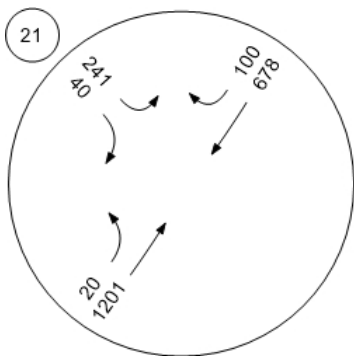
Willow Rd (SR 114)/O'Brien



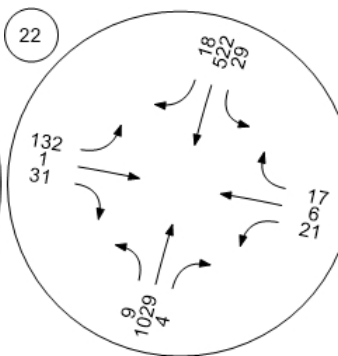
Willow Rd (SR 114)/Newbrid



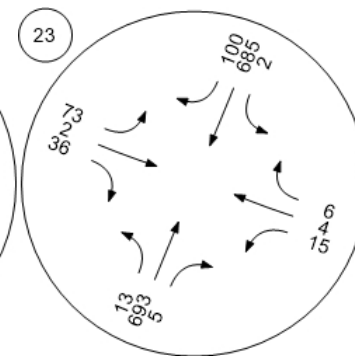
Willow Rd/Bay Rd



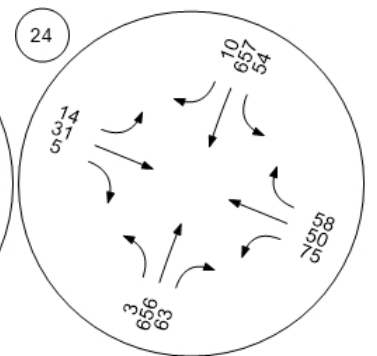
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



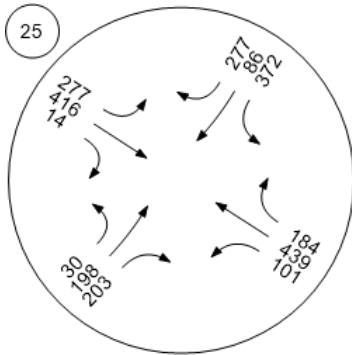
Willow Rd/Gilbert Ave



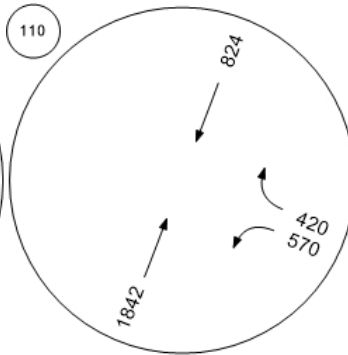
Traffic Volume - Base Volume



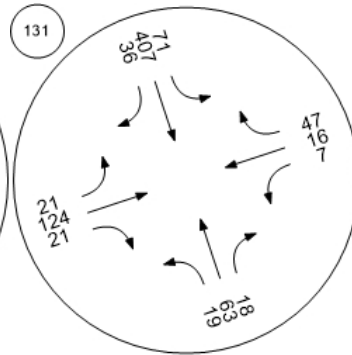
Middlefield Rd-Willow Rd



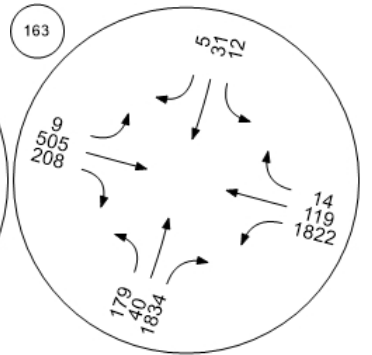
Marsh Road/101 NB Ramps



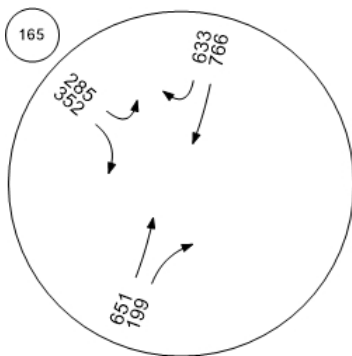
Chilco Street/Hamilton Avenue



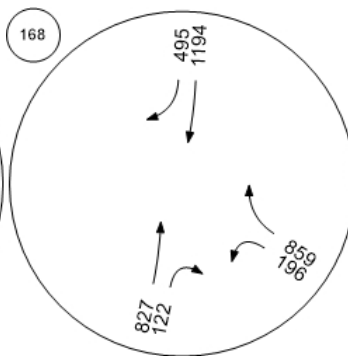
Bayfront Expy/Marsh Rd



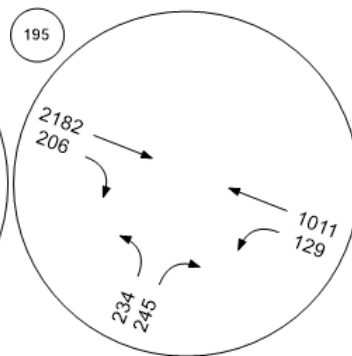
Willow Rd/US-101 SB Ramps



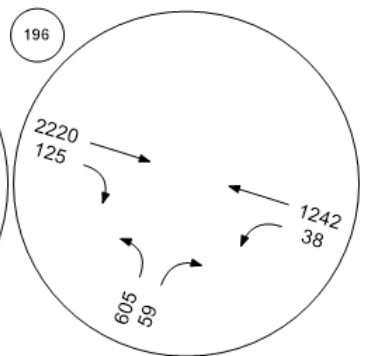
Willow Rd/US-101 NB Ramp



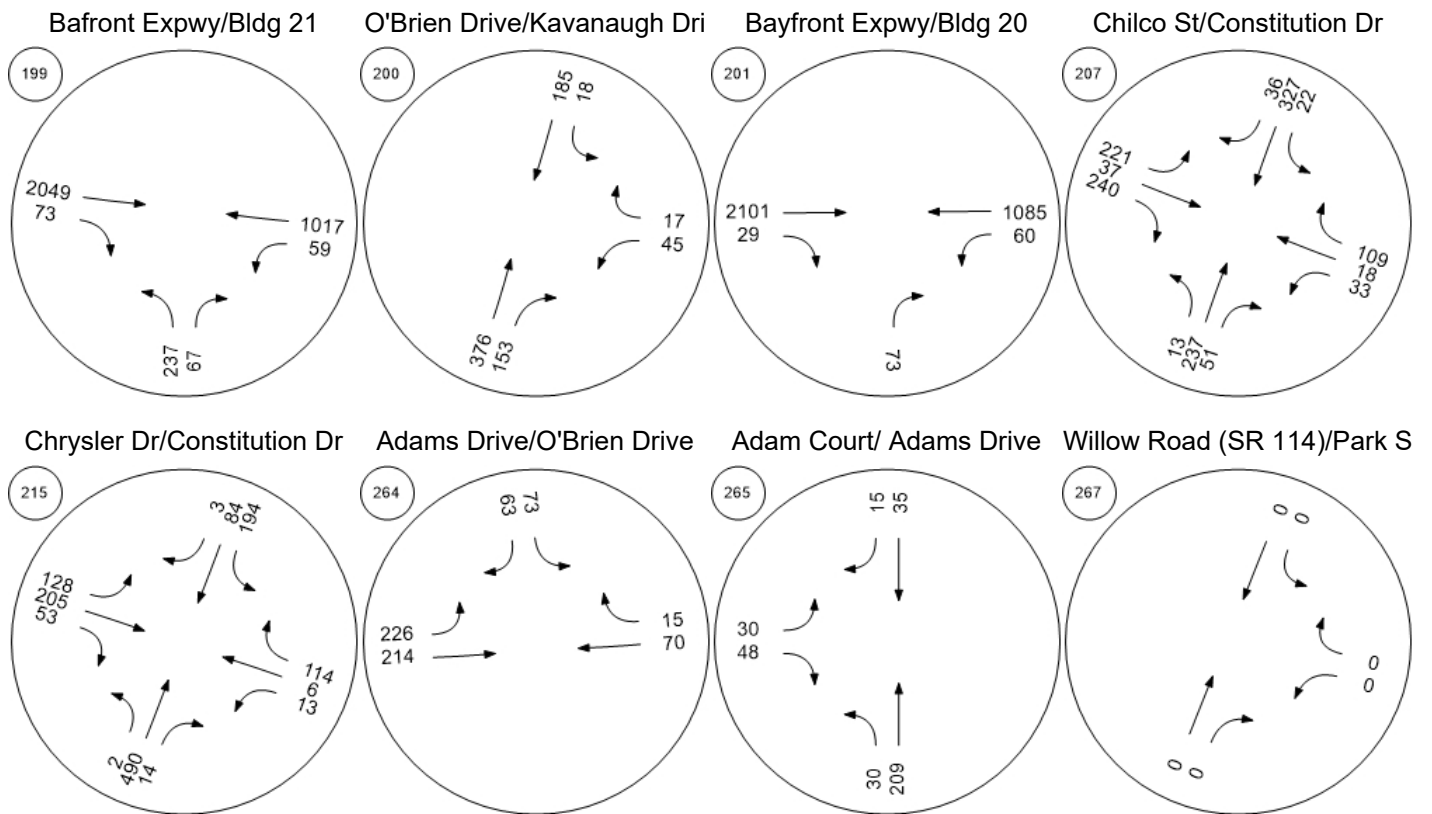
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



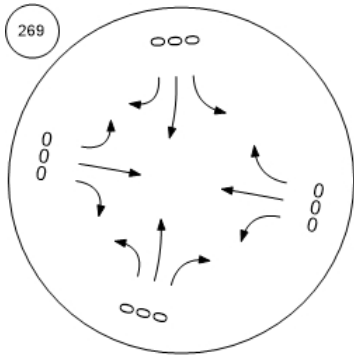
Traffic Volume - Base Volume



Traffic Volume - Base Volume



O'Brien Drive/Loop Road

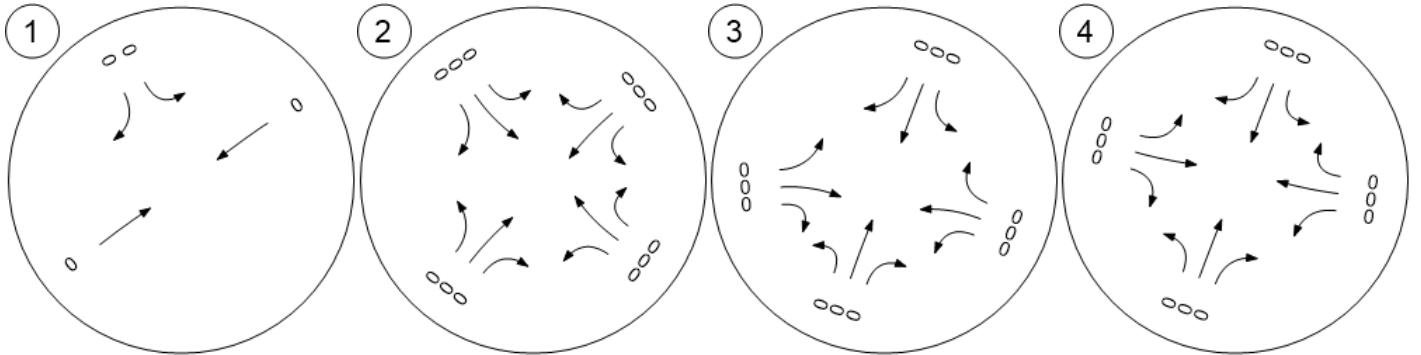


Traffic Volume - In-Process Volume

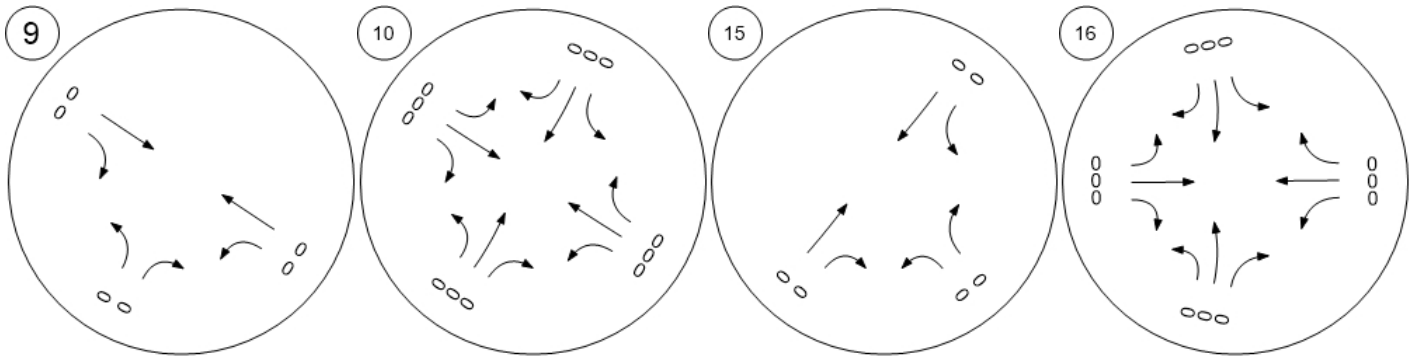


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



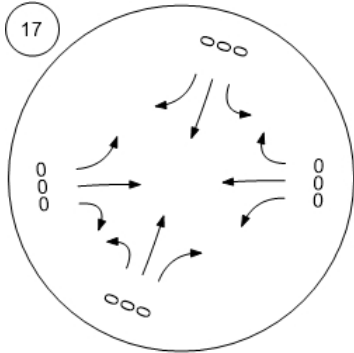
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



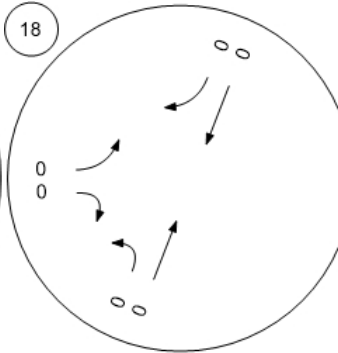
Traffic Volume - In-Process Volume



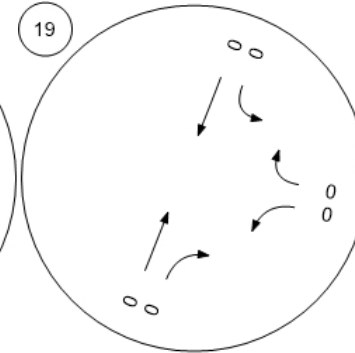
Willow Rd (SR 114)/Hamilton



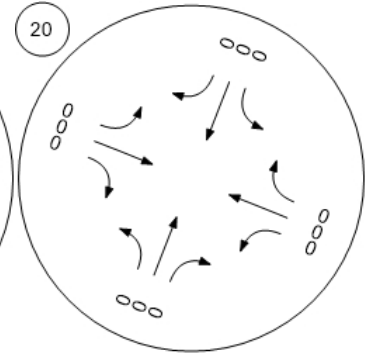
Willow Rd (SR 114)/Ivy Dr



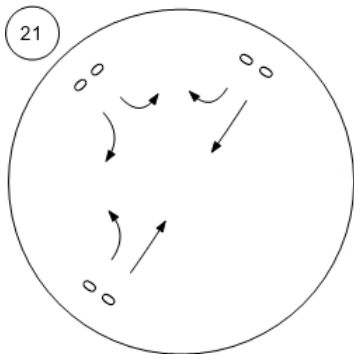
Willow Rd (SR 114)/O'Brien



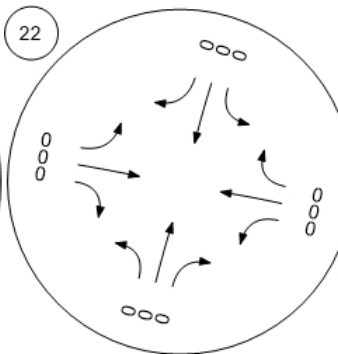
Willow Rd (SR 114)/Newbrid



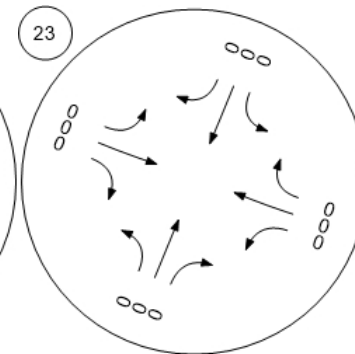
Willow Rd/Bay Rd



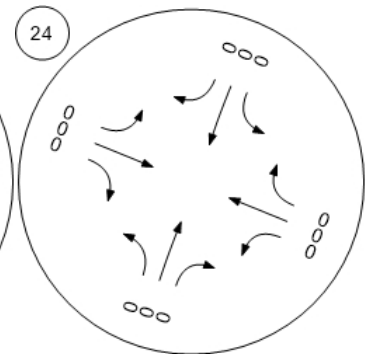
Willow Rd/Durham St-VA Me



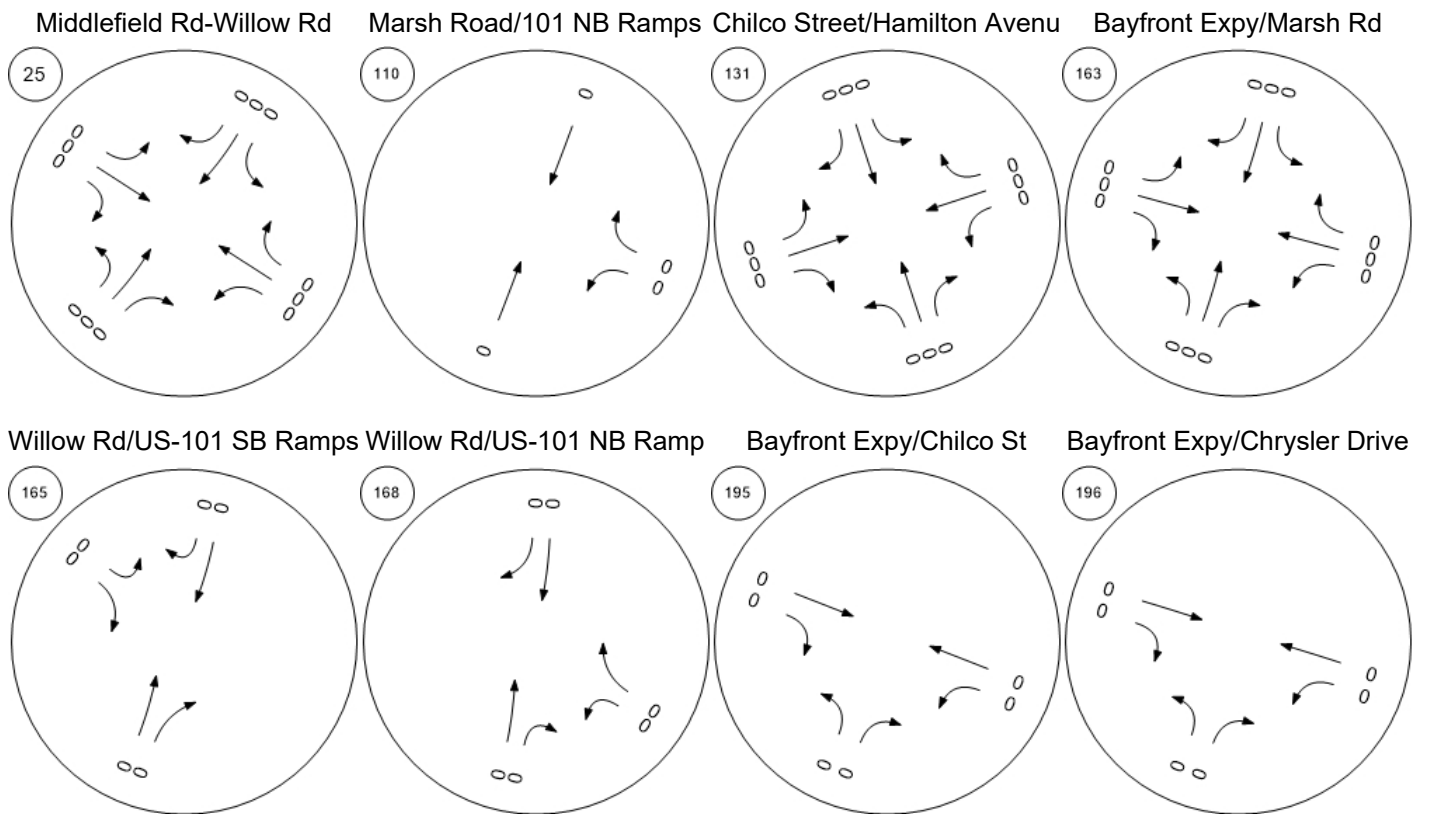
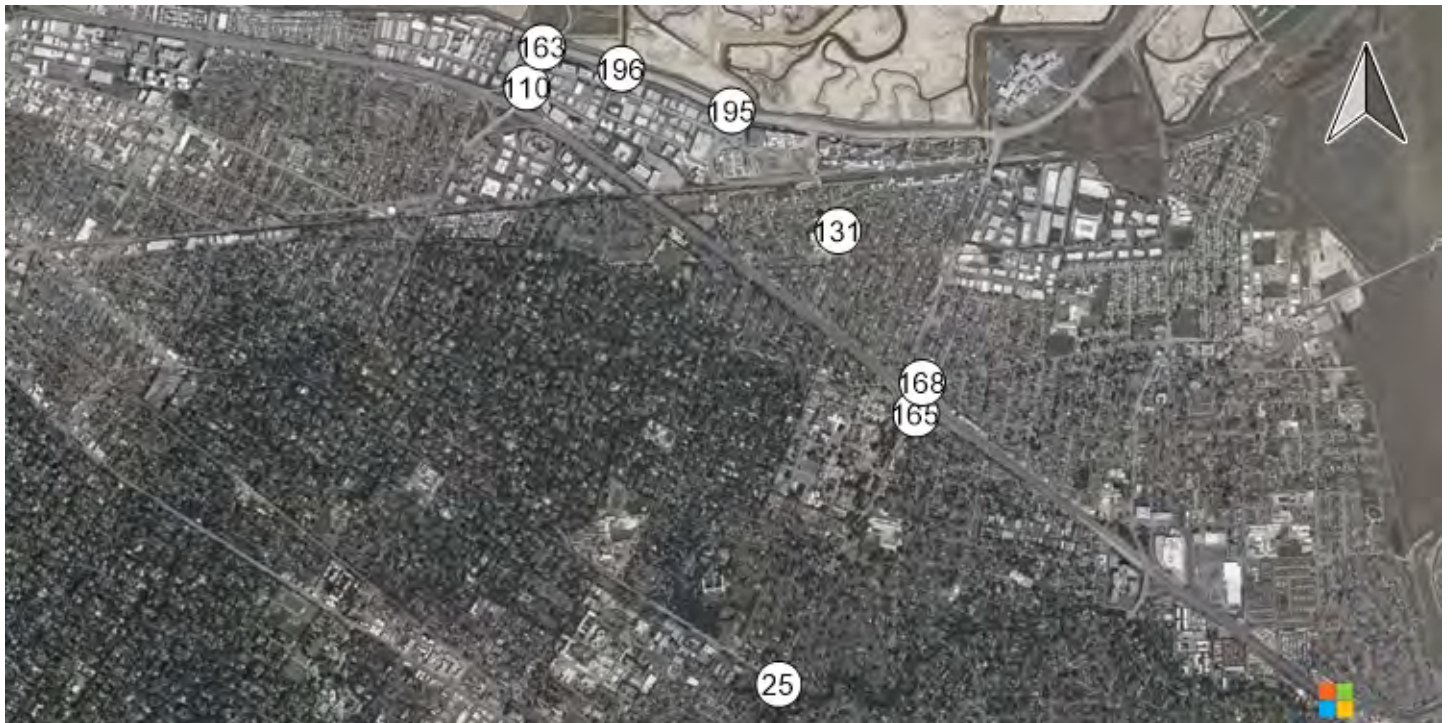
Willow Rd/Coleman Ave



Willow Rd/Gilbert Ave

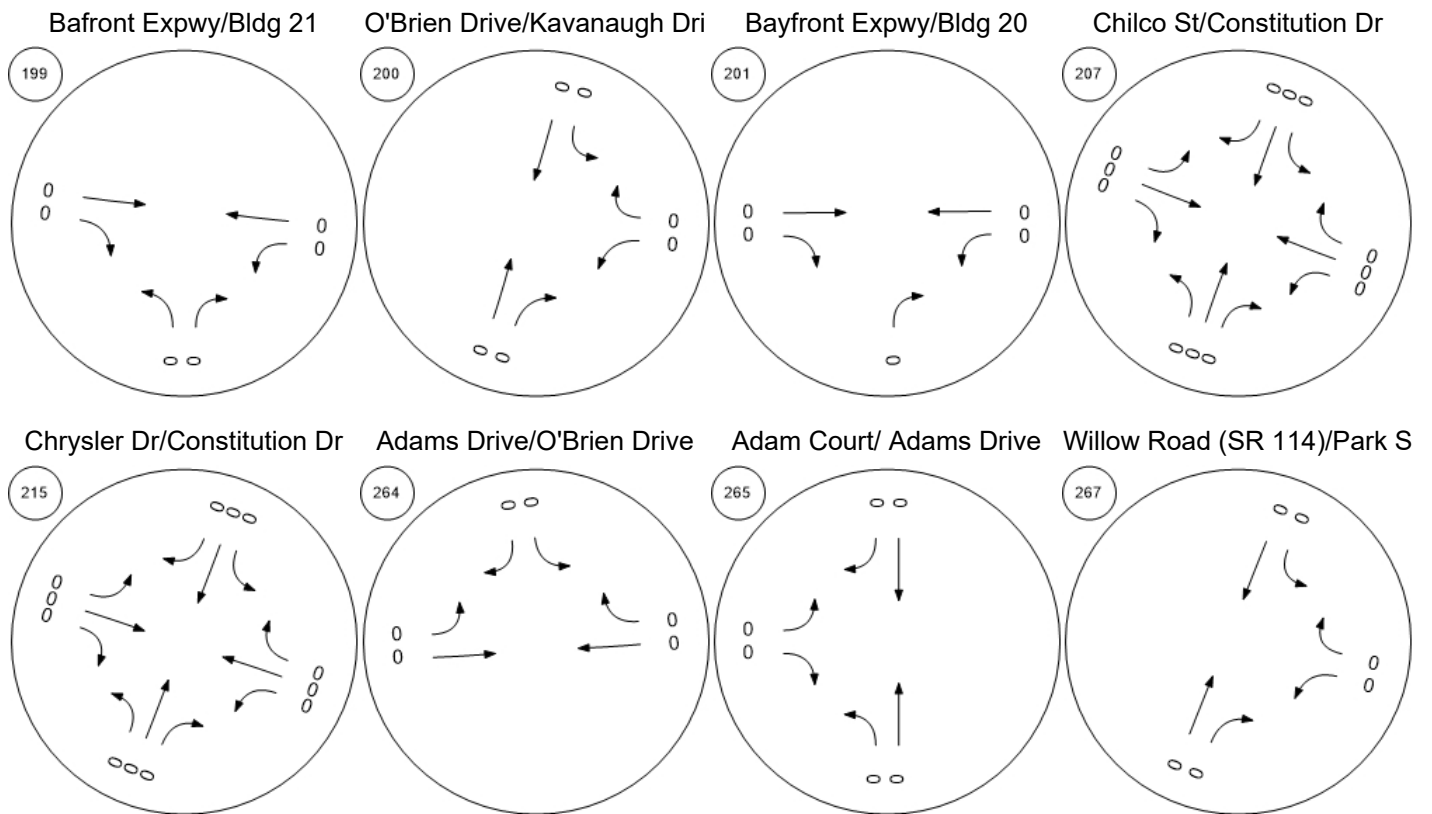


Traffic Volume - In-Process Volume





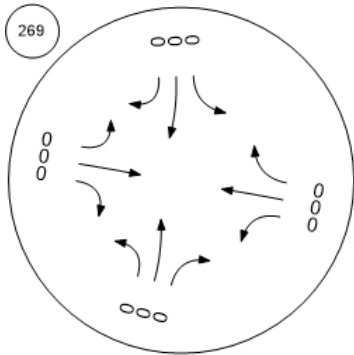
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

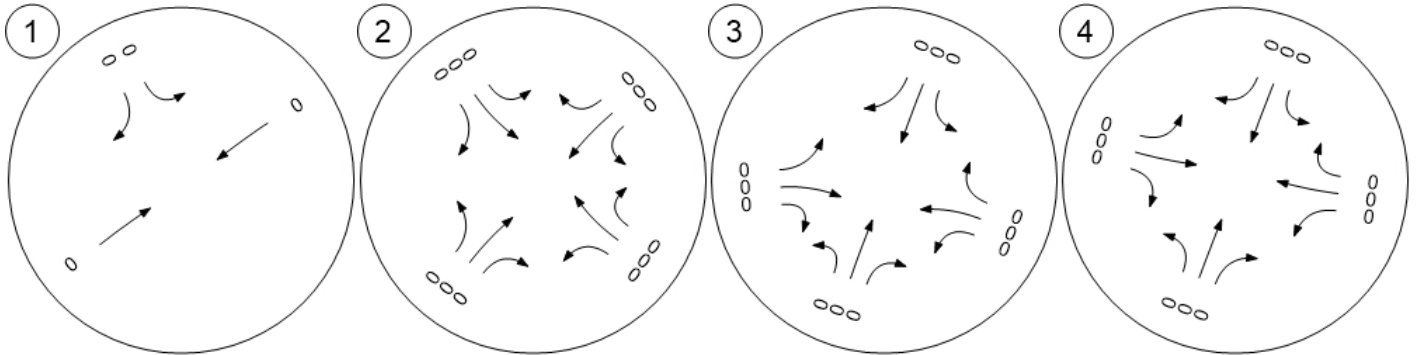


Traffic Volume - Net New Site Trips

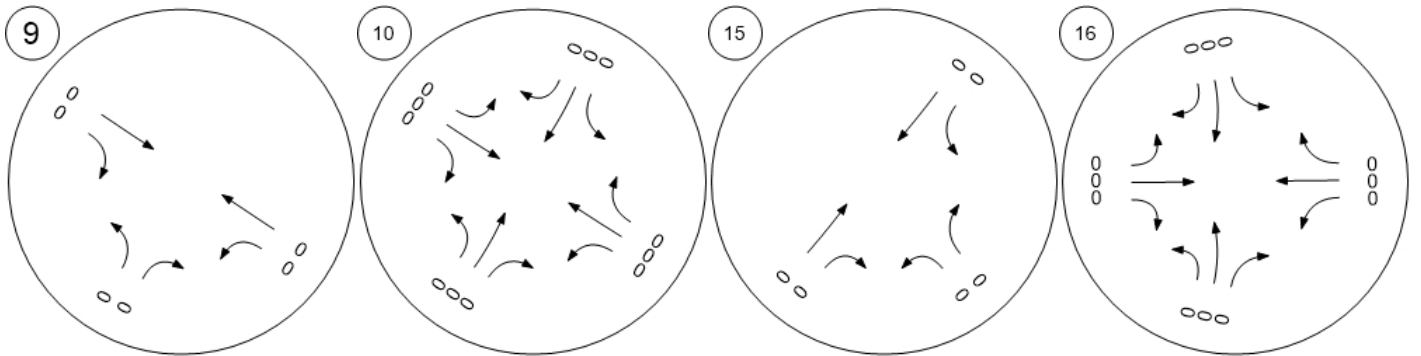


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



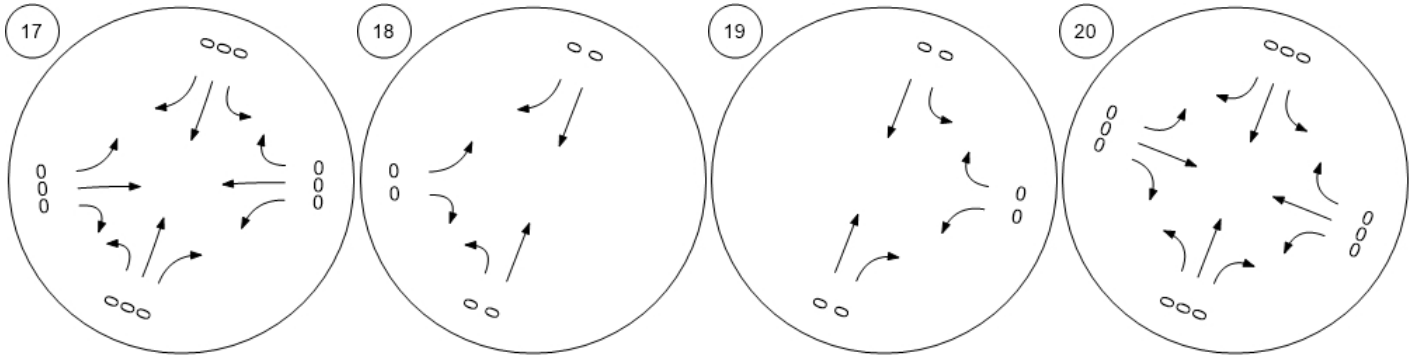
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



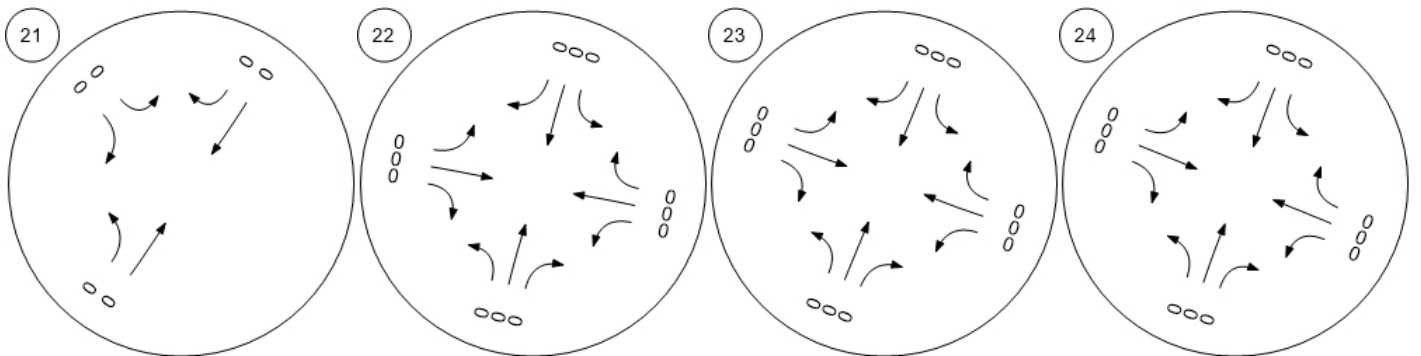
Traffic Volume - Net New Site Trips



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



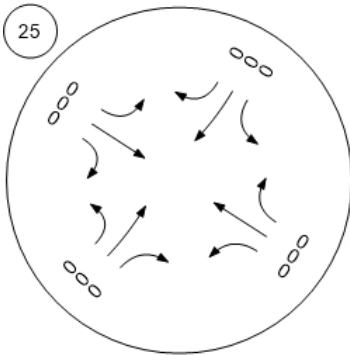
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



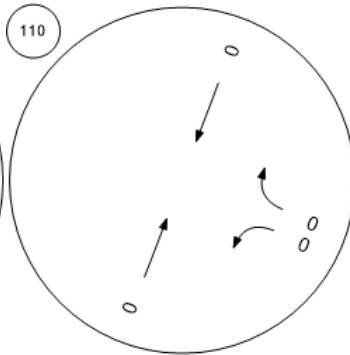
Traffic Volume - Net New Site Trips



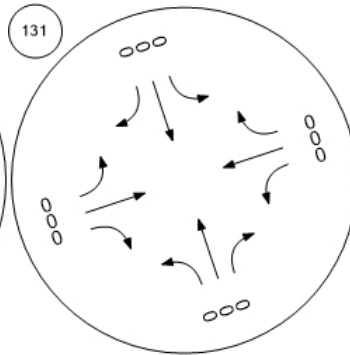
Middlefield Rd-Willow Rd



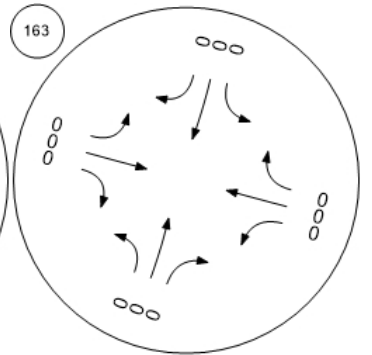
Marsh Road/101 NB Ramps



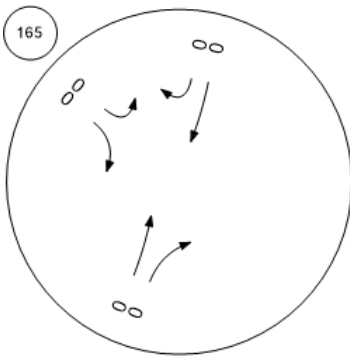
Chilco Street/Hamilton Avenue



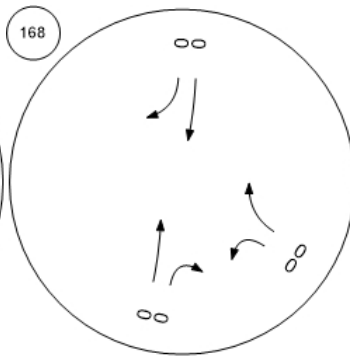
Bayfront Expy/Marsh Rd



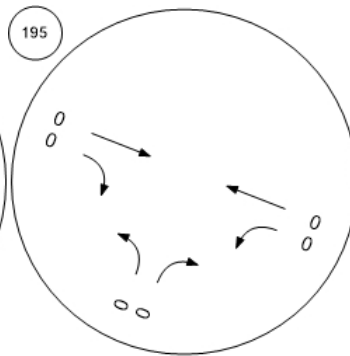
Willow Rd/US-101 SB Ramps



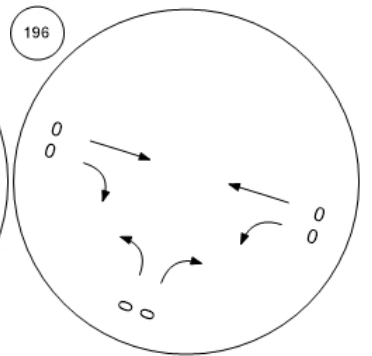
Willow Rd/US-101 NB Ramp



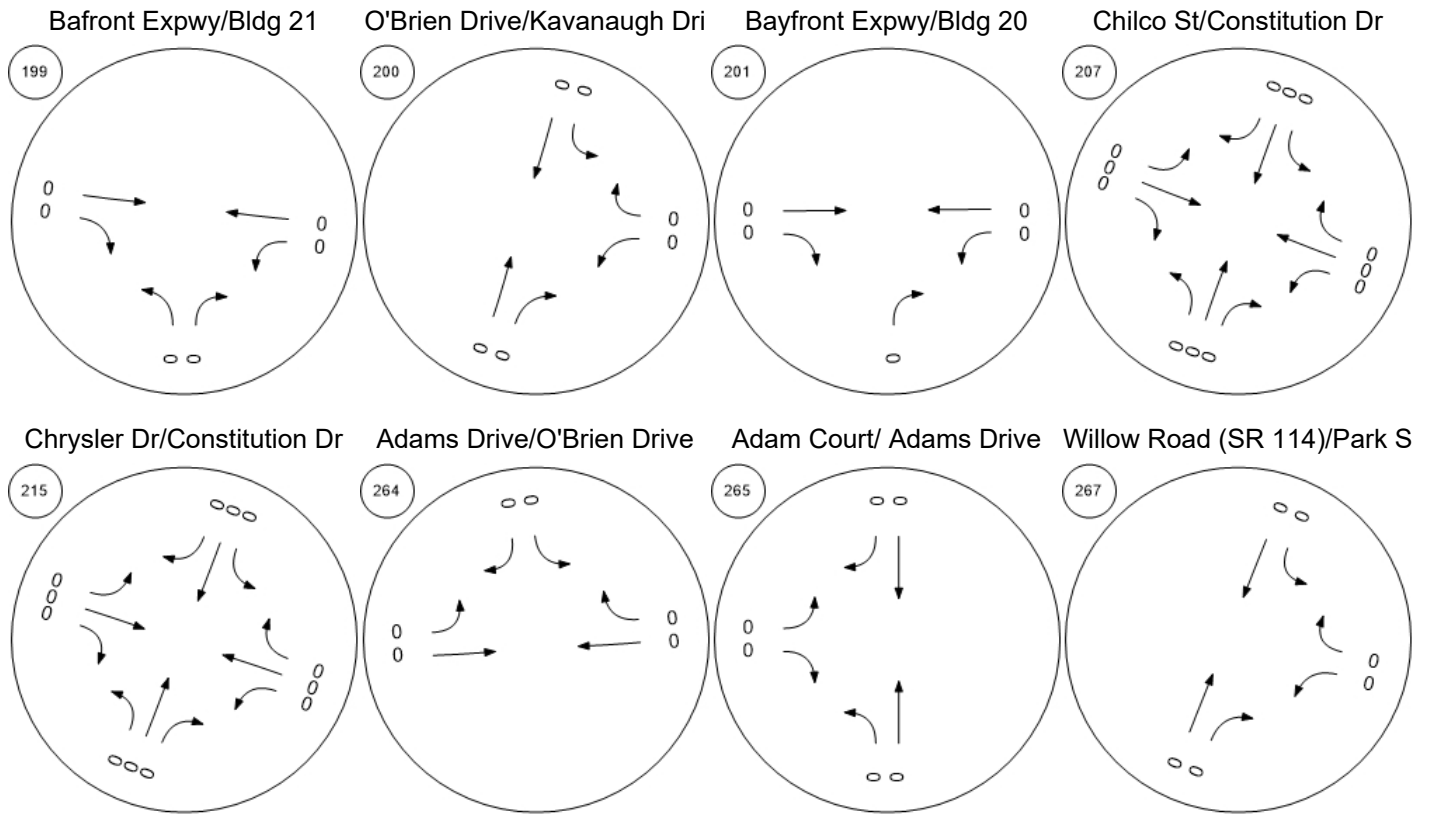
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



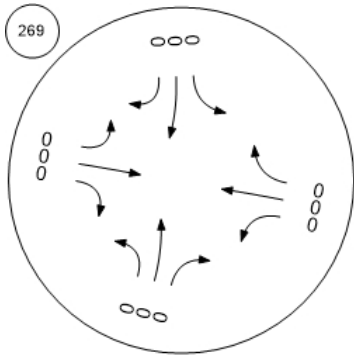
Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road

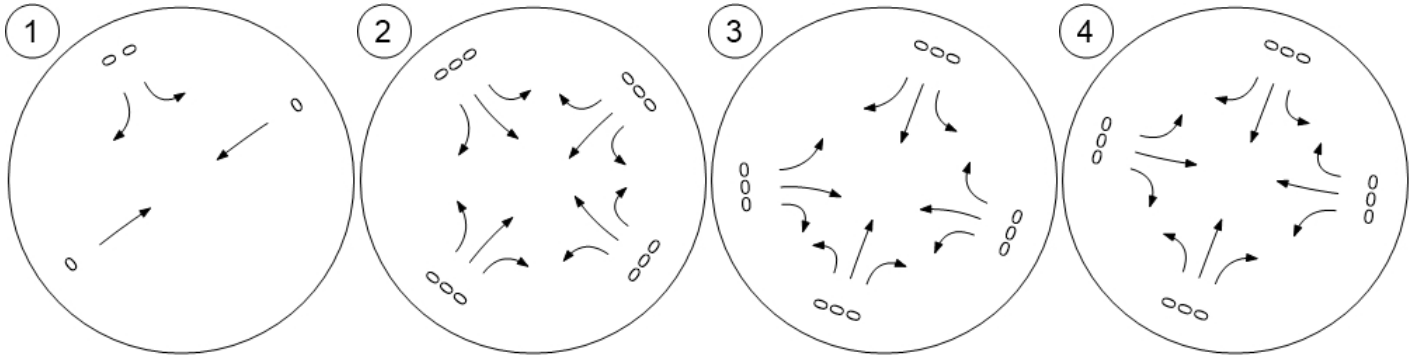


Traffic Volume - Other Volume

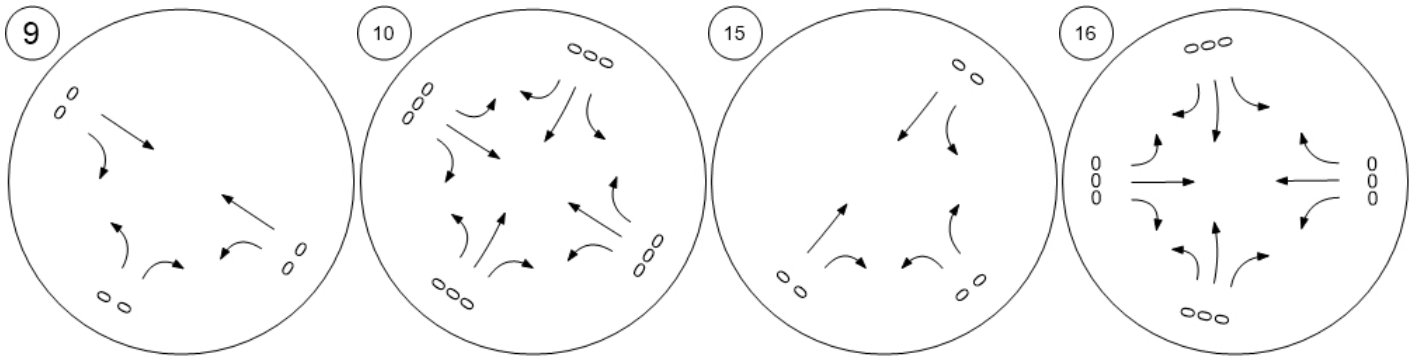


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow

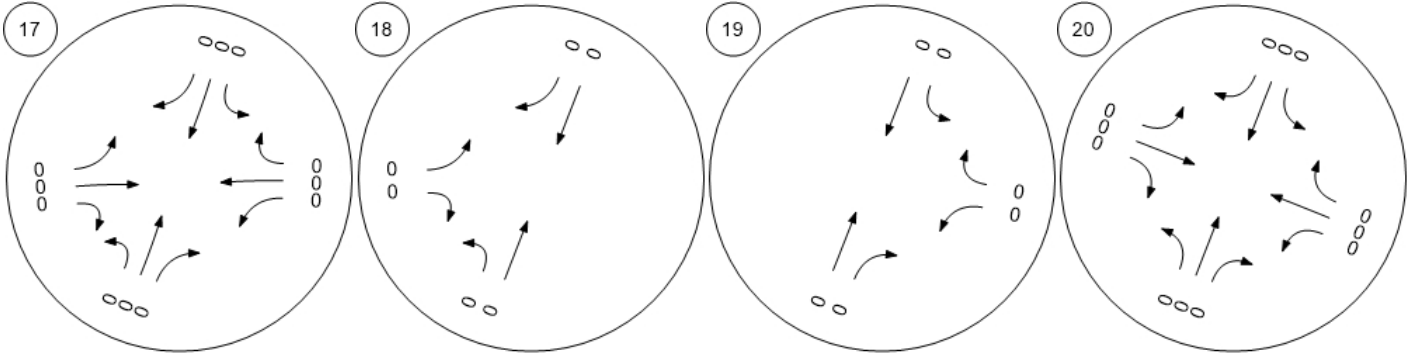




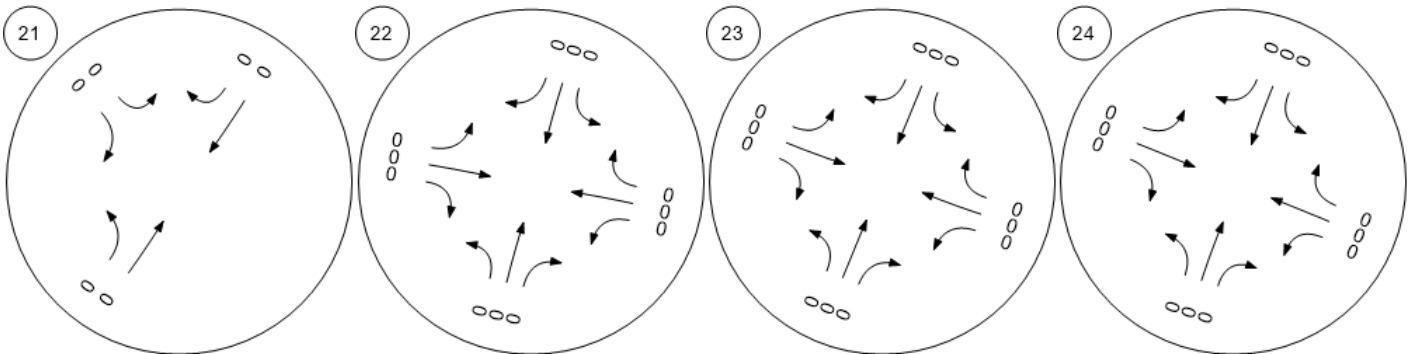
Traffic Volume - Other Volume



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



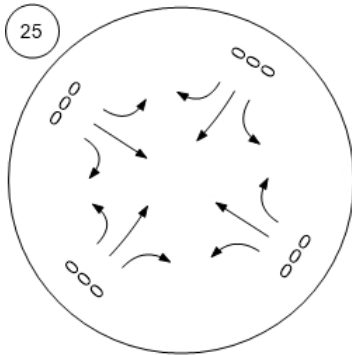
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



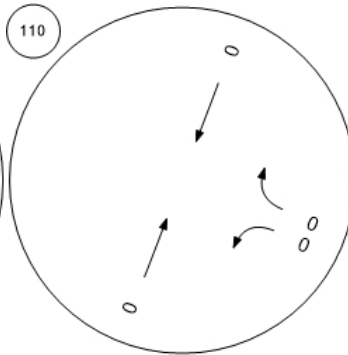
Traffic Volume - Other Volume



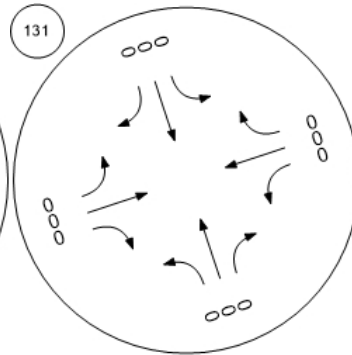
Middlefield Rd-Willow Rd



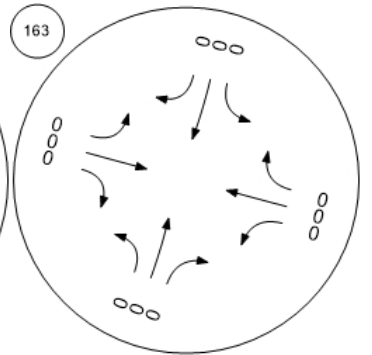
Marsh Road/101 NB Ramps



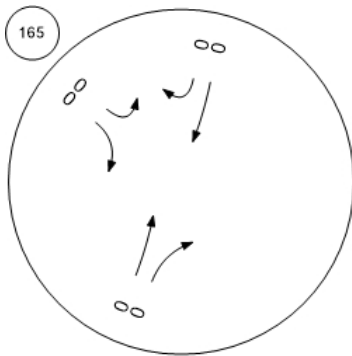
Chilco Street/Hamilton Avenue



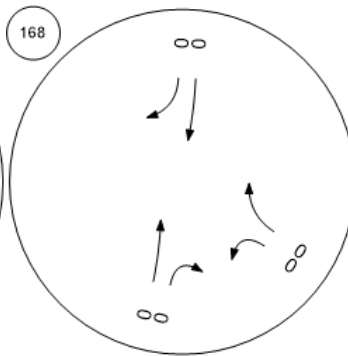
Bayfront Expy/Marsh Rd



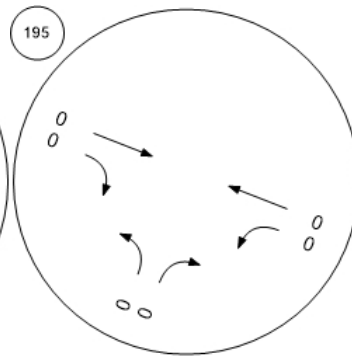
Willow Rd/US-101 SB Ramps



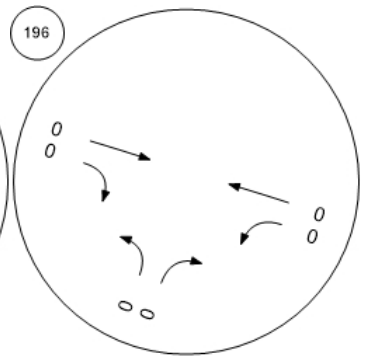
Willow Rd/US-101 NB Ramp



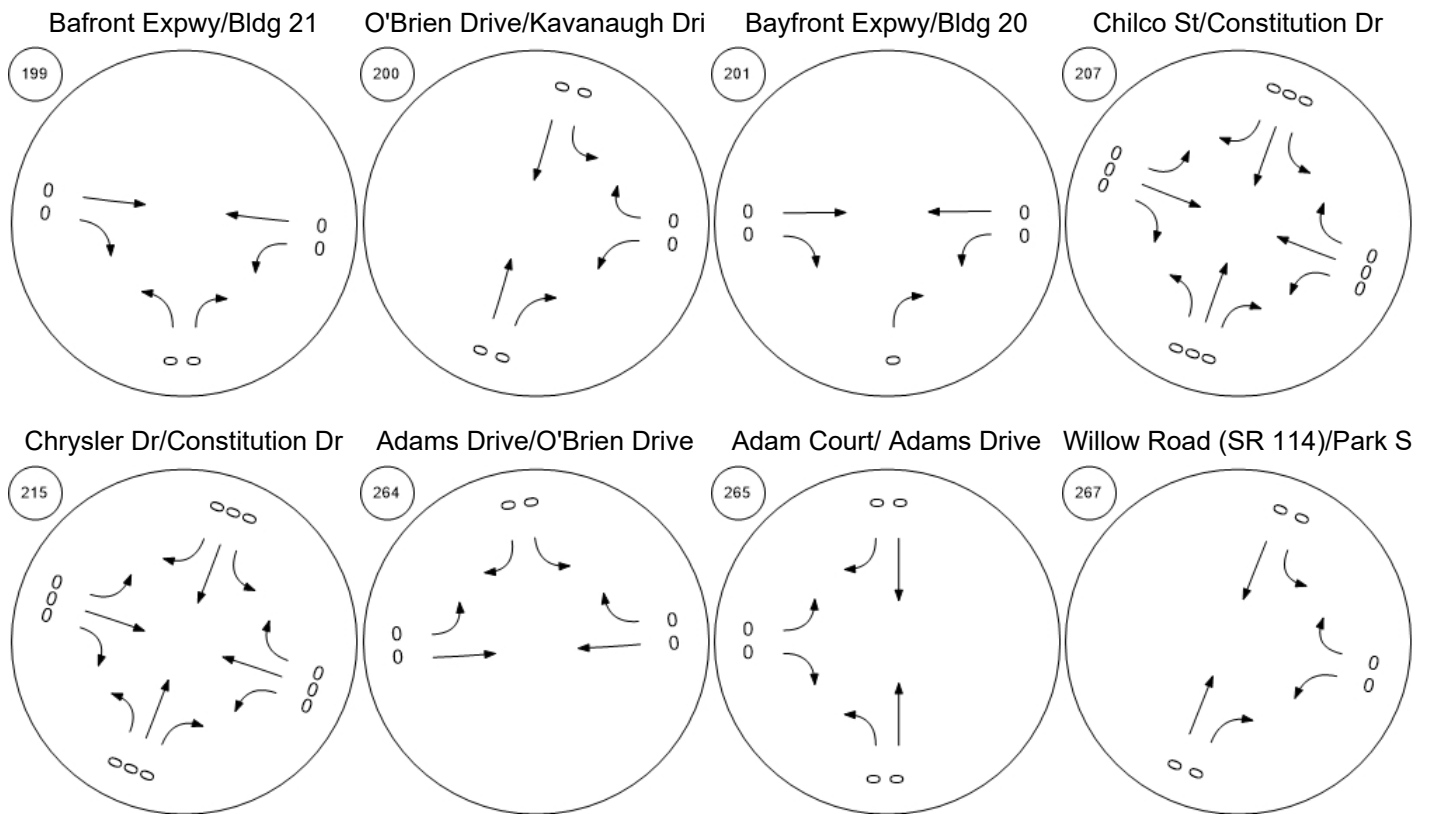
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



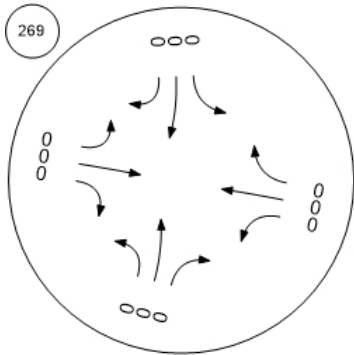
Traffic Volume - Other Volume



Traffic Volume - Other Volume



O'Brien Drive/Loop Road

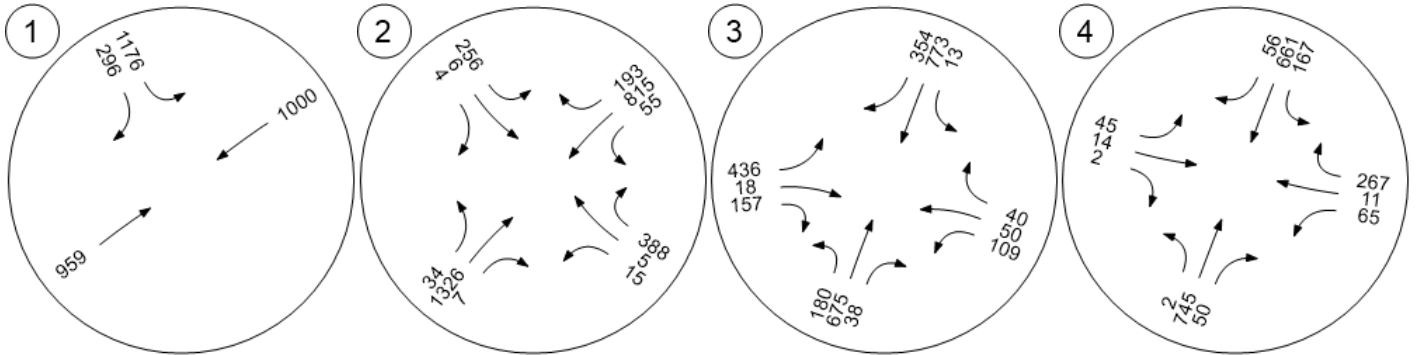


Traffic Volume - Future Total Volume

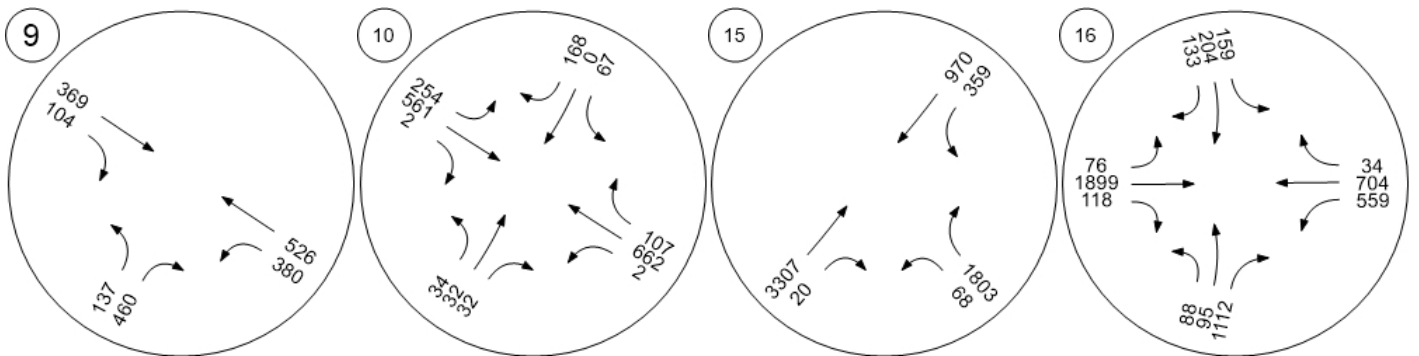


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



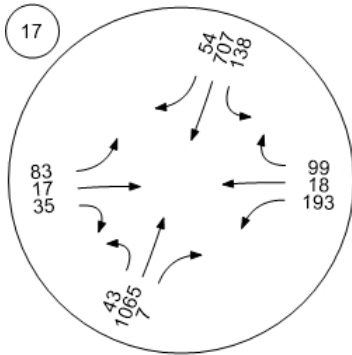
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



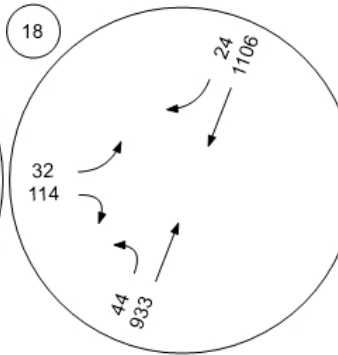
Traffic Volume - Future Total Volume



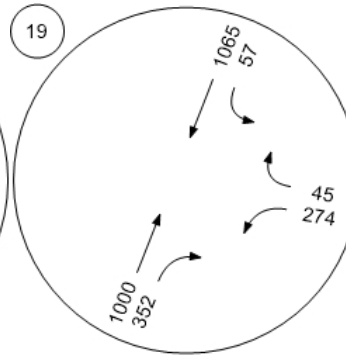
Willow Rd (SR 114)/Hamilton



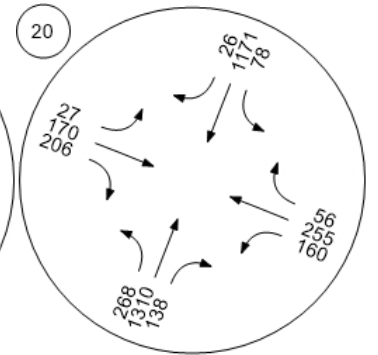
Willow Rd (SR 114)/Ivy Dr



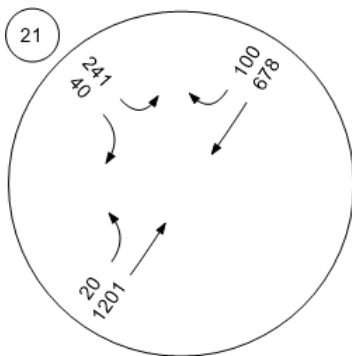
Willow Rd (SR 114)/O'Brien



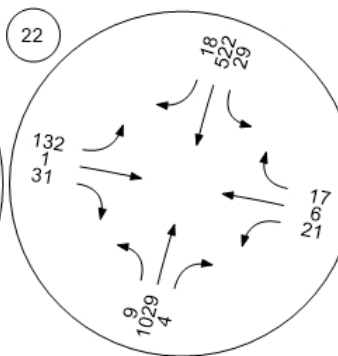
Willow Rd (SR 114)/Newbrid



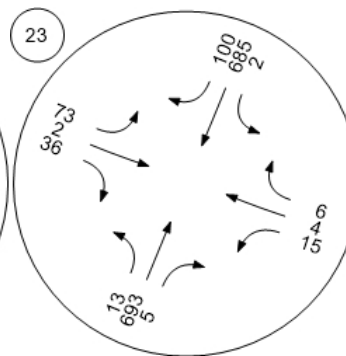
Willow Rd/Bay Rd



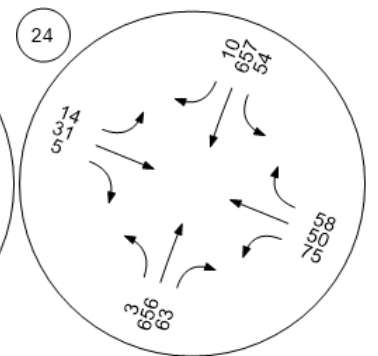
Willow Rd/Durham St-VA Me



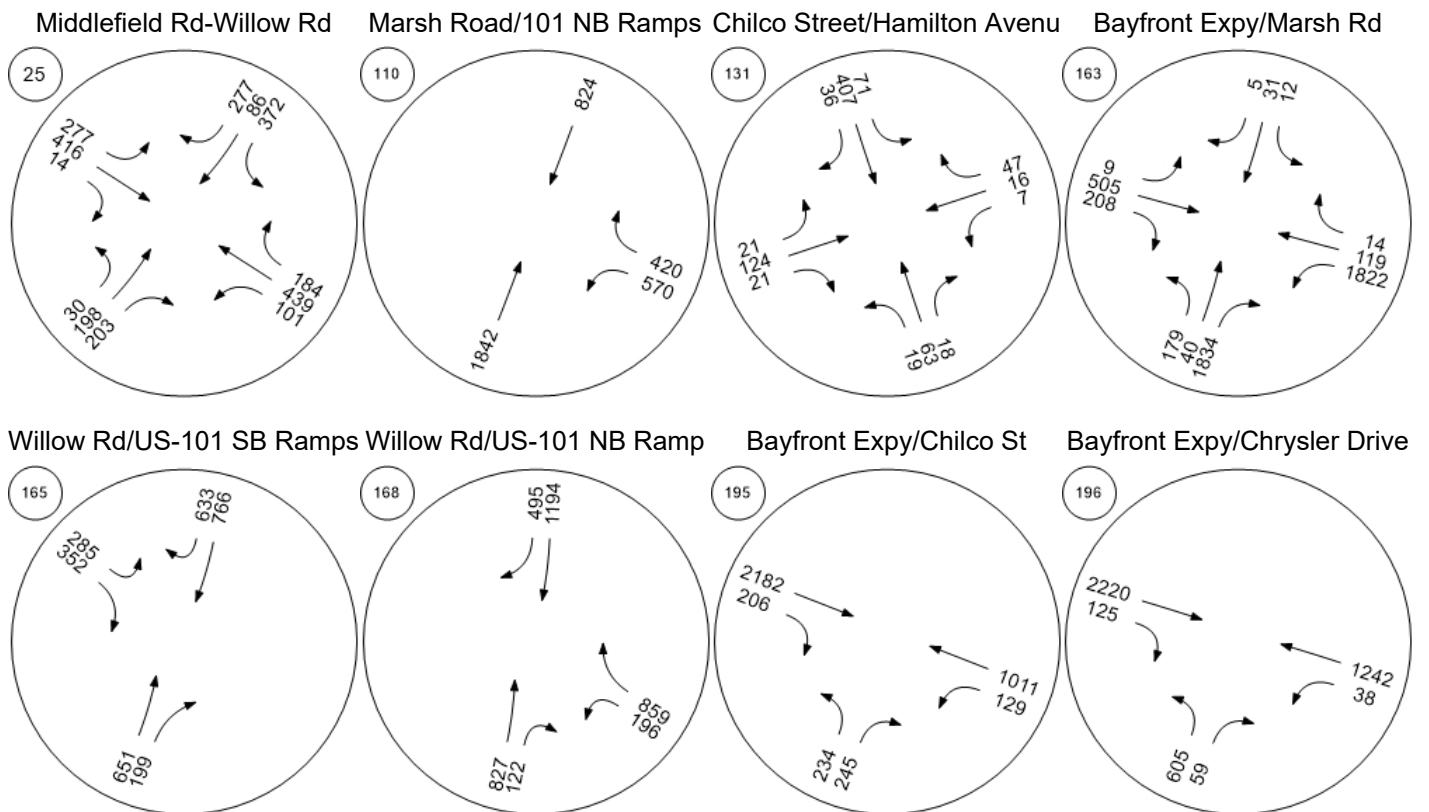
Willow Rd/Coleman Ave



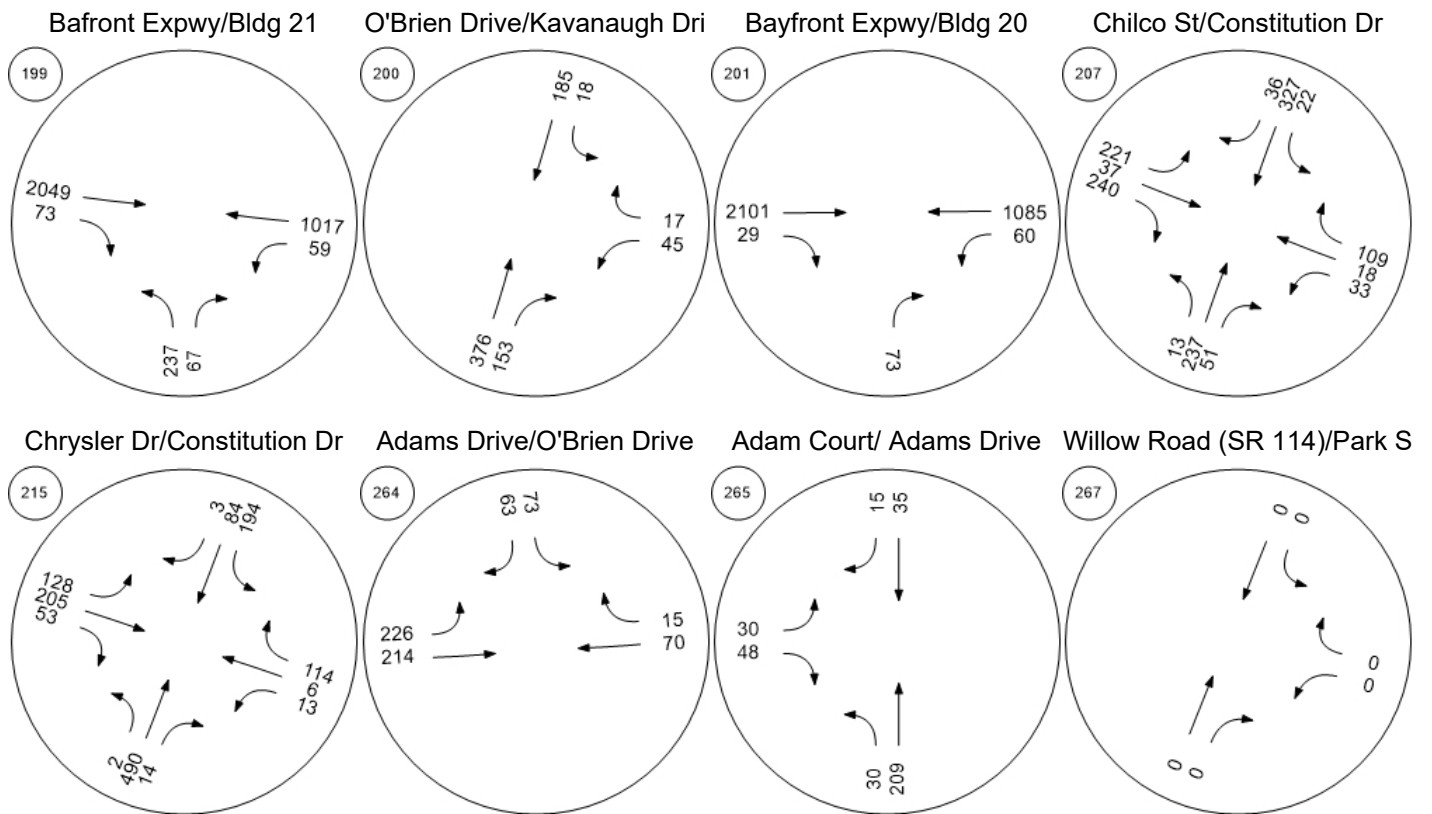
Willow Rd/Gilbert Ave



Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume

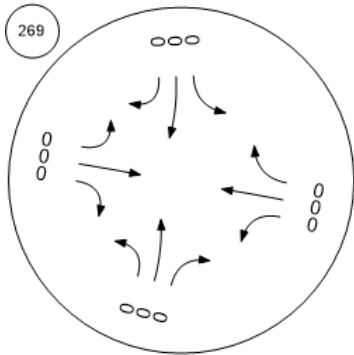




Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road

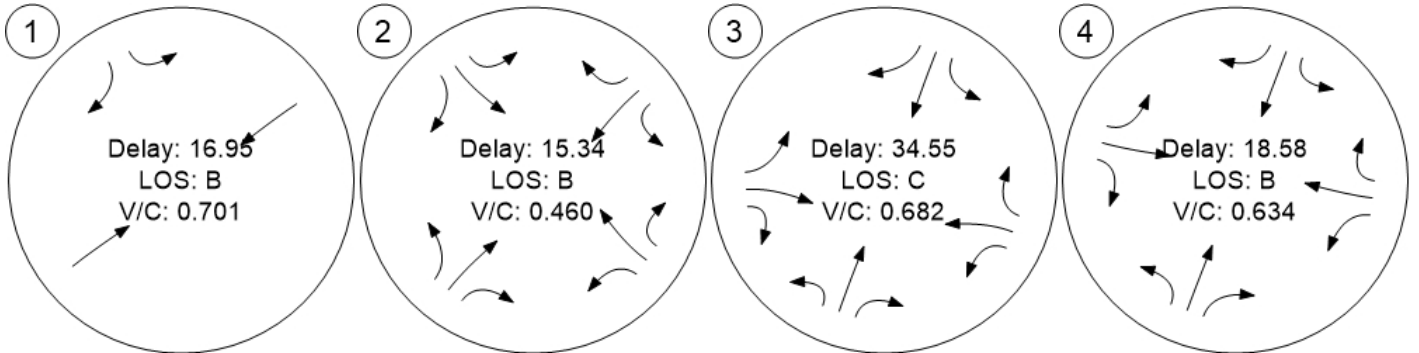


Traffic Conditions

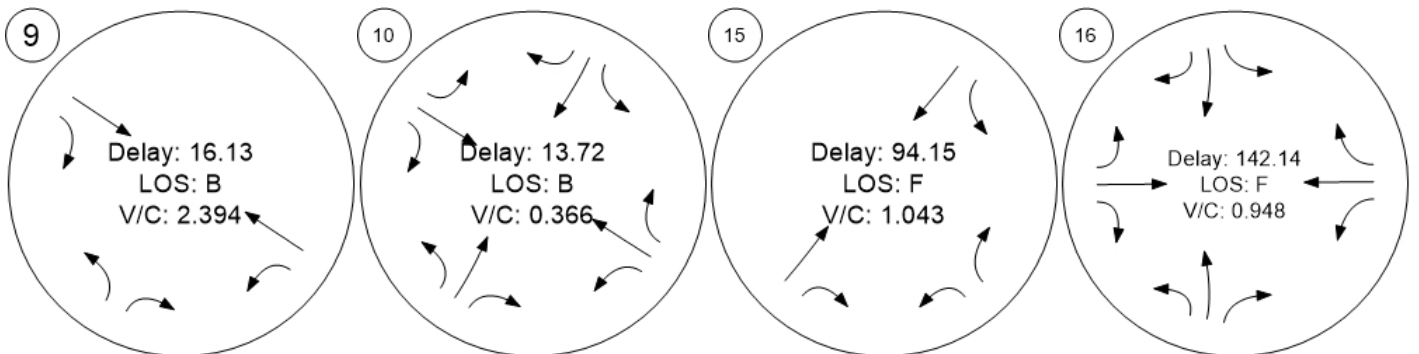


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



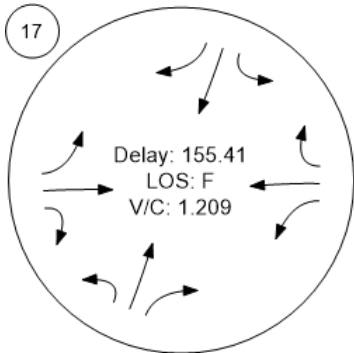
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



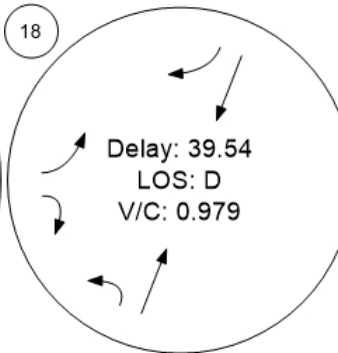
Traffic Conditions



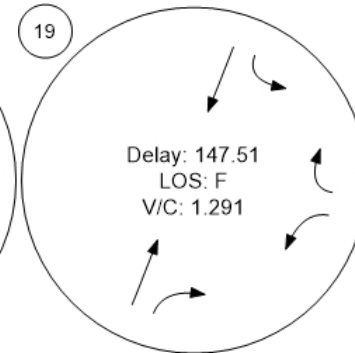
Willow Rd (SR 114)/Hamilton



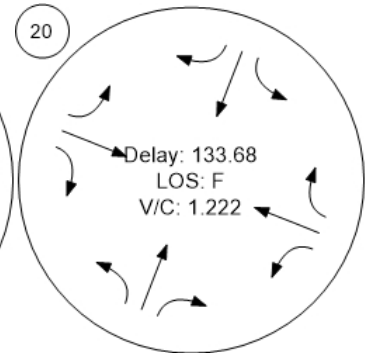
Willow Rd (SR 114)/Ivy Dr



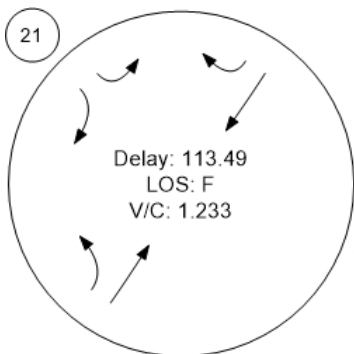
Willow Rd (SR 114)/O'Brien



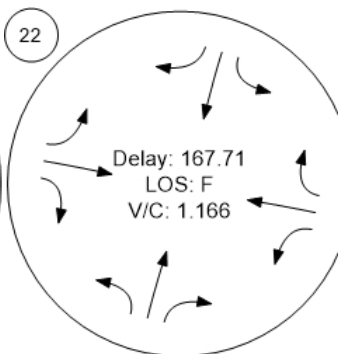
Willow Rd (SR 114)/Newbrid



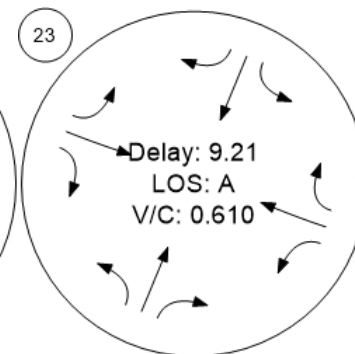
Willow Rd/Bay Rd



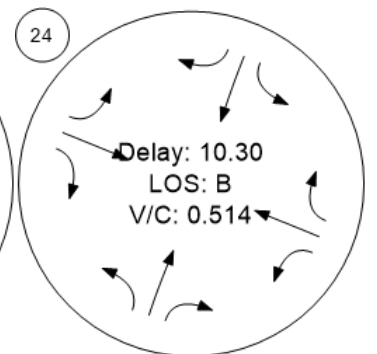
Willow Rd/Durham St-VA Me



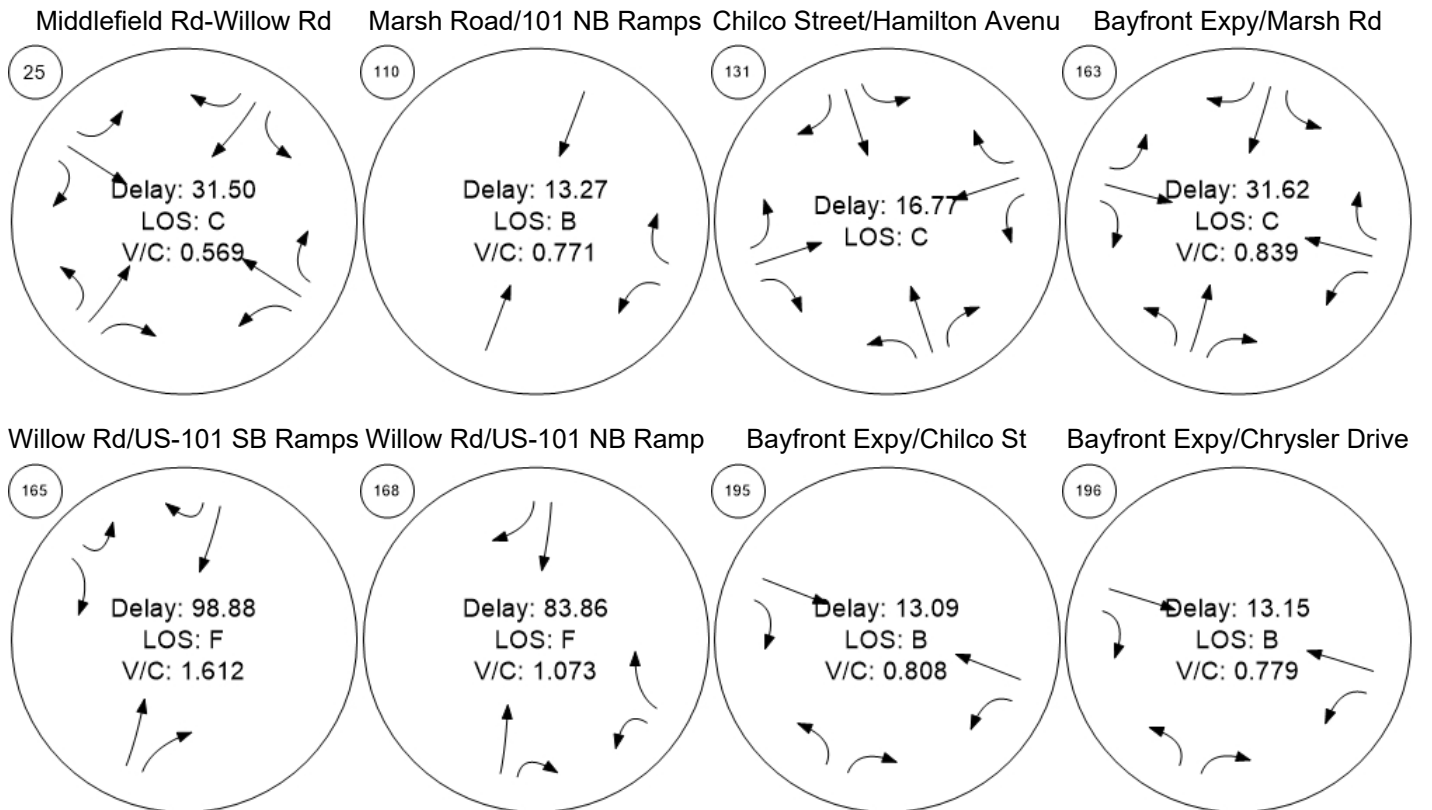
Willow Rd/Coleman Ave



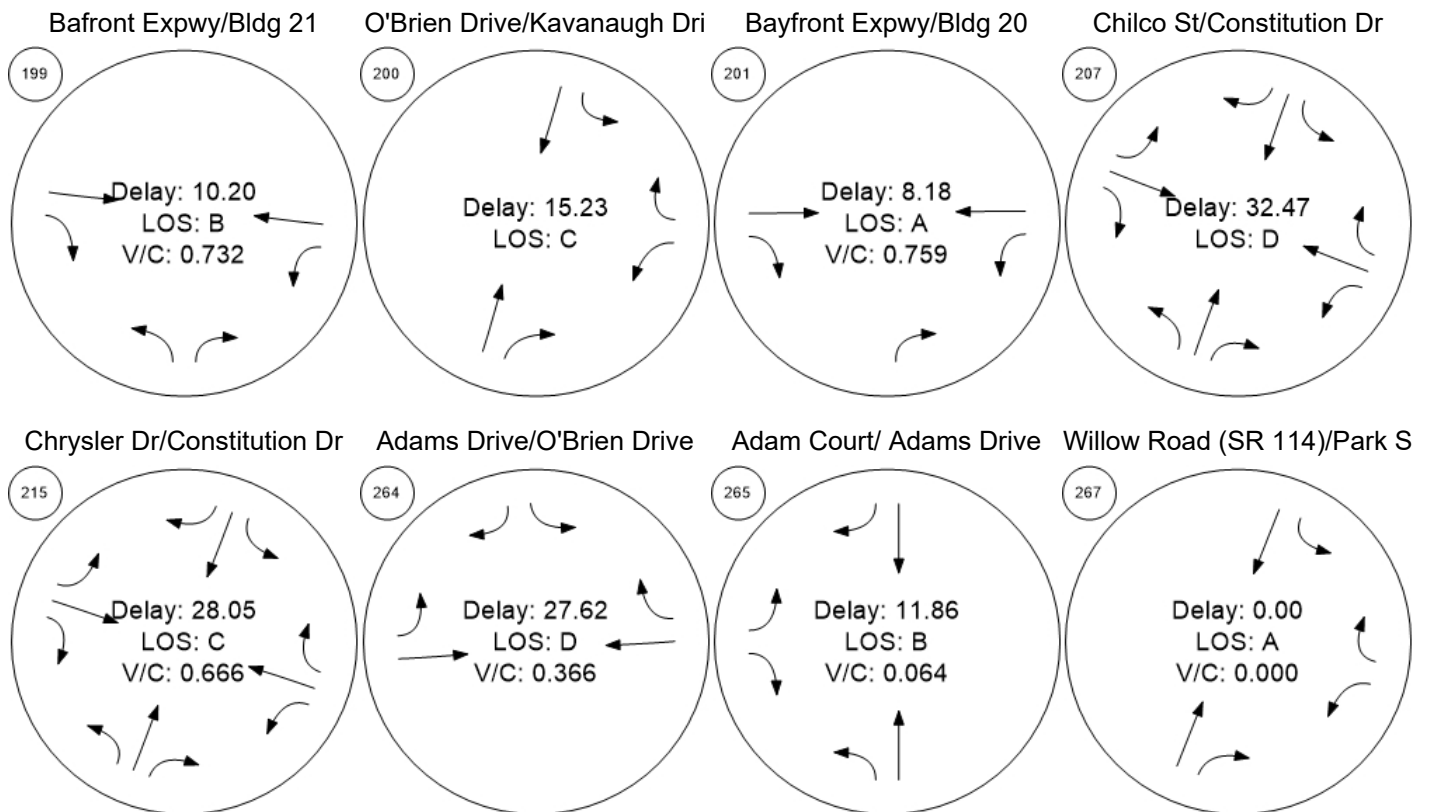
Willow Rd/Gilbert Ave



Traffic Conditions



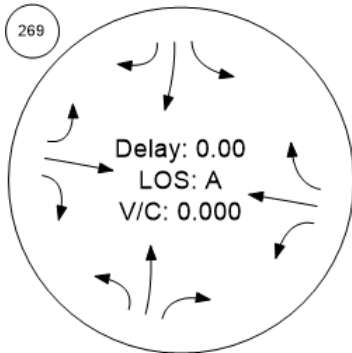
Traffic Conditions



Traffic Conditions

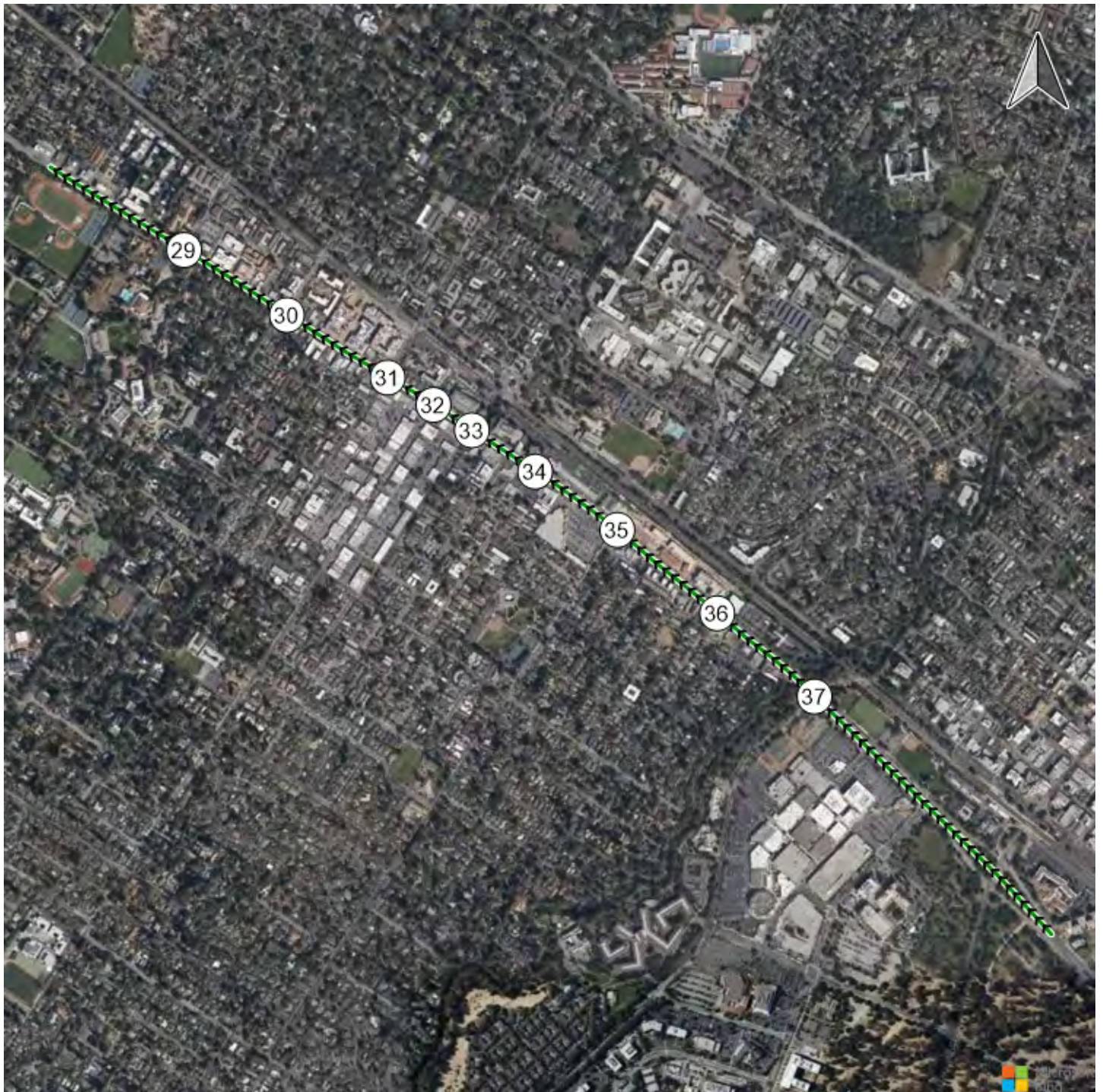


O'Brien Drive/Loop Road



Time Space Diagram - Flowing Off

Route 1: ECR NB



Generated with 

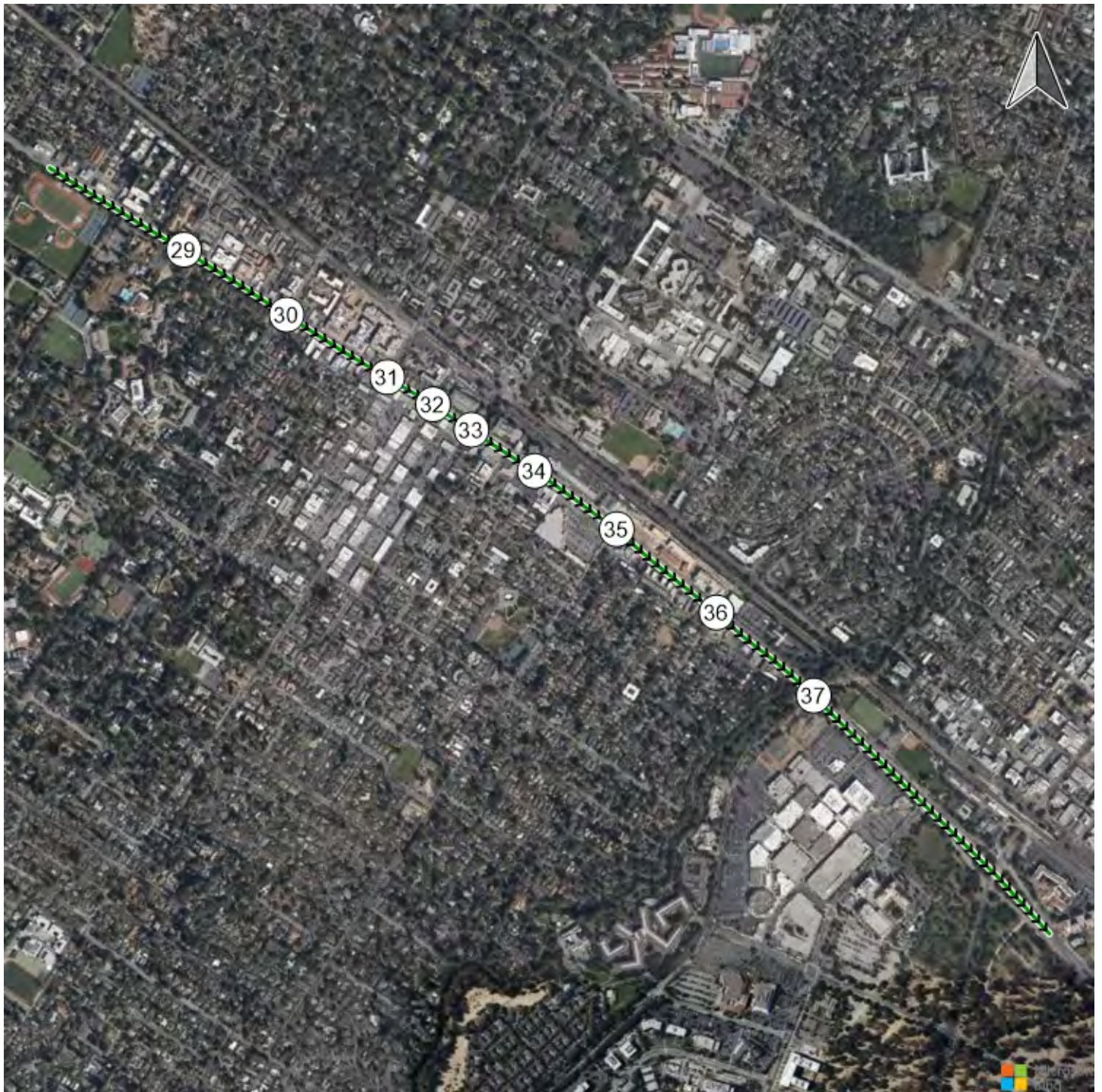
Version 2021 (SP 0-4)

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Route 1: ECR NB

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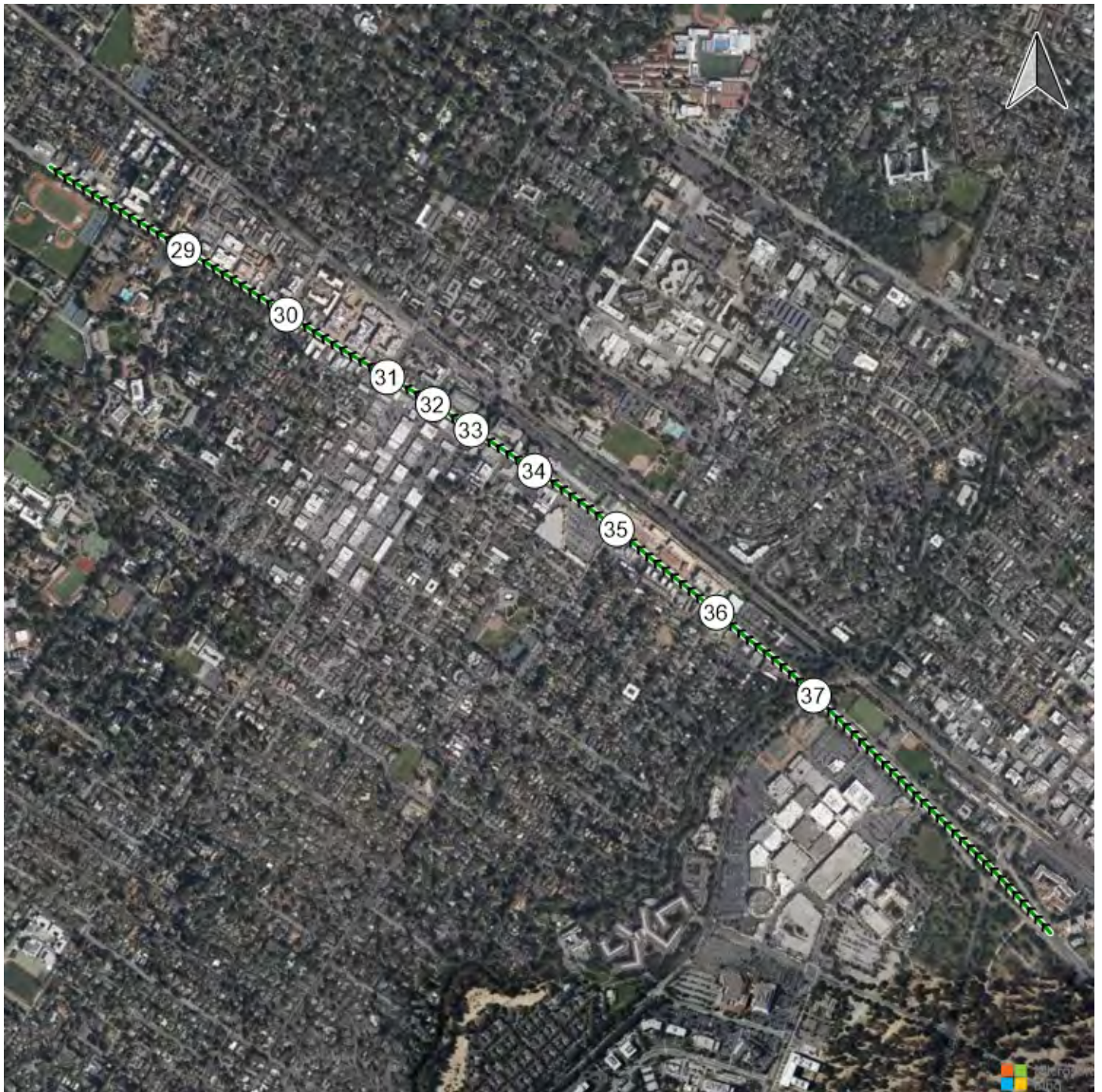
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



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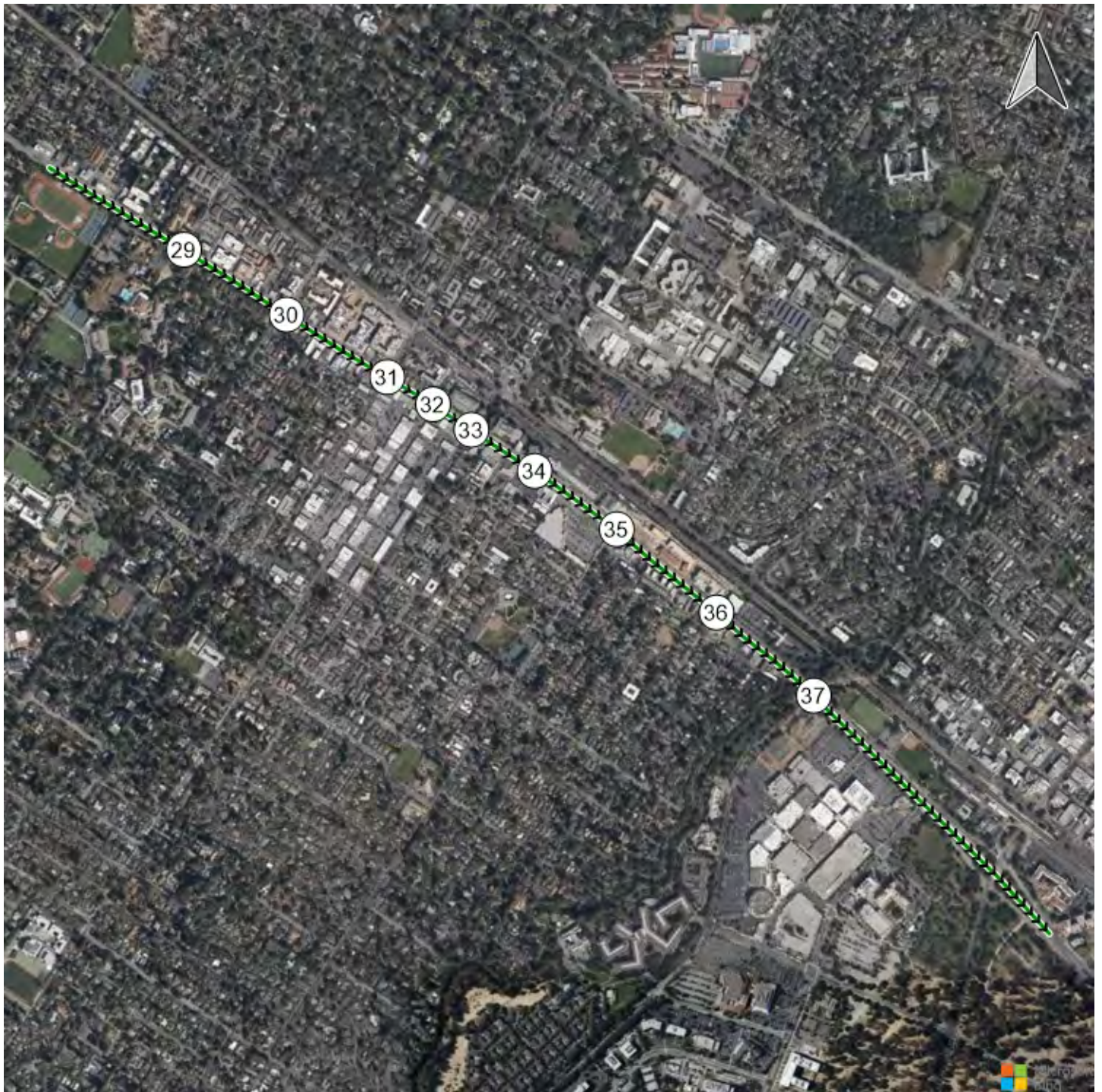
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



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Version 2021 (SP 0-4)

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Route 2: ECR SB

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**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Right	0.875	20.7	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.745	20.3	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.760	40.0	D
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.752	23.6	C
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NWB Left	0.722	43.1	D
10	Middlefield Rd/Ringswood Ave	Signalized	HCM 6th Edition	NEB Left	0.375	13.2	B
15	Bayfront Expy (SR 84)/University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Left	0.772	13.9	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	WB Left	1.166	212.5	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	SB Left	1.060	106.4	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	SB Right	1.228	130.5	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	NB Thru	1.162	77.4	E
20	Willow Rd (SR 114)/Newbridge St	Signalized	HCM 6th Edition	SB Right	1.249	134.5	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	SEB Left	1.049	57.0	E
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	NB Left	0.958	71.7	E
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.841	25.1	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	EB Left	0.692	20.0	C
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.581	62.3	E
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	0.907	23.1	C

131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	NB Thru	0.351	10.5	B
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.814	52.0	D
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.511	63.8	E
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.535	120.6	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.830	23.7	C
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.641	9.1	A
199	Bayfront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.778	7.3	A
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	SB Thru	0.528	12.7	B
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.805	7.3	A
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.527	24.8	C
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	EB Right	0.837	59.8	E
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	0.108	17.6	C
265	Adam Court/Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.025	11.5	B
267	Willow Road(SR114)/Park Street	Signalized	HCM 6th Edition		0.000	0.0	A
269	O'Brien Drive/Loop Road	Roundabout	HCM 6th Edition	WB Left		2.7	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.



**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.875

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↵↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	942	1474	217	1224	503
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	942	1474	217	1224	503
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	240	376	54	312	128
Total Analysis Volume [veh/h]	0	961	1504	217	1249	513
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	43	41	32	32
g / C, Green / Cycle	0.54	0.52	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.24	0.43	0.37	0.33
s, saturation flow rate [veh/h]	4000	3515	3373	1572
c, Capacity [veh/h]	2167	1812	1355	632
d1, Uniform Delay [s]	11.04	16.39	22.70	21.22
k, delay calibration	0.50	0.50	0.04	0.33
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.66	4.58	1.21	7.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.44	0.83	0.92	0.81
d, Delay for Lane Group [s/veh]	11.70	20.96	23.91	28.69
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.67	11.21	10.53	9.22
50th-Percentile Queue Length [ft/ln]	116.77	280.35	263.31	230.60
95th-Percentile Queue Length [veh/ln]	8.22	16.71	15.85	14.20
95th-Percentile Queue Length [ft/ln]	205.38	417.64	396.37	355.12

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	11.70	20.96	0.00	23.91	28.69
Movement LOS		B	C		C	C
d_A, Approach Delay [s/veh]	11.70		20.96		25.30	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	20.66					
Intersection LOS	C					
Intersection V/C	0.875					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	2.974	0.000	2.550
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.352	2.800	1.560
Bicycle LOS	B	C	A

**Sequence**




Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	24	1159	7	448	1224	331	13	4	58	241	19	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	0.00	0.00	12.70	1.70	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	59	0	0	0
Total Hourly Volume [veh/h]	24	1159	7	448	1224	331	13	4	0	241	19	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	322	2	124	340	92	4	1	0	67	5	0
Total Analysis Volume [veh/h]	27	1288	8	498	1360	368	14	4	0	268	21	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			1			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			1			1	
v_co, Outbound Pedestrian Volume crossing		1			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		1			0			1			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	40	40	15	40	40	0	20	0	20	20	20
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	51	51	31	70	70	0	41	0	37	37	37
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	5	105	105	120	112	112	6	6	28	28
g / C, Green / Cycle	0.03	0.66	0.66	0.75	0.70	0.70	0.04	0.04	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.24	0.46	0.47	0.50	0.01	0.00	0.15	0.01
s, saturation flow rate [veh/h]	1758	3532	1849	1081	1840	1711	1829	2572	1785	1900
c, Capacity [veh/h]	56	2324	1217	803	1294	1204	72	101	313	333
d1, Uniform Delay [s]	76.05	12.30	12.30	9.59	13.26	14.20	74.49	0.00	63.94	54.95
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.27	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.66	0.45	0.85	3.59	2.74	3.70	1.34	0.00	15.21	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.37	0.37	0.62	0.67	0.72	0.25	0.00	0.86	0.06
d, Delay for Lane Group [s/veh]	80.71	12.75	13.16	13.18	16.00	17.90	75.83	0.00	79.15	55.01
Lane Group LOS	F	B	B	B	B	B	E	A	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.17	6.91	7.37	3.00	17.39	18.80	0.75	0.00	12.03	0.73
50th-Percentile Queue Length [ft/ln]	29.17	172.74	184.33	75.12	434.63	470.10	18.86	0.00	300.76	18.16
95th-Percentile Queue Length [veh/ln]	2.10	11.22	11.83	5.41	24.22	25.92	1.36	0.00	17.72	1.31
95th-Percentile Queue Length [ft/ln]	52.50	280.52	295.66	135.21	605.59	647.89	33.94	0.00	442.97	32.69

**Movement, Approach, & Intersection Results**

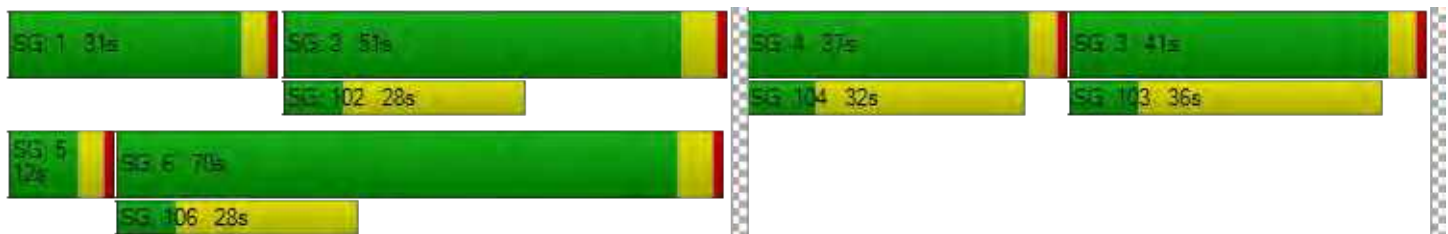
d_M, Delay for Movement [s/veh]	80.71	12.89	13.16	13.18	16.69	17.90	75.83	75.83	0.00	79.15	55.01	55.01
Movement LOS	F	B	B	B	B	B	E	E	A	E	E	E
d_A, Approach Delay [s/veh]	14.27			16.11			75.83			77.39		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	20.35											
Intersection LOS	C											
Intersection V/C	0.745											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.40	68.40	69.33	69.33
I_p,int, Pedestrian LOS Score for Intersection	3.059	3.245	2.984	2.154
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	575	813	460	410
d_b, Bicycle Delay [s]	40.59	28.16	47.39	50.52
I_b,int, Bicycle LOS Score for Intersection	2.287	3.396	1.687	2.036
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	40.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	133	841	83	29	1012	431	576	56	166	35	16	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	133	841	83	29	1012	431	576	56	151	35	16	25
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	217	21	7	261	111	148	14	39	9	4	6
Total Analysis Volume [veh/h]	137	867	86	30	1043	444	594	58	156	36	16	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			2			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			1			2	
v_co, Outbound Pedestrian Volume crossing		0			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			0			6			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	100	100	5	92	92	35	35	35	12	12
g / C, Green / Cycle	0.08	0.62	0.62	0.03	0.58	0.58	0.22	0.22	0.22	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.26	0.02	0.42	0.44	0.19	0.19	0.10	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1809	1704	1823	1643	1717	1703	1525	1439	1196
c, Capacity [veh/h]	142	1169	1127	58	1051	947	378	375	336	104	86
d1, Uniform Delay [s]	73.20	15.30	15.32	75.88	24.85	25.46	60.04	59.99	53.98	70.60	71.34
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.12	0.12	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	66.06	1.08	1.13	2.58	4.54	5.63	6.78	6.60	0.74	1.47	3.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	0.41	0.42	0.51	0.73	0.76	0.87	0.86	0.46	0.35	0.49
d, Delay for Lane Group [s/veh]	139.26	16.38	16.46	78.45	29.39	31.09	66.83	66.59	54.72	72.07	74.48
Lane Group LOS	F	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.22	9.26	9.00	1.26	22.31	21.48	13.67	13.48	5.61	1.47	1.75
50th-Percentile Queue Length [ft/ln]	205.39	231.40	224.97	31.42	557.85	536.93	341.69	336.97	140.23	36.66	43.85
95th-Percentile Queue Length [veh/ln]	12.92	14.25	13.92	2.26	30.06	29.08	19.73	19.50	9.49	2.64	3.16
95th-Percentile Queue Length [ft/ln]	322.91	356.13	347.96	56.56	751.52	726.94	493.27	487.49	237.33	65.99	78.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	139.26	16.41	16.46	78.45	29.84	31.09	66.72	66.59	54.72	72.07	74.48	74.48
Movement LOS	F	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	31.86			31.16			64.39			73.37		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	40.01											
Intersection LOS	D											
Intersection V/C	0.760											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.924			3.050			2.468			2.036		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.459			2.811			2.918			1.688		
Bicycle LOS	B			C			C			A		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	23.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	810	85	310	755	66	218	66	2	40	22	202
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	810	85	310	755	66	218	66	2	40	22	202
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	207	22	79	193	17	56	17	1	10	6	52
Total Analysis Volume [veh/h]	0	827	87	316	770	67	222	67	2	41	22	206
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			5			0			5	
v_di, Inbound Pedestrian Volume crossing in		0			5			0			5	
v_co, Outbound Pedestrian Volume crossing		1			1			1			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			1			1			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			12			9			2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	29	29	16	48	48	28	28
g / C, Green / Cycle	0.36	0.36	0.20	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.19	0.23	0.24	0.27	0.16
s, saturation flow rate [veh/h]	1882	1652	1708	1807	1747	1074	1637
c, Capacity [veh/h]	714	587	342	1072	1036	454	624
d1, Uniform Delay [s]	22.46	22.47	31.43	8.67	8.68	24.56	20.45
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.35	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.21	7.73	10.46	1.10	1.15	4.80	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.68	0.73	0.92	0.40	0.40	0.64	0.43
d, Delay for Lane Group [s/veh]	27.67	30.19	41.89	9.76	9.83	29.35	21.46
Lane Group LOS	C	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.39	7.72	6.69	3.61	3.53	5.51	3.94
50th-Percentile Queue Length [ft/ln]	209.72	193.08	167.14	90.23	88.27	137.79	98.45
95th-Percentile Queue Length [veh/ln]	13.14	12.28	10.93	6.50	6.36	9.36	7.09
95th-Percentile Queue Length [ft/ln]	328.46	307.03	273.15	162.41	158.88	234.04	177.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	27.67	28.71	30.19	41.89	9.79	9.83	29.35	29.35	29.35	21.46	21.46	21.46
Movement LOS	C	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	28.85			18.59			29.35			21.46		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	23.65											
Intersection LOS	C											
Intersection V/C	0.752											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	23.9
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.79	29.79	29.79	19.70
I_p,int, Pedestrian LOS Score for Intersection	2.674	3.157	1.863	2.052
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	597	1072	682	682
d_b, Bicycle Delay [s]	19.70	8.68	17.47	17.41
I_b,int, Bicycle LOS Score for Intersection	2.314	2.511	2.040	2.003
Bicycle LOS	B	B	B	B

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	43.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	87	479	488	425	476	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	11.80	4.20	3.10	2.50	3.30	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	87	0	488	425	476	104
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	130	113	127	28
Total Analysis Volume [veh/h]	93	0	519	452	506	111
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing in	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	10	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.6	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	13	13	33	100	68
g / C, Green / Cycle	0.11	0.11	0.28	0.84	0.57
(v / s)_i Volume / Saturation Flow Rate	0.06	0.00	0.29	0.24	0.35
s, saturation flow rate [veh/h]	1641	1561	1765	1862	1776
c, Capacity [veh/h]	180	172	485	1555	1004
d1, Uniform Delay [s]	50.42	0.00	43.52	2.15	17.39
k, delay calibration	0.08	0.08	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.69	0.00	60.55	0.47	2.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	1.07	0.29	0.61
d, Delay for Lane Group [s/veh]	52.11	0.00	104.07	2.63	20.21
Lane Group LOS	D	A	F	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	0.00	22.27	1.62	11.53
50th-Percentile Queue Length [ft/ln]	68.20	0.00	556.69	40.44	288.37
95th-Percentile Queue Length [veh/ln]	4.91	0.00	31.27	2.91	17.10
95th-Percentile Queue Length [ft/ln]	122.76	0.00	781.87	72.79	427.61



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.11	0.00	104.07	2.63	20.21	20.21
Movement LOS	D	A	F	A	C	C
d_A, Approach Delay [s/veh]	52.11		56.85		20.21	
Approach LOS	D		E		C	
d_I, Intersection Delay [s/veh]	43.14					
Intersection LOS	D					
Intersection V/C	0.722					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.52	49.52	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.936	2.849	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	763	1090	507
d_b, Bicycle Delay [s]	23.21	12.68	34.09
I_b,int, Bicycle LOS Score for Intersection	1.560	3.162	2.578
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringswood Ave**

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.375

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↑			↑↵			↵↵↵			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	6	11	9	129	28	310	21	600	114	243	683	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	8.30	4.40	0.00	4.00	0.00	3.20	0.00	4.60	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	222	0	0	96	0	0	0
Total Hourly Volume [veh/h]	6	11	9	129	28	88	21	600	18	243	683	56
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	2	34	7	23	6	160	5	65	182	15
Total Analysis Volume [veh/h]	6	12	10	137	30	94	22	638	19	259	727	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing in	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	24	24	24	24	92	79	79	89	83	83
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.77	0.66	0.66	0.74	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.00	0.01	0.13	0.06	0.03	0.18	0.01	0.29	0.22	0.22
s, saturation flow rate [veh/h]	1401	1737	1278	1481	748	3526	1473	888	1840	1774
c, Capacity [veh/h]	122	348	311	297	607	2334	975	698	1276	1231
d1, Uniform Delay [s]	55.06	38.85	46.06	40.81	4.36	8.37	6.93	5.01	7.18	7.20
k, delay calibration	0.10	0.10	0.10	0.10	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	0.07	1.38	0.58	0.02	0.29	0.04	1.51	0.64	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.06	0.54	0.32	0.04	0.27	0.02	0.37	0.31	0.32
d, Delay for Lane Group [s/veh]	55.22	38.92	47.44	41.39	4.39	8.66	6.97	6.52	7.82	7.88
Lane Group LOS	E	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.18	0.55	4.76	2.42	0.12	3.28	0.17	1.94	3.84	3.76
50th-Percentile Queue Length [ft/ln]	4.57	13.66	119.06	60.61	3.11	82.01	4.18	48.45	96.01	93.94
95th-Percentile Queue Length [veh/ln]	0.33	0.98	8.34	4.36	0.22	5.91	0.30	3.49	6.91	6.76
95th-Percentile Queue Length [ft/ln]	8.22	24.60	208.53	109.10	5.60	147.63	7.53	87.21	172.81	169.10

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	55.22	38.92	38.92	47.44	47.44	41.39	4.39	8.66	6.97	6.52	7.85	7.88
Movement LOS	E	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	42.42			45.26			8.47			7.52		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	13.22											
Intersection LOS	B											
Intersection V/C	0.375											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.007			2.794			3.111			2.779		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	513			513			757			507		
d_b, Bicycle Delay [s]	33.29			33.54			23.36			34.10		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.357			2.199			2.423		
Bicycle LOS	A			B			B			B		

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	13.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.772

**Intersection Setup**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	829	84	1215	2780	329	416
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	3.50	1.60	3.10	2.20	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	829	84	1215	2780	329	416
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	214	22	313	716	85	107
Total Analysis Volume [veh/h]	855	87	1253	2866	339	429
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	20	20	30	53	10	44
g / C, Green / Cycle	0.27	0.27	0.41	0.73	0.14	0.60
(v / s)_i Volume / Saturation Flow Rate	0.17	0.06	0.36	0.57	0.10	0.10
s, saturation flow rate [veh/h]	4955	1548	3470	5049	3453	4166
c, Capacity [veh/h]	1350	422	1410	3676	471	2489
d1, Uniform Delay [s]	23.35	20.46	20.14	6.24	30.20	6.59
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.60	0.29	0.81	0.45	0.78	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.63	0.21	0.89	0.78	0.72	0.17
d, Delay for Lane Group [s/veh]	23.95	20.75	20.94	6.69	30.98	6.61
Lane Group LOS	C	C	C	A	C	A
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.77	1.02	8.01	3.44	2.75	0.81
50th-Percentile Queue Length [ft/ln]	94.15	25.52	200.24	86.12	68.87	20.18
95th-Percentile Queue Length [veh/ln]	6.78	1.84	12.65	6.20	4.96	1.45
95th-Percentile Queue Length [ft/ln]	169.48	45.94	316.27	155.02	123.96	36.32

**Movement, Approach, & Intersection Results**

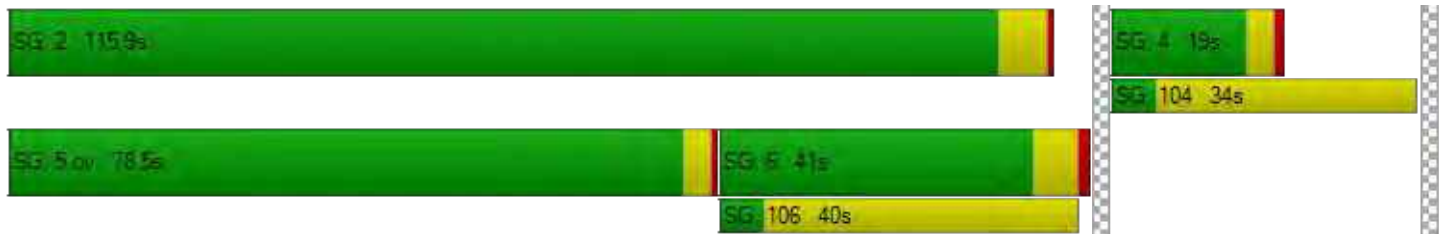
d_M, Delay for Movement [s/veh]	23.95	20.75	20.94	6.69	30.98	6.61
Movement LOS	C	C	C	A	C	A
d_A, Approach Delay [s/veh]	23.66		11.03		17.37	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	13.90					
Intersection LOS	B					
Intersection V/C	0.772					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.01	0.00	28.01
I_p,int, Pedestrian LOS Score for Intersection	3.644	0.000	2.927
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	960	384	411
d_b, Bicycle Delay [s]	9.86	23.81	23.00
I_b,int, Bicycle LOS Score for Intersection	2.078	3.825	1.670
Bicycle LOS	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	212.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.166

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	210	464	277	42	93	78	376	453	172	1142	2234	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	210	464	277	42	93	62	376	453	66	1142	2234	72
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	118	71	11	24	16	96	116	17	291	570	18
Total Analysis Volume [veh/h]	214	473	283	43	95	63	384	462	67	1165	2280	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			2			3			0	
v_di, Inbound Pedestrian Volume crossing in		0			3			2			0	
v_co, Outbound Pedestrian Volume crossing		4			0			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		3			0			4			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	22	21	51	9	9	9	26	51	51	25	50	50
g / C, Green / Cycle	0.17	0.17	0.40	0.07	0.07	0.07	0.21	0.40	0.40	0.20	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.29	0.21	0.07	0.06	0.03	0.06	0.25	0.09	0.05	0.43	0.45	0.05
s, saturation flow rate [veh/h]	740	2209	3942	670	2746	1075	1515	4922	1458	2715	5020	1615
c, Capacity [veh/h]	128	369	1578	48	196	77	312	1989	589	538	1990	640
d1, Uniform Delay [s]	52.15	52.54	24.45	58.13	56.33	57.69	50.09	24.72	23.48	50.58	38.08	24.08
k, delay calibration	0.50	0.32	0.11	0.24	0.11	0.19	0.15	0.11	0.11	0.48	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	332.70	139.67	0.05	65.89	1.84	30.27	112.73	0.06	0.08	530.36	67.17	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.67	1.28	0.18	0.90	0.48	0.82	1.23	0.23	0.11	2.17	1.15	0.11
d, Delay for Lane Group [s/veh]	384.84	192.21	24.51	124.02	58.18	87.96	162.82	24.78	23.57	580.94	105.24	24.15
Lane Group LOS	F	F	C	F	E	F	F	C	C	F	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	15.83	12.89	1.81	2.26	1.53	2.66	9.79	3.07	1.28	48.10	32.47	1.41
50th-Percentile Queue Length [ft/ln]	395.66	322.25	45.13	56.49	38.32	66.49	244.65	76.82	31.98	1202.44	811.72	35.31
95th-Percentile Queue Length [veh/ln]	26.78	20.86	3.25	4.07	2.76	4.79	16.37	5.53	2.30	76.66	45.90	2.54
95th-Percentile Queue Length [ft/ln]	669.43	521.41	81.24	101.68	68.97	119.68	409.22	138.27	57.56	1916.61	1147.60	63.55

**Movement, Approach, & Intersection Results**

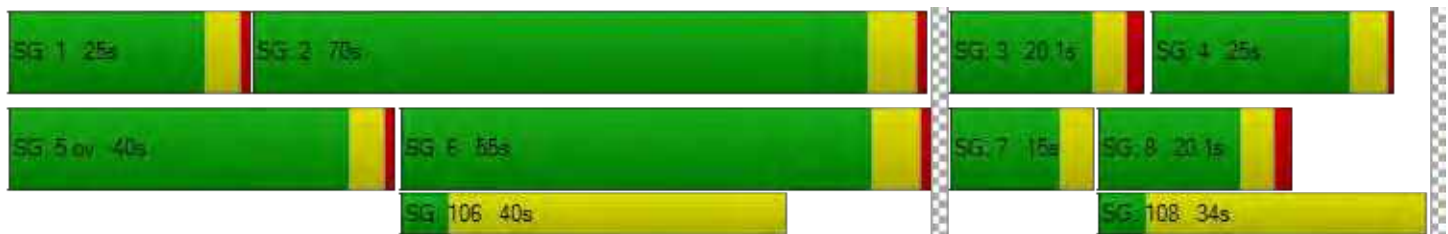
d_M, Delay for Movement [s/veh]	384.84	192.21	24.51	124.02	58.18	87.96	162.82	24.78	23.57	580.94	105.24	24.15
Movement LOS	F	F	C	F	E	F	F	C	C	F	F	C
d_A, Approach Delay [s/veh]	185.78			81.60			82.75			261.09		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	212.55											
Intersection LOS	F											
Intersection V/C	1.166											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.44	0.00	54.44	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.125	0.000	3.332	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	326	238	776	1014
d_b, Bicycle Delay [s]	44.20	49.01	23.62	15.34
I_b,int, Bicycle LOS Score for Intersection	2.360	1.739	2.120	3.495
Bicycle LOS	B	A	B	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	106.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.060

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	110	833	73	190	1189	37	47	14	48	56	25	87
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	6.30	7.00	9.10	8.40	10.50	1.30	4.50	6.00	23.10	12.50	30.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	833	73	190	1189	37	47	14	48	56	25	87
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	224	20	51	320	10	13	4	13	15	7	23
Total Analysis Volume [veh/h]	118	896	78	204	1278	40	51	15	52	60	27	94
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing in	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	92	75	75	92	78	78	30	31
g / C, Green / Cycle	0.71	0.58	0.58	0.71	0.60	0.60	0.23	0.24
(v / s)_i Volume / Saturation Flow Rate	0.25	0.61	0.61	0.34	0.71	0.71	0.22	0.24
s, saturation flow rate [veh/h]	467	808	782	599	934	919	548	762
c, Capacity [veh/h]	146	468	453	179	563	554	168	202
d1, Uniform Delay [s]	36.23	27.32	27.32	47.95	25.77	25.77	49.64	46.68
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.34	0.43
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	36.99	56.85	59.11	110.51	95.94	100.31	15.26	36.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	1.05	1.06	1.14	1.17	1.18	0.70	0.90
d, Delay for Lane Group [s/veh]	73.22	84.17	86.43	158.46	121.71	126.08	64.90	83.33
Lane Group LOS	E	F	F	F	F	F	E	F
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.48	20.55	20.17	7.18	31.23	31.41	4.55	7.66
50th-Percentile Queue Length [ft/ln]	61.95	513.78	504.36	179.45	780.85	785.13	113.77	191.46
95th-Percentile Queue Length [veh/ln]	4.46	29.19	28.83	12.64	45.65	46.14	8.05	12.20
95th-Percentile Queue Length [ft/ln]	111.52	729.84	720.75	316.00	1141.32	1153.52	201.23	304.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	73.22	85.18	86.43	158.46	123.82	126.08	64.90	64.90	64.90	83.33	83.33	83.33
Movement LOS	E	F	F	F	F	F	E	E	E	F	F	F
d_A, Approach Delay [s/veh]	83.98			128.52			64.90			83.33		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	106.44											
Intersection LOS	F											
Intersection V/C	1.060											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.30	56.30	54.45	54.45
I_p,int, Pedestrian LOS Score for Intersection	3.327	2.961	1.959	2.260
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1123	1077	505	508
d_b, Bicycle Delay [s]	12.58	14.10	36.42	36.38
I_b,int, Bicycle LOS Score for Intersection	2.461	2.815	1.754	1.858
Bicycle LOS	B	C	A	A

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	130.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.228

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑ ↑		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	81	1273	1273	14	11	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	5.70	10.30	22.20	0.00	6.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	1273	1273	14	11	95
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	346	346	4	3	26
Total Analysis Volume [veh/h]	88	1384	1384	15	12	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing in	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	106	90	90	24	24
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	104	88	88	19	19
g / C, Green / Cycle	0.10	0.80	0.67	0.67	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.11	0.90	0.90	0.90	0.01	0.13
s, saturation flow rate [veh/h]	795	1546	781	777	1744	779
c, Capacity [veh/h]	80	1233	526	524	259	116
d1, Uniform Delay [s]	58.39	13.13	21.15	21.15	47.40	54.02
k, delay calibration	0.18	0.50	0.50	0.50	0.04	0.30
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	91.14	66.31	160.64	163.18	0.03	41.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.10	1.12	1.33	1.33	0.05	0.89
d, Delay for Lane Group [s/veh]	149.53	79.45	181.79	184.32	47.42	95.18
Lane Group LOS	F	F	F	F	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.60	23.46	37.10	37.31	0.34	4.61
50th-Percentile Queue Length [ft/ln]	115.03	586.57	927.56	932.74	8.46	115.30
95th-Percentile Queue Length [veh/ln]	8.28	34.61	57.70	58.12	0.61	8.13
95th-Percentile Queue Length [ft/ln]	207.05	865.17	1442.40	1453.08	15.22	203.34

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	149.53	79.45	183.04	184.32	47.42	95.18
Movement LOS	F	F	F	F	D	F
d_A, Approach Delay [s/veh]	83.64		183.06		90.19	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	130.47					
Intersection LOS	F					
Intersection V/C	1.228					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.088	3.058	2.029
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.01	7.42	45.67
I_b,int, Bicycle LOS Score for Intersection	2.774	2.714	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	77.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.162

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1366	363	42	1134	237	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.30	7.40	9.70	10.30	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1366	363	42	1134	237	83
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	363	97	11	302	63	22
Total Analysis Volume [veh/h]	1453	386	45	1206	252	88
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	98	98	4	106	17	17
g / C, Green / Cycle	0.76	0.76	0.03	0.81	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.94	0.26	0.03	0.81	0.12	0.12
s, saturation flow rate [veh/h]	1549	1479	1704	1494	1312	1596
c, Capacity [veh/h]	1170	1117	57	1214	174	211
d1, Uniform Delay [s]	15.87	5.17	62.26	11.85	55.33	55.37
k, delay calibration	0.50	0.50	0.04	0.50	0.16	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	116.01	0.85	8.38	24.33	18.42	16.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.24	0.35	0.78	0.99	0.88	0.89
d, Delay for Lane Group [s/veh]	131.89	6.02	70.64	36.18	73.75	71.73
Lane Group LOS	F	A	E	D	E	E
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	32.00	3.09	1.59	14.87	5.81	6.98
50th-Percentile Queue Length [ft/ln]	800.00	77.17	39.79	371.63	145.28	174.47
95th-Percentile Queue Length [veh/ln]	48.82	5.56	2.86	21.19	9.76	11.31
95th-Percentile Queue Length [ft/ln]	1220.58	138.90	71.61	529.71	244.11	282.78

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	131.89	6.02	70.64	36.18	73.00	71.73
Movement LOS	F	A	E	D	E	E
d_A, Approach Delay [s/veh]	105.47		37.42		72.64	
Approach LOS	F		D		E	
d_I, Intersection Delay [s/veh]	77.40					
Intersection LOS	E					
Intersection V/C	1.162					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.42
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.208
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.17	3.45	44.18
I_b,int, Bicycle LOS Score for Intersection	3.077	2.592	2.121
Bicycle LOS	C	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	134.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.249

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐			⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	143	1593	333	40	1302	7	23	109	332	293	89	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	143	1593	333	40	1302	7	23	109	288	293	89	70
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	424	89	11	346	2	6	29	77	78	24	19
Total Analysis Volume [veh/h]	152	1695	354	43	1385	7	24	116	306	312	95	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			3			3	
v_di, Inbound Pedestrian Volume crossing in		3			3			2			2	
v_co, Outbound Pedestrian Volume crossing		8			12			7			11	
v_ci, Inbound Pedestrian Volume crossing mi		7			11			8			12	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			1			5			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	60	60	4	51	51	31	31	31	20	20	20
g / C, Green / Cycle	0.10	0.46	0.46	0.03	0.40	0.40	0.24	0.24	0.24	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.09	0.40	0.41	0.02	0.61	0.61	0.02	0.07	0.23	0.20	0.12	0.11
s, saturation flow rate [veh/h]	1781	3455	1635	1781	1491	780	1420	1577	1318	1536	800	668
c, Capacity [veh/h]	176	1605	760	55	591	309	334	371	310	236	123	103
d1, Uniform Delay [s]	57.69	30.94	31.74	62.54	39.22	39.22	38.65	41.01	48.97	55.02	52.85	51.88
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.26	0.13	0.23	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.17	6.09	14.65	8.43	253.81	261.28	0.03	0.18	33.48	152.98	19.05	14.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.86	0.89	0.78	1.55	1.55	0.07	0.31	0.99	1.32	0.77	0.72
d, Delay for Lane Group [s/veh]	62.85	37.03	46.39	70.97	293.03	300.51	38.68	41.19	82.44	208.00	71.90	66.61
Lane Group LOS	E	D	D	E	F	F	D	D	F	F	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.11	19.62	21.51	1.55	30.21	32.28	0.61	3.11	12.63	8.87	3.63	2.70
50th-Percentile Queue Length [ft/ln]	127.63	490.50	537.67	38.85	755.34	807.07	15.16	77.80	315.72	221.75	90.86	67.55
95th-Percentile Queue Length [veh/ln]	8.81	26.88	29.11	2.80	49.21	52.28	1.09	5.60	18.46	15.29	6.54	4.86
95th-Percentile Queue Length [ft/ln]	220.27	672.11	727.81	69.93	1230.37	1306.99	27.28	140.04	461.43	382.24	163.54	121.60

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	62.85	38.81	46.39	70.97	295.58	300.51	38.68	41.19	82.44	208.00	71.90	66.61
Movement LOS	E	D	D	E	F	F	D	D	F	F	E	E
d_A, Approach Delay [s/veh]	41.69			288.87			69.36			159.37		
Approach LOS	D			F			E			F		
d_I, Intersection Delay [s/veh]	134.53											
Intersection LOS	F											
Intersection V/C	1.249											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.402	2.991	2.393	2.568
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.33	21.07	38.56	50.34
I_b,int, Bicycle LOS Score for Intersection	2.770	2.349	2.368	2.409
Bicycle LOS	C	B	B	B

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	57.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.049

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩ ↑		↑↩		↩↪	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1266	1203	594	406	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1266	1203	295	406	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	317	301	74	102	0
Total Analysis Volume [veh/h]	65	1266	1203	295	406	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	5	45	36	36	36	36
g / C, Green / Cycle	0.06	0.49	0.40	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.48	0.43	0.24	0.44	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1229	928	1597
c, Capacity [veh/h]	78	1296	1101	489	369	635
d1, Uniform Delay [s]	42.15	22.35	27.29	21.49	27.29	0.00
k, delay calibration	0.04	0.19	0.15	0.19	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.15	11.00	47.06	2.09	77.03	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	0.98	1.09	0.60	1.10	0.00
d, Delay for Lane Group [s/veh]	50.30	33.35	74.35	23.58	104.32	0.00
Lane Group LOS	D	C	F	C	F	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.60	14.02	18.18	4.92	15.38	0.00
50th-Percentile Queue Length [ft/ln]	39.96	350.43	454.44	122.99	384.57	0.00
95th-Percentile Queue Length [veh/ln]	2.88	20.16	26.71	8.56	23.22	0.00
95th-Percentile Queue Length [ft/ln]	71.92	503.94	667.65	213.93	580.55	0.00



**Movement, Approach, & Intersection Results**

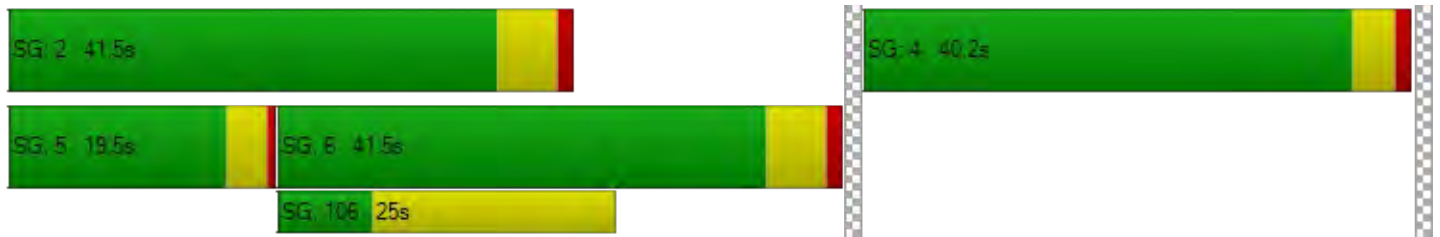
d_M, Delay for Movement [s/veh]	50.30	33.35	74.35	23.58	104.32	0.00
Movement LOS	D	C	F	C	F	A
d_A, Approach Delay [s/veh]	34.18		64.35		104.32	
Approach LOS	C		E		F	
d_I, Intersection Delay [s/veh]	56.95					
Intersection LOS	E					
Intersection V/C	1.049					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.91
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.421
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	796	796	796
d_b, Bicycle Delay [s]	16.41	16.42	16.41
I_b,int, Bicycle LOS Score for Intersection	2.658	3.042	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	71.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.958

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	22	899	7	36	924	108	67	7	32	59	11	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0
Total Hourly Volume [veh/h]	22	899	7	36	924	108	67	7	26	59	11	174
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	234	2	9	241	28	17	2	7	15	3	45
Total Analysis Volume [veh/h]	23	936	7	38	963	113	70	7	27	61	11	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing in	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			6			2		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	163	163	163	163	163	163	163	163	163	163
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	4	97	97	7	100	13	13	13	28	28
g / C, Green / Cycle	0.02	0.59	0.59	0.04	0.61	0.08	0.08	0.08	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.28	0.04	0.70	0.03	0.03	0.02	0.06	0.16
s, saturation flow rate [veh/h]	952	1445	1895	952	1537	952	1386	1330	952	1206
c, Capacity [veh/h]	23	858	1125	41	942	77	112	108	163	207
d1, Uniform Delay [s]	79.59	18.76	18.77	77.72	31.56	71.22	71.21	70.04	59.84	66.61
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.34
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	87.14	0.88	0.67	46.23	76.81	3.41	2.34	1.20	1.42	36.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.00	0.48	0.48	0.92	1.14	0.41	0.41	0.25	0.37	0.93
d, Delay for Lane Group [s/veh]	166.73	19.64	19.44	123.95	108.37	74.63	73.54	71.24	61.25	103.19
Lane Group LOS	F	B	B	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.54	9.14	11.92	2.14	56.21	1.36	1.94	1.12	2.34	10.06
50th-Percentile Queue Length [ft/ln]	38.39	228.43	298.11	53.53	1405.22	34.04	48.49	28.10	58.41	251.53
95th-Percentile Queue Length [veh/ln]	2.76	14.09	17.59	3.85	76.51	2.45	3.49	2.02	4.21	15.26
95th-Percentile Queue Length [ft/ln]	69.11	352.36	439.69	96.36	1912.71	61.26	87.28	50.58	105.15	381.58

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	166.73	19.52	19.44	123.95	108.37	108.37	74.04	73.54	71.24	61.25	103.19	103.19
Movement LOS	F	B	B	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	23.03			108.90			73.27			93.08		
Approach LOS	C			F			E			F		
d_I, Intersection Delay [s/veh]	71.70											
Intersection LOS	E											
Intersection V/C	0.958											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	70.86			70.86			70.86			70.86		
I_p,int, Pedestrian LOS Score for Intersection	2.570			2.793			2.189			2.051		
Crosswalk LOS	B			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	245			245			368			368		
d_b, Bicycle Delay [s]	62.78			62.74			54.41			54.30		
I_b,int, Bicycle LOS Score for Intersection	2.357			3.398			1.741			1.977		
Bicycle LOS	B			C			A			A		

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	25.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.841

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	29	783	7	4	878	120	222	6	59	1	2	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.70	0.00	0.00	3.90	3.30	1.00	0.00	0.00	0.00	0.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	783	7	4	878	120	222	6	59	1	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	206	2	1	231	32	58	2	16	0	1	2
Total Analysis Volume [veh/h]	31	824	7	4	924	126	234	6	62	1	2	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing in	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			2			13			1		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	109	109	109	109	109	109	41	41	41	0	41	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	108	108	108	108	34	34
g / C, Green / Cycle	0.72	0.72	0.72	0.72	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.06	0.46	0.01	0.58	0.22	0.01
s, saturation flow rate [veh/h]	526	1826	671	1797	1391	1729
c, Capacity [veh/h]	212	1310	364	1290	360	420
d1, Uniform Delay [s]	37.74	10.98	21.11	14.39	56.75	44.96
k, delay calibration	0.50	0.50	0.50	0.50	0.37	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.45	2.35	0.05	5.73	15.94	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.15	0.63	0.01	0.81	0.84	0.02
d, Delay for Lane Group [s/veh]	39.18	13.33	21.16	20.11	72.69	44.98
Lane Group LOS	D	B	C	C	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.94	14.77	0.08	24.53	12.87	0.27
50th-Percentile Queue Length [ft/ln]	23.57	369.33	2.07	613.29	321.74	6.73
95th-Percentile Queue Length [veh/ln]	1.70	21.08	0.15	32.65	18.75	0.48
95th-Percentile Queue Length [ft/ln]	42.42	526.92	3.72	816.36	468.82	12.12

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.18	13.33	13.33	21.16	20.11	20.11	72.69	72.69	72.69	44.98	44.98	44.98
Movement LOS	D	B	B	C	C	C	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	14.26			20.12			72.69			44.98		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	25.08											
Intersection LOS	C											
Intersection V/C	0.841											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.39			64.39			64.39			64.39		
I_p,int, Pedestrian LOS Score for Intersection	2.467			2.986			2.008			1.755		
Crosswalk LOS	B			C			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1399			1399			492			492		
d_b, Bicycle Delay [s]	6.79			6.78			42.90			42.65		
I_b,int, Bicycle LOS Score for Intersection	2.982			3.299			2.058			1.574		
Bicycle LOS	C			C			B			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	20.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	7	692	93	52	919	0	20	82	11	97	94	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.20	10.00	7.40	3.60	0.00	2.70	0.00	0.00	2.60	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	692	93	52	919	0	20	82	11	97	94	93
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	188	25	14	250	0	5	22	3	26	26	25
Total Analysis Volume [veh/h]	8	752	101	57	999	0	22	89	12	105	102	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		6			4			6			3	
v_di, Inbound Pedestrian Volume crossing in		6			3			6			4	
v_co, Outbound Pedestrian Volume crossing		0			2			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			2			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		9			12			11			11	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	116	116	116	116	116	116	34	34	34	0	34	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	117	117	117	117	25	25	25	25
g / C, Green / Cycle	0.78	0.78	0.78	0.78	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.48	0.09	0.54	0.02	0.05	0.08	0.12
s, saturation flow rate [veh/h]	573	1778	619	1846	1169	1839	1258	1709
c, Capacity [veh/h]	341	1386	399	1439	92	305	176	283
d1, Uniform Delay [s]	18.08	7.00	15.42	7.94	70.77	55.18	66.03	59.18
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	2.05	0.75	2.78	1.33	0.63	3.24	4.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.02	0.62	0.14	0.69	0.24	0.33	0.60	0.72
d, Delay for Lane Group [s/veh]	18.21	9.05	16.17	10.73	72.10	55.82	69.27	63.89
Lane Group LOS	B	A	B	B	E	E	E	E
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	11.47	1.05	15.29	0.87	3.48	4.14	7.76
50th-Percentile Queue Length [ft/ln]	3.88	286.63	26.14	382.30	21.84	87.10	103.56	194.12
95th-Percentile Queue Length [veh/ln]	0.28	17.02	1.88	21.71	1.57	6.27	7.46	12.33
95th-Percentile Queue Length [ft/ln]	6.98	425.45	47.05	542.63	39.31	156.77	186.41	308.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	18.21	9.05	9.05	16.17	10.73	10.73	72.10	55.82	55.82	69.27	63.89	63.89
Movement LOS	B	A	A	B	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	9.14			11.02			58.73			65.72		
Approach LOS	A			B			E			E		
d_I, Intersection Delay [s/veh]	20.00											
Intersection LOS	C											
Intersection V/C	0.692											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.38			64.38			64.38			64.38		
I_p,int, Pedestrian LOS Score for Intersection	2.649			2.579			2.039			2.196		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1493			1493			399			399		
d_b, Bicycle Delay [s]	4.85			4.86			48.32			48.32		
I_b,int, Bicycle LOS Score for Intersection	2.980			3.302			1.763			2.068		
Bicycle LOS	C			C			A			B		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	62.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	27	271	133	374	122	446	125	344	170	352	347	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	3.60	2.60	2.70	3.80	2.50	0.50	5.50	5.30	3.70	13.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	119	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	27	271	14	374	122	0	125	344	170	352	347	20
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	71	4	97	32	0	33	90	44	92	90	5
Total Analysis Volume [veh/h]	28	282	15	390	127	0	130	358	177	367	361	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		10			2			10			2	
v_di, Inbound Pedestrian Volume crossing in		10			2			10			2	
v_co, Outbound Pedestrian Volume crossing		5			3			2			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			2			3			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		29			22			6			20	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			Yes	
Maximum Recall		No			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	26	26	26	61	61	61	19	19	19	19	25	25	25
g / C, Green / Cycle	0.17	0.17	0.17	0.41	0.41	0.41	0.13	0.13	0.13	0.13	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.15	0.01	0.14	0.14	0.00	0.07	0.10	0.10	0.11	0.14	0.14	0.15
s, saturation flow rate [veh/h]	1810	1825	1442	1772	1813	1567	1774	1892	1850	1487	1734	1804	1636
c, Capacity [veh/h]	313	316	250	726	743	642	223	237	232	187	293	305	276
d1, Uniform Delay [s]	52.04	60.60	51.73	30.51	30.51	0.00	61.84	63.71	63.76	63.82	60.50	60.48	60.58
k, delay calibration	0.11	0.30	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.13	0.14	0.14	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	20.17	0.10	1.34	1.31	0.00	2.42	6.26	6.72	11.82	9.03	8.62	10.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.09	0.89	0.06	0.35	0.35	0.00	0.58	0.80	0.81	0.85	0.86	0.85	0.86
d, Delay for Lane Group [s/veh]	52.17	80.78	51.83	31.85	31.82	0.00	64.26	69.97	70.48	75.64	69.53	69.10	70.78
Lane Group LOS	D	F	D	C	C	A	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.91	12.29	0.48	6.83	6.98	0.00	4.85	7.50	7.41	6.50	10.02	10.38	9.63
50th-Percentile Queue Length [ft/ln]	22.69	307.27	12.12	170.70	174.43	0.00	121.3	187.5	185.3	162.4	250.49	259.39	240.78
95th-Percentile Queue Length [veh/ln]	1.63	18.04	0.87	11.11	11.31	0.00	8.47	12.00	11.88	10.68	15.21	15.66	14.72
95th-Percentile Queue Length [ft/ln]	40.84	451.01	21.81	277.84	282.73	0.00	211.6	299.8	296.9	266.9	380.27	391.45	368.02

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.17	80.78	51.83	31.84	31.82	0.00	64.26	70.21	75.64	69.39	70.11	70.78
Movement LOS	D	F	D	C	C	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	76.97			31.83			70.34			69.78		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	62.29											
Intersection LOS	E											
Intersection V/C	0.581											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.45	63.45	63.45	63.45
l_p,int, Pedestrian LOS Score for Intersection	2.500	4.289	4.313	2.740
Crosswalk LOS	B	E	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	458
d_b, Bicycle Delay [s]	49.74	39.79	50.30	45.04
l_b,int, Bicycle LOS Score for Intersection	2.292	4.063	2.933	2.178
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road and US 101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.907

**Intersection Setup**

Name	Marsh Road		Marsh Road			
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road			
Base Volume Input [veh/h]	1573	0	0	858	771	971
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1573	0	0	858	771	971
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	405	0	0	221	199	250
Total Analysis Volume [veh/h]	1622	0	0	885	795	1001
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.46	0.26	0.23	0.36
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	12.35	8.87	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.09
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.06	0.66	0.23	22.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.78	0.43	0.66	1.03
d, Delay for Lane Group [s/veh]	15.41	9.53	22.10	48.48
Lane Group LOS	B	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.19	3.84	6.00	11.63
50th-Percentile Queue Length [ft/ln]	254.74	95.95	149.89	290.76
95th-Percentile Queue Length [veh/ln]	15.42	6.91	10.01	17.59
95th-Percentile Queue Length [ft/ln]	385.62	172.71	250.29	439.80

**Movement, Approach, & Intersection Results**

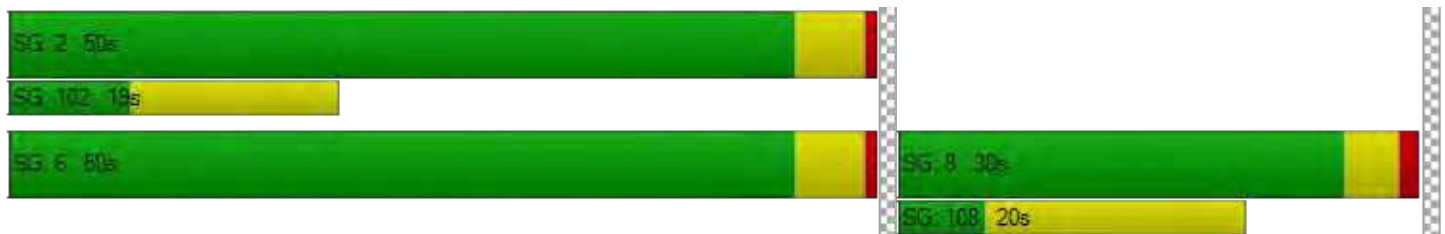
d_M, Delay for Movement [s/veh]	15.41	0.00	0.00	9.53	22.10	48.48
Movement LOS	B			A	C	F
d_A, Approach Delay [s/veh]	15.41		9.53		36.81	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	23.13					
Intersection LOS	C					
Intersection V/C	0.907					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.982	2.562
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	2.898	2.290	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	10.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.351

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	210	10	50	98	24	37	41	23	22	51	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	210	10	50	98	24	37	41	23	22	51	131
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	55	3	16	31	8	12	13	7	6	14	36
Total Analysis Volume [veh/h]	14	219	10	63	123	30	47	52	29	24	56	144
Pedestrian Volume [ped/h]	3			3			9			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	692	689	659	719
Degree of Utilization, x	0.35	0.31	0.19	0.31

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	1.58	1.34	0.72	1.33
95th-Percentile Queue Length [ft]	39.48	33.55	17.88	33.28
Approach Delay [s/veh]	10.99	10.61	9.77	10.27
Approach LOS	B	B	A	B
Intersection Delay [s/veh]	10.50			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	52.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	978	10	30	7	8	323	296	1931	460	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	978	10	30	7	8	323	296	1931	460	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	255	3	8	2	2	84	77	503	120	9
Total Analysis Volume [veh/h]	169	28	1019	10	31	7	8	336	308	2011	479	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			1			1			0	
v_di, Inbound Pedestrian Volume crossing in		0			1			1			0	
v_co, Outbound Pedestrian Volume crossing		0			22			0			22	
v_ci, Inbound Pedestrian Volume crossing mi		0			22			0			22	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			13			25			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	69	11	11	0	32	25	32	48	32	48	69	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	19	87	29	29	36	36	36	67	67
g / C, Green / Cycle	0.12	0.55	0.18	0.18	0.22	0.22	0.22	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.25	0.01	0.01	0.11	0.11	0.21	0.40	0.29
s, saturation flow rate [veh/h]	1822	4114	1863	1610	1623	1480	1444	5075	1794
c, Capacity [veh/h]	212	2153	339	293	363	331	323	2121	750
d1, Uniform Delay [s]	70.05	24.10	54.28	54.32	54.19	54.19	60.65	44.89	37.99
k, delay calibration	0.50	0.50	0.04	0.04	0.11	0.11	0.30	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	45.94	0.75	0.03	0.04	1.04	1.14	28.56	10.63	5.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.47	0.07	0.08	0.50	0.49	0.95	0.95	0.69
d, Delay for Lane Group [s/veh]	115.99	24.85	54.31	54.36	55.24	55.34	89.21	55.52	43.04
Lane Group LOS	F	C	D	D	E	E	F	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.75	8.40	0.86	0.78	6.50	5.94	14.82	27.59	17.60
50th-Percentile Queue Length [ft/ln]	268.63	209.88	21.43	19.47	162.55	148.44	370.44	689.70	440.00
95th-Percentile Queue Length [veh/ln]	16.12	13.15	1.54	1.40	10.68	9.93	21.13	36.20	24.48
95th-Percentile Queue Length [ft/ln]	403.03	328.68	38.58	35.04	267.09	248.34	528.27	905.05	612.00



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	115.99	115.99	24.85	54.31	54.34	54.36	55.24	55.29	89.21	55.52	43.04	43.04
Movement LOS	F	F	C	D	D	D	E	E	F	E	D	D
d_A, Approach Delay [s/veh]	39.61			54.33			71.31			52.98		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	52.03											
Intersection LOS	D											
Intersection V/C	0.814											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.478			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			555			791		
d_b, Bicycle Delay [s]	73.76			54.89			42.29			29.24		
I_b,int, Bicycle LOS Score for Intersection	3.566			1.599			2.098			5.726		
Bicycle LOS	D			A			B			F		

**Sequence**

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	63.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.511

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1149	623	0	1325	861	0	0	0	689	0	391
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	3.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1149	623	0	1325	861	0	0	0	689	0	391
Peak Hour Factor	1.0000	0.9700	1.0000	1.0000	0.9700	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	296	156	0	341	222	0	0	0	172	0	109
Total Analysis Volume [veh/h]	0	1185	623	0	1366	888	0	0	0	689	0	434
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	52	52	52		20	20
g / C, Green / Cycle	0.65	0.65	0.65		0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.23	0.27	1.01		0.20	0.15
s, saturation flow rate [veh/h]	5053	5053	877		3514	2859
c, Capacity [veh/h]	3289	3289	571		874	711
d1, Uniform Delay [s]	6.35	6.66	13.41		28.00	26.54
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.31	0.39	258.24		1.62	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.36	0.42	1.55		0.79	0.61
d, Delay for Lane Group [s/veh]	6.66	7.05	271.66		29.63	27.39
Lane Group LOS	A	A	F		C	C
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	2.61	3.16	48.65		6.10	3.61
50th-Percentile Queue Length [ft/ln]	65.21	78.98	1216.13		152.50	90.21
95th-Percentile Queue Length [veh/ln]	4.70	5.69	79.20		10.15	6.49
95th-Percentile Queue Length [ft/ln]	117.38	142.17	1980.03		253.76	162.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	6.66	0.00	0.00	7.05	271.66	0.00	0.00	0.00	29.63	0.00	27.39
Movement LOS		A			A	F				C		C
d_A, Approach Delay [s/veh]	6.66			111.30			0.00			28.76		
Approach LOS	A			F			A			C		
d_I, Intersection Delay [s/veh]	63.80											
Intersection LOS	E											
Intersection V/C	1.511											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.005	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.10	12.07	39.95	12.06
I_b,int, Bicycle LOS Score for Intersection	2.211	2.799	4.132	1.560
Bicycle LOS	B	C	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	120.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.535

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1252	574	0	1760	424	0	0	0	501	0	789
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	2.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1252	574	0	1760	424	0	0	0	501	0	789
Peak Hour Factor	1.0000	0.9700	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	323	148	0	454	106	0	0	0	125	0	219
Total Analysis Volume [veh/h]	0	1291	592	0	1814	424	0	0	0	501	0	877
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			3			0			1		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	L	R
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	36	36	36
g / C, Green / Cycle	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.26	0.38	0.67	0.14	0.56
s, saturation flow rate [veh/h]	5012	1551	2715	3514	1567
c, Capacity [veh/h]	2253	697	1220	1582	706
d1, Uniform Delay [s]	16.29	19.27	21.97	14.06	21.71
k, delay calibration	0.50	0.50	0.50	0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.07	12.31	223.45	0.11	113.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.85	1.49	0.32	1.24
d, Delay for Lane Group [s/veh]	17.36	31.58	245.42	14.17	135.26
Lane Group LOS	B	C	F	B	F
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.63	11.18	32.14	2.75	17.05
50th-Percentile Queue Length [ft/ln]	140.75	279.60	803.38	68.69	426.36
95th-Percentile Queue Length [veh/ln]	9.52	16.67	51.81	4.95	27.23
95th-Percentile Queue Length [ft/ln]	238.03	416.72	1295.25	123.64	680.73

**Movement, Approach, & Intersection Results**

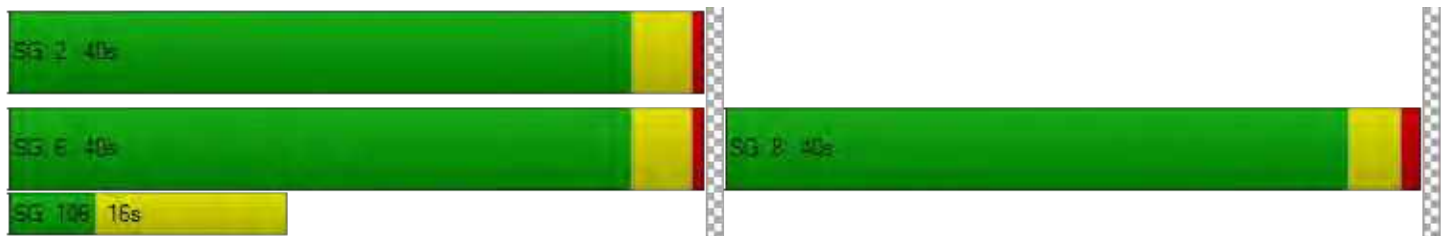
d_M, Delay for Movement [s/veh]	0.00	17.36	31.58	0.00	245.42	0.00	0.00	0.00	0.00	14.17	0.00	135.26
Movement LOS		B	C		F					B		F
d_A, Approach Delay [s/veh]	21.83		245.42			0.00			91.23			
Approach LOS	C		F			A			F			
d_I, Intersection Delay [s/veh]	120.59											
Intersection LOS	F											
Intersection V/C	1.535											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.09	12.08	39.95	12.07
I_b,int, Bicycle LOS Score for Intersection	2.595	2.557	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	208	258	1569	537	481	1963
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	258	1569	537	481	1963
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	68	413	141	127	517
Total Analysis Volume [veh/h]	219	272	1652	565	506	2066
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	34	34	60	60
g / C, Green / Cycle	0.22	0.22	0.38	0.38	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.06	0.21	0.33	0.37	0.59	0.41
s, saturation flow rate [veh/h]	3420	1320	4967	1547	858	5020
c, Capacity [veh/h]	762	294	1887	588	601	3347
d1, Uniform Delay [s]	28.94	34.11	25.84	27.16	22.80	8.47
k, delay calibration	0.04	0.36	0.04	0.14	0.48	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	29.19	0.53	12.12	12.96	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.29	0.92	0.88	0.96	0.84	0.62
d, Delay for Lane Group [s/veh]	29.01	63.30	26.37	39.28	35.76	8.54
Lane Group LOS	C	E	C	D	D	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.93	8.02	9.70	12.35	5.56	5.57
50th-Percentile Queue Length [ft/ln]	48.34	200.61	242.60	308.66	139.02	139.23
95th-Percentile Queue Length [veh/ln]	3.48	12.67	14.81	18.11	9.43	9.44
95th-Percentile Queue Length [ft/ln]	87.01	316.76	370.32	452.72	235.70	235.98

**Movement, Approach, & Intersection Results**

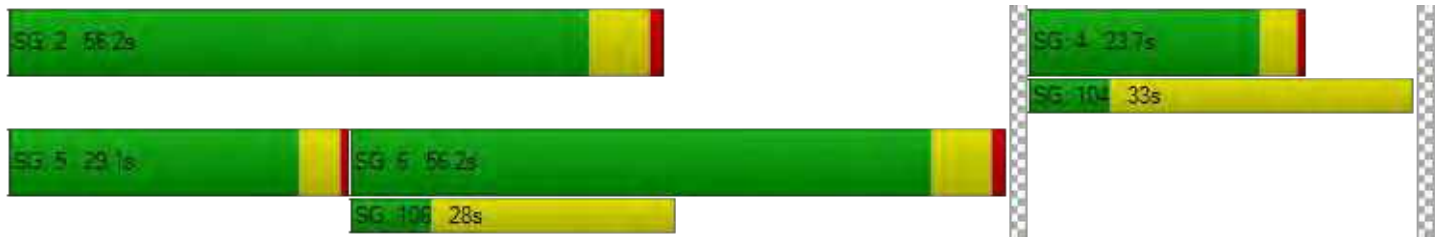
d_M, Delay for Movement [s/veh]	29.01	63.30	26.37	39.28	35.76	8.54
Movement LOS	C	E	C	D	D	A
d_A, Approach Delay [s/veh]	48.01		29.66		13.89	
Approach LOS	D		C		B	
d_I, Intersection Delay [s/veh]	23.68					
Intersection LOS	C					
Intersection V/C	0.830					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.49	34.49	34.49
I_p,int, Pedestrian LOS Score for Intersection	2.995	3.639	3.533
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	446	1116	1116
d_b, Bicycle Delay [s]	27.05	8.76	8.76
I_b,int, Bicycle LOS Score for Intersection	1.560	2.779	2.974
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	186	70	1569	137	143	2068
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	70	1569	137	143	2068
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	18	404	35	37	533
Total Analysis Volume [veh/h]	192	72	1618	141	147	2132
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	5	5	13	13	4	21
g / C, Green / Cycle	0.13	0.13	0.36	0.36	0.11	0.58
(v / s)_i Volume / Saturation Flow Rate	0.06	0.05	0.33	0.09	0.08	0.42
s, saturation flow rate [veh/h]	3173	1509	4959	1492	1810	5024
c, Capacity [veh/h]	401	191	1810	545	193	2924
d1, Uniform Delay [s]	15.04	14.84	11.09	8.23	16.10	5.62
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.33	0.46	0.66	0.09	2.36	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	0.38	0.89	0.26	0.76	0.73
d, Delay for Lane Group [s/veh]	15.37	15.30	11.75	8.33	18.46	5.76
Lane Group LOS	B	B	B	A	B	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.66	0.50	2.48	0.47	1.02	0.94
50th-Percentile Queue Length [ft/ln]	16.57	12.53	62.06	11.86	25.60	23.57
95th-Percentile Queue Length [veh/ln]	1.19	0.90	4.47	0.85	1.84	1.70
95th-Percentile Queue Length [ft/ln]	29.83	22.55	111.71	21.34	46.09	42.42

**Movement, Approach, & Intersection Results**

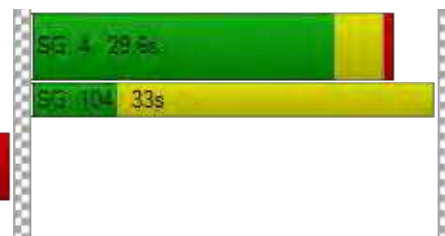
d_M, Delay for Movement [s/veh]	15.37	15.30	11.75	8.33	18.46	5.76
Movement LOS	B	B	B	A	B	A
d_A, Approach Delay [s/veh]	15.35		11.48		6.58	
Approach LOS	B		B		A	
d_I, Intersection Delay [s/veh]	9.12					
Intersection LOS	A					
Intersection V/C	0.641					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	9.12	9.12	9.12
I_p,int, Pedestrian LOS Score for Intersection	2.189	3.418	3.369
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1353	2706	2706
d_b, Bicycle Delay [s]	1.93	2.30	2.30
I_b,int, Bicycle LOS Score for Intersection	1.560	2.527	2.813
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 199: Bayfront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	7.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

**Intersection Setup**

Name	Bldg 21		Bayfront Expwy		Bayfront Expwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑⇐		⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	48	37	1068	288	179	2198
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	35.50	35.50	11.60	11.60	4.40	4.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	37	1068	288	179	2198
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	10	278	75	47	572
Total Analysis Volume [veh/h]	50	39	1113	300	186	2290
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	25	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	31	31	31	31	31	31
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	3	3	10	10	18	18
g / C, Green / Cycle	0.09	0.09	0.33	0.33	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.04	0.04	0.26	0.23	0.12	0.51
s, saturation flow rate [veh/h]	1172	1058	4231	1320	1605	4496
c, Capacity [veh/h]	105	95	1384	432	1175	2657
d1, Uniform Delay [s]	13.36	13.40	9.52	9.08	3.84	5.28
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.04	1.29	0.43	0.75	0.02	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.43	0.46	0.80	0.69	0.16	0.86
d, Delay for Lane Group [s/veh]	14.40	14.69	9.95	9.84	3.86	5.62
Lane Group LOS	B	B	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.26	0.26	1.16	0.95	0.00	0.08
50th-Percentile Queue Length [ft/ln]	6.56	6.46	29.08	23.64	0.09	2.07
95th-Percentile Queue Length [veh/ln]	0.47	0.47	2.09	1.70	0.01	0.15
95th-Percentile Queue Length [ft/ln]	11.80	11.63	52.35	42.55	0.17	3.72

**Movement, Approach, & Intersection Results**

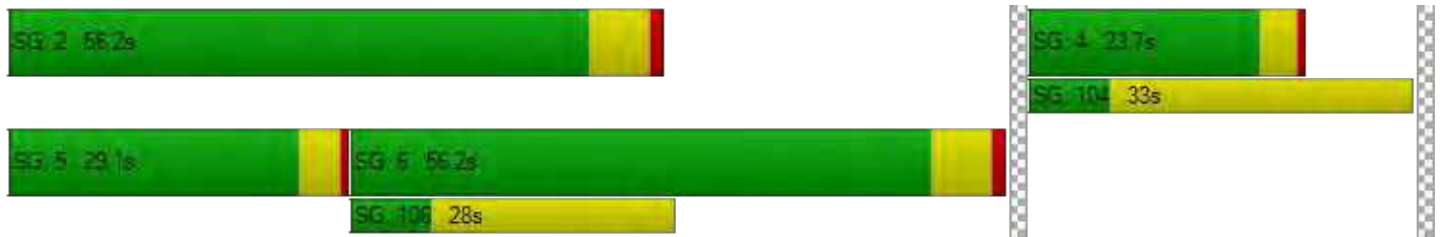
d_M, Delay for Movement [s/veh]	14.43	14.69	9.95	9.84	3.86	5.62
Movement LOS	B	B	A	A	A	A
d_A, Approach Delay [s/veh]	14.54		9.92		5.49	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	7.27					
Intersection LOS	A					
Intersection V/C	0.778					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	6.38	6.38	6.38
I_p,int, Pedestrian LOS Score for Intersection	2.306	3.310	3.320
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1297	3243	3243
d_b, Bicycle Delay [s]	1.90	5.96	5.96
I_b,int, Bicycle LOS Score for Intersection	1.706	2.337	2.921
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	201	114	9	321	159	18
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	201	114	9	321	159	18
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	32	3	91	45	5
Total Analysis Volume [veh/h]	228	130	10	365	181	20
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	738	711	615
Degree of Utilization, x	0.49	0.53	0.33

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	2.68	3.12	1.42
95th-Percentile Queue Length [ft]	66.93	77.96	35.43
Approach Delay [s/veh]	12.39	13.58	11.67
Approach LOS	B	B	B
Intersection Delay [s/veh]	12.71		
Intersection LOS	B		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	7.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

**Intersection Setup**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	980.00	760.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	

**Volumes**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Base Volume Input [veh/h]	0	35	922	170	63	2486
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	88.60	11.70	11.70	6.30	6.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	35	922	170	63	2486
Peak Hour Factor	0.9500	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	9	245	45	17	661
Total Analysis Volume [veh/h]	0	37	981	181	67	2645
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	25	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	59	59	59	59	59
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	3	38	38	46	46
g / C, Green / Cycle	0.05	0.65	0.65	0.78	0.78
(v / s)_i Volume / Saturation Flow Rate	0.08	0.23	0.14	0.11	0.60
s, saturation flow rate [veh/h]	436	4227	1319	633	4426
c, Capacity [veh/h]	22	2742	856	617	3467
d1, Uniform Delay [s]	28.12	4.76	4.23	1.84	3.45
k, delay calibration	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	337.17	0.03	0.05	0.03	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.72	0.36	0.21	0.11	0.76
d, Delay for Lane Group [s/veh]	365.28	4.79	4.28	1.87	3.59
Lane Group LOS	F	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.32	0.94	0.47	0.00	0.04
50th-Percentile Queue Length [ft/ln]	58.11	23.45	11.73	0.12	1.07
95th-Percentile Queue Length [veh/ln]	4.18	1.69	0.84	0.01	0.08
95th-Percentile Queue Length [ft/ln]	104.59	42.21	21.11	0.22	1.93



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	365.28	4.79	4.28	1.87	3.59
Movement LOS		F	A	A	A	A
d_A, Approach Delay [s/veh]	365.28		4.71		3.55	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	7.31					
Intersection LOS	A					
Intersection V/C	0.805					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	19.54	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.366	0.000
Crosswalk LOS	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	678	1694	1694
d_b, Bicycle Delay [s]	12.90	0.69	0.69
I_b,int, Bicycle LOS Score for Intersection	1.560	2.199	3.051
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	24.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.527

**Intersection Setup**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	86	289	143	556	215	423	70	7	73	30	17	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	86	289	143	556	215	423	70	7	73	30	17	61
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	74	36	142	55	108	18	2	19	8	4	16
Total Analysis Volume [veh/h]	88	295	146	567	219	432	71	7	74	31	17	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing in	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing mi	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	37	35	0	33	31	0	0	31	31	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	20	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	69	69	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	25	15	35	9	9	4	4
g / C, Green / Cycle	0.07	0.36	0.21	0.51	0.13	0.13	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.17	0.39	0.04	0.05	0.03	0.03
s, saturation flow rate [veh/h]	1767	1665	3431	1661	1774	1452	1761	1577
c, Capacity [veh/h]	117	605	720	842	236	193	112	100
d1, Uniform Delay [s]	31.91	19.17	26.00	13.89	27.36	27.45	31.50	31.57
k, delay calibration	0.11	0.17	0.11	0.38	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.28	2.62	1.95	5.31	0.81	1.25	3.45	4.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	0.73	0.79	0.77	0.33	0.38	0.50	0.54
d, Delay for Lane Group [s/veh]	41.19	21.78	27.96	19.20	28.18	28.70	34.96	35.94
Lane Group LOS	D	C	C	B	C	C	C	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.70	6.07	4.39	8.32	1.18	1.14	0.99	0.97
50th-Percentile Queue Length [ft/ln]	42.56	151.71	109.77	208.07	29.56	28.54	24.74	24.13
95th-Percentile Queue Length [veh/ln]	3.06	10.11	7.83	13.05	2.13	2.05	1.78	1.74
95th-Percentile Queue Length [ft/ln]	76.60	252.71	195.69	326.35	53.21	51.37	44.53	43.43

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	41.19	21.78	21.78	27.96	19.20	19.20	28.18	28.18	28.70	34.96	34.96	35.83
Movement LOS	D	C	C	C	B	B	C	C	C	C	C	D
d_A, Approach Delay [s/veh]	25.01			23.28			28.43			35.44		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	24.79											
Intersection LOS	C											
Intersection V/C	0.527											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.57	24.57	24.57	24.57
I_p,int, Pedestrian LOS Score for Intersection	2.203	2.607	2.150	2.319
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	778	778	778
d_b, Bicycle Delay [s]	10.62	12.95	12.95	12.95
I_b,int, Bicycle LOS Score for Intersection	2.432	3.569	1.810	1.741
Bicycle LOS	B	D	A	A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	59.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.837

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
	24	206	57	119	291	321	47	26	101	0	153	19
Base Volume Input [veh/h]	24	206	57	119	291	321	47	26	101	0	153	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80	0.00	17.90	100.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	206	57	119	291	321	47	26	101	0	153	19
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	57	16	33	81	89	13	7	28	0	43	5
Total Analysis Volume [veh/h]	27	229	63	132	323	357	52	29	112	0	170	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		13			14			5			5	
v_di, Inbound Pedestrian Volume crossing in		14			13			5			5	
v_co, Outbound Pedestrian Volume crossing		0			1			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	25	0	0	19	0	0	46	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	76	76	76	76	76	76
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	30	30	16	19	19
g / C, Green / Cycle	0.24	0.39	0.39	0.21	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.22	0.10	0.44	0.18	0.07	0.07
s, saturation flow rate [veh/h]	1483	1357	1553	1048	1404	1278
c, Capacity [veh/h]	411	531	607	219	388	310
d1, Uniform Delay [s]	27.84	15.72	23.31	29.35	23.52	23.65
k, delay calibration	0.12	0.11	0.50	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.50	0.24	73.93	10.88	0.34	0.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.78	0.25	1.12	0.88	0.25	0.30
d, Delay for Lane Group [s/veh]	31.34	15.96	97.23	40.23	23.86	24.18
Lane Group LOS	C	B	F	D	C	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.75	1.50	22.46	3.95	1.43	1.36
50th-Percentile Queue Length [ft/ln]	143.75	37.49	561.59	98.87	35.76	34.03
95th-Percentile Queue Length [veh/ln]	9.68	2.70	32.60	7.12	2.57	2.45
95th-Percentile Queue Length [ft/ln]	242.06	67.48	815.11	177.97	64.37	61.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.34	31.34	31.34	15.96	97.23	97.23	40.23	40.23	40.23	23.86	23.99	24.18
Movement LOS	C	C	C	B	F	F	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	31.34			84.02			40.23			24.01		
Approach LOS	C			F			D			C		
d_I, Intersection Delay [s/veh]	59.78											
Intersection LOS	E											
Intersection V/C	0.837											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.99	27.99	27.99	27.99
I_p,int, Pedestrian LOS Score for Intersection	2.169	2.225	2.019	2.201
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1099	550	393	1099
d_b, Bicycle Delay [s]	7.74	20.09	24.67	7.74
I_b,int, Bicycle LOS Score for Intersection	2.086	2.899	1.878	1.717
Bicycle LOS	B	C	A	A

**Sequence**




Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.108

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	29	74	89	81	277	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	74	89	81	277	28
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	24	29	26	90	9
Total Analysis Volume [veh/h]	38	96	116	105	360	36
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.11	0.15	0.10	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	17.57	12.73	8.50	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.00	1.00	0.34	0.34	0.00	0.00
95th-Percentile Queue Length [ft/ln]	24.96	24.96	8.43	8.43	0.00	0.00
d_A, Approach Delay [s/veh]	14.10		4.46		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.83					
Intersection LOS	C					

**Intersection Level Of Service Report  
Intersection 265: Adam Court/Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	39	42	60	103	13	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.50	12.50	15.60	15.60	46.80	46.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	42	60	103	13	65
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	12	18	30	4	19
Total Analysis Volume [veh/h]	46	49	71	121	15	76
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.02	0.09
d_M, Delay for Movement [s/veh]	7.82	0.00	0.00	0.00	11.55	10.07
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.11	0.11	0.00	0.00	0.40	0.40
95th-Percentile Queue Length [ft/ln]	2.70	2.70	0.00	0.00	10.02	10.02
d_A, Approach Delay [s/veh]	3.79		0.00		10.31	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.43					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 267: Willow Road(SR114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↔↑↑		↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	



**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	0	0	0	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	0	0
Maximum Green [s]	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk						
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall						
Maximum Recall						
Pedestrian Recall						
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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**Lane Group Calculations**

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**Lane Group Results**

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**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS						
d_A, Approach Delay [s/veh]	0.00		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					
Intersection V/C	0.000					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.00	45.00	45.00
I_p,int, Pedestrian LOS Score for Intersection	2.141	2.463	2.141
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
I_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560
Bicycle LOS	A	A	A

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**Intersection Level Of Service Report**  
**Intersection 269: O'Brien Drive/Loop Road**

Control Type:	Roundabout	Delay (sec / veh):	2.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	0			0			0			0		
Exiting Flow Rate [veh/h]	0			0			0			0		
Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0	0	
Adjusted Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0	0	

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.98			0.98		
Entry Flow Rate [veh/h]	0			0			0			0		
Capacity of Entry and Bypass Lanes [veh/h]	1380			1380			1380			1380		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1353			1353			1353			1353		
X, volume / capacity	0.00			0.00			0.00			0.00		

**Movement, Approach, & Intersection Results**

Lane LOS	A			A			A			A		
95th-Percentile Queue Length [veh]	0.00			0.00			0.00			0.00		
95th-Percentile Queue Length [ft]	0.00			0.00			0.00			0.00		
Approach Delay [s/veh]	2.66			2.66			2.66			2.66		
Approach LOS	A			A			A			A		
Intersection Delay [s/veh]	2.66											
Intersection LOS	A											

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12/30/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	942		1474		1224	503	4143

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	24	1159	7	448	1224	331	13	4	58	241	19	0	3528

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	133	841	83	29	1012	431	576	56	166	35	16	25	3403

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	0	810	85	310	755	66	218	66	2	40	22	202	2576

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	87	479	488	425	476	104	2059

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	6	11	9	129	28	310	21	600	114	243	683	56	2210

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84)/University Ave (SR 109)	829	84	1215	2780	329	416	5653

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	210	464	277	42	93	78	376	453	172	1142	2234	72	5613

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	110	833	73	190	1189	37	47	14	48	56	25	87	2709

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	81	1273	1273	14	11	95	2747

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1366	363	42	1134	237	83	3225

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	143	1593	333	40	1302	7	23	109	332	293	89	104	4368

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1266	1203	594	406	60	3594

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	22	899	7	36	924	108	67	7	32	59	11	174	2346

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	29	783	7	4	878	120	222	6	59	1	2	6	2117

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	7	692	93	52	919	0	20	82	11	97	94	93	2160

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	27	271	133	374	122	446	125	344	170	352	347	20	2731

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road and US 101 NB Ramps	1573		858		771	971	4173

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	210	10	50	98	24	37	41	23	22	51	131	710

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	162	27	978	10	30	7	8	323	296	1931	460	34	4266

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	1149	623	1325	861	689	391	5038

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1252	574	1760	424	501	789	5300

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	208	258	1569	537	481	1963	5016



ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	186	70	1569	137	143	2068	4173

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	48	37	1068	288	179	2198	3818

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	201	114	9	321	159	18	822

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	35		922	170	63	2486	3676

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	86	289	143	556	215	423	70	7	73	30	17	61	1970

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	24	206	57	119	291	321	47	26	101	0	153	19	1364

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	29	74	89	81	277	28	578

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	39	42	60	103	13	65	322



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12/30/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	942		1474		1224	503	4143
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>942</b>		<b>1474</b>		<b>1224</b>	<b>503</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	24	1159	7	448	1224	331	13	4	58	241	19	0	3528
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>24</b>	<b>1159</b>	<b>7</b>	<b>448</b>	<b>1224</b>	<b>331</b>	<b>13</b>	<b>4</b>	<b>58</b>	<b>241</b>	<b>19</b>	<b>0</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	133	841	83	29	1012	431	576	56	166	35	16	25	3403
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>133</b>	<b>841</b>	<b>83</b>	<b>29</b>	<b>1012</b>	<b>431</b>	<b>576</b>	<b>56</b>	<b>166</b>	<b>35</b>	<b>16</b>	<b>25</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	Final Base	0	810	85	310	755	66	218	66	2	40	22	202	2576
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>0</b>	<b>810</b>	<b>85</b>	<b>310</b>	<b>755</b>	<b>66</b>	<b>218</b>	<b>66</b>	<b>2</b>	<b>40</b>	<b>22</b>	<b>202</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	87	479	488	425	476	104	2059
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>87</b>	<b>479</b>	<b>488</b>	<b>425</b>	<b>476</b>	<b>104</b>	<b>2059</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	Final Base	6	11	9	129	28	310	21	600	114	243	683	56	2210
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>6</b>	<b>11</b>	<b>9</b>	<b>129</b>	<b>28</b>	<b>310</b>	<b>21</b>	<b>600</b>	<b>114</b>	<b>243</b>	<b>683</b>	<b>56</b>	<b>2210</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	829	84	1215	2780	329	416	5653
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>829</b>	<b>84</b>	<b>1215</b>	<b>2780</b>	<b>329</b>	<b>416</b>	<b>5653</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	210	464	277	42	93	78	376	453	172	1142	2234	72	5613
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>210</b>	<b>464</b>	<b>277</b>	<b>42</b>	<b>93</b>	<b>78</b>	<b>376</b>	<b>453</b>	<b>172</b>	<b>1142</b>	<b>2234</b>	<b>72</b>	<b>5613</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	110	833	73	190	1189	37	47	14	48	56	25	87	2709
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>110</b>	<b>833</b>	<b>73</b>	<b>190</b>	<b>1189</b>	<b>37</b>	<b>47</b>	<b>14</b>	<b>48</b>	<b>56</b>	<b>25</b>	<b>87</b>	<b>2709</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	81	1273	1273	14	11	95	2747
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>81</b>	<b>1273</b>	<b>1273</b>	<b>14</b>	<b>11</b>	<b>95</b>	<b>2747</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1366	363	42	1134	237	83	3225
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1366</b>	<b>363</b>	<b>42</b>	<b>1134</b>	<b>237</b>	<b>83</b>	<b>3225</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	143	1593	333	40	1302	7	23	109	332	293	89	104	4368
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>143</b>	<b>1593</b>	<b>333</b>	<b>40</b>	<b>1302</b>	<b>7</b>	<b>23</b>	<b>109</b>	<b>332</b>	<b>293</b>	<b>89</b>	<b>104</b>	<b>4368</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1266	1203	594	406	60	3594
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1266</b>	<b>1203</b>	<b>594</b>	<b>406</b>	<b>60</b>	<b>3594</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	22	899	7	36	924	108	67	7	32	59	11	174	2346
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>899</b>	<b>7</b>	<b>36</b>	<b>924</b>	<b>108</b>	<b>67</b>	<b>7</b>	<b>32</b>	<b>59</b>	<b>11</b>	<b>174</b>	<b>2346</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	29	783	7	4	878	120	222	6	59	1	2	6	2117
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>29</b>	<b>783</b>	<b>7</b>	<b>4</b>	<b>878</b>	<b>120</b>	<b>222</b>	<b>6</b>	<b>59</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>2117</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	7	692	93	52	919	0	20	82	11	97	94	93	2160
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>7</b>	<b>692</b>	<b>93</b>	<b>52</b>	<b>919</b>	<b>0</b>	<b>20</b>	<b>82</b>	<b>11</b>	<b>97</b>	<b>94</b>	<b>93</b>	<b>2160</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
25	Middlefield Rd- Willow Rd	Final Base	27	271	133	374	122	446	125	344	170	352	347	20	2731	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>27</b>	<b>271</b>	<b>133</b>	<b>374</b>	<b>122</b>	<b>446</b>	<b>125</b>	<b>344</b>	<b>170</b>	<b>352</b>	<b>347</b>	<b>20</b>	<b>2731</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road and US 101 NB Ramps	Final Base	1573		858		771	971	4173
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1573</b>		<b>858</b>		<b>771</b>	<b>971</b>	<b>4173</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
131	Chilco Street/Hamilton Avenue	Final Base	13	210	10	50	98	24	37	41	23	22	51	131	710	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>210</b>	<b>10</b>	<b>50</b>	<b>98</b>	<b>24</b>	<b>37</b>	<b>41</b>	<b>23</b>	<b>22</b>	<b>51</b>	<b>131</b>	<b>710</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
163	Bayfront Expy/Marsh Rd	Final Base	162	27	978	10	30	7	8	323	296	1931	460	34	4266	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>162</b>	<b>27</b>	<b>978</b>	<b>10</b>	<b>30</b>	<b>7</b>	<b>8</b>	<b>323</b>	<b>296</b>	<b>1931</b>	<b>460</b>	<b>34</b>	<b>4266</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1149	623	1325	861	689	391	5038
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1149</b>	<b>623</b>	<b>1325</b>	<b>861</b>	<b>689</b>	<b>391</b>	<b>5038</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1252	574	1760	424	501	789	5300
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1252</b>	<b>574</b>	<b>1760</b>	<b>424</b>	<b>501</b>	<b>789</b>	<b>5300</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	208	258	1569	537	481	1963	5016
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>208</b>	<b>258</b>	<b>1569</b>	<b>537</b>	<b>481</b>	<b>1963</b>	<b>5016</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	186	70	1569	137	143	2068	4173
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>186</b>	<b>70</b>	<b>1569</b>	<b>137</b>	<b>143</b>	<b>2068</b>	<b>4173</b>



ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	Final Base	48	37	1068	288	179	2198	3818
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>48</b>	<b>37</b>	<b>1068</b>	<b>288</b>	<b>179</b>	<b>2198</b>	<b>3818</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	201	114	9	321	159	18	822
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>201</b>	<b>114</b>	<b>9</b>	<b>321</b>	<b>159</b>	<b>18</b>	<b>822</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	35	922	170	63	2486	3676	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>35</b>	<b>922</b>	<b>170</b>	<b>63</b>	<b>2486</b>	<b>3676</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	86	289	143	556	215	423	70	7	73	30	17	61	1970
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>86</b>	<b>289</b>	<b>143</b>	<b>556</b>	<b>215</b>	<b>423</b>	<b>70</b>	<b>7</b>	<b>73</b>	<b>30</b>	<b>17</b>	<b>61</b>	<b>1970</b>





## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	233	172	204	101
2	226	167	198	98
3	221	163	194	96
4	207	153	182	90
5	184	136	161	80
6	182	134	159	79
7	179	132	157	78
8	163	120	143	71
9	161	119	141	70
10	158	117	139	69
11	137	101	120	60
12	128	95	112	56
13	126	93	110	55
14	93	69	82	40
15	93	69	82	40
16	65	48	57	28
17	37	28	33	16
18	37	28	33	16
19	21	15	18	9
20	12	9	10	5
21	7	5	6	3
22	2	2	2	1
23	2	2	2	1
24	2	2	2	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	405	1	204	No	Yes	Yes	Yes	No	No	No	No	No	No
2	1	393	1	198	No	No	Yes	Yes	No	No	No	No	No	No
3	1	384	1	194	No	No	Yes	Yes	No	No	No	No	No	No
4	1	360	1	182	No	No	Yes	Yes	No	No	No	No	No	No
5	1	320	1	161	No	No	No	Yes	No	No	No	No	No	No
6	1	316	1	159	No	No	No	Yes	No	No	No	No	No	No
7	1	311	1	157	No	No	No	Yes	No	No	No	No	No	No
8	1	283	1	143	No	No	No	Yes	No	No	No	No	No	No
9	1	280	1	141	No	No	No	Yes	No	No	No	No	No	No
10	1	275	1	139	No	No	No	No	No	No	No	No	No	No
11	1	238	1	120	No	No	No	No	No	No	No	No	No	No
12	1	223	1	112	No	No	No	No	No	No	No	No	No	No
13	1	219	1	110	No	No	No	No	No	No	No	No	No	No
14	1	162	1	82	No	No	No	No	No	No	No	No	No	No
15	1	162	1	82	No	No	No	No	No	No	No	No	No	No
16	1	113	1	57	No	No	No	No	No	No	No	No	No	No
17	1	65	1	33	No	No	No	No	No	No	No	No	No	No
18	1	65	1	33	No	No	No	No	No	No	No	No	No	No
19	1	36	1	18	No	No	No	No	No	No	No	No	No	No
20	1	21	1	10	No	No	No	No	No	No	No	No	No	No
21	1	12	1	6	No	No	No	No	No	No	No	No	No	No
22	1	4	1	2	No	No	No	No	No	No	No	No	No	No
23	1	4	1	2	No	No	No	No	No	No	No	No	No	No
24	1	4	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	1	4	9	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.3	9.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:34	0:16
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	204	101
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	710	710
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	330	315	177
2	320	306	172
3	314	299	168
4	294	280	158
5	261	249	140
6	257	246	138
7	254	243	136
8	231	221	124
9	228	217	122
10	224	214	120
11	195	186	104
12	182	173	97
13	178	170	96
14	132	126	71
15	132	126	71
16	92	88	50
17	53	50	28
18	53	50	28
19	30	28	16
20	17	16	9
21	10	9	5
22	3	3	2
23	3	3	2
24	3	3	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	645	1	177	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	1	626	1	172	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
3	1	613	1	168	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
4	1	574	1	158	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	1	510	1	140	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	1	503	1	138	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	1	497	1	136	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	1	452	1	124	No	Yes	Yes	Yes	No	No	No	Yes	No	No
9	1	445	1	122	No	Yes	Yes	Yes	No	No	No	Yes	No	No
10	1	438	1	120	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	381	1	104	No	No	No	Yes	No	No	No	No	No	No
12	1	355	1	97	No	No	No	Yes	No	No	No	No	No	No
13	1	348	1	96	No	No	No	Yes	No	No	No	No	No	No
14	1	258	1	71	No	No	No	No	No	No	No	No	No	No
15	1	258	1	71	No	No	No	No	No	No	No	No	No	No
16	1	180	1	50	No	No	No	No	No	No	No	No	No	No
17	1	103	1	28	No	No	No	No	No	No	No	No	No	No
18	1	103	1	28	No	No	No	No	No	No	No	No	No	No
19	1	58	1	16	No	No	No	No	No	No	No	No	No	No
20	1	33	1	9	No	No	No	No	No	No	No	No	No	No
21	1	19	1	5	No	No	No	No	No	No	No	No	No	No
22	1	6	1	2	No	No	No	No	No	No	No	No	No	No
23	1	6	1	2	No	No	No	No	No	No	No	No	No	No
24	1	6	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	10	13	0	3	4	10	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:34
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	177
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	822
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	305	170	103
2	296	165	100
3	290	162	98
4	271	151	92
5	241	134	81
6	238	133	80
7	235	131	79
8	214	119	72
9	210	117	71
10	207	116	70
11	180	100	61
12	168	94	57
13	165	92	56
14	122	68	41
15	122	68	41
16	85	48	29
17	49	27	16
18	49	27	16
19	27	15	9
20	15	9	5
21	9	5	3
22	3	2	1
23	3	2	1
24	3	2	1



## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	475	1	103	No	No	No	Yes	No	No	No	Yes	No	No
2	1	461	1	100	No	No	No	Yes	No	No	No	Yes	No	No
3	1	452	1	98	No	No	No	Yes	No	No	No	Yes	No	No
4	1	422	1	92	No	No	No	Yes	No	No	No	Yes	No	No
5	1	375	1	81	No	No	No	No	No	No	No	No	No	No
6	1	371	1	80	No	No	No	No	No	No	No	No	No	No
7	1	366	1	79	No	No	No	No	No	No	No	No	No	No
8	1	333	1	72	No	No	No	No	No	No	No	No	No	No
9	1	327	1	71	No	No	No	No	No	No	No	No	No	No
10	1	323	1	70	No	No	No	No	No	No	No	No	No	No
11	1	280	1	61	No	No	No	No	No	No	No	No	No	No
12	1	262	1	57	No	No	No	No	No	No	No	No	No	No
13	1	257	1	56	No	No	No	No	No	No	No	No	No	No
14	1	190	1	41	No	No	No	No	No	No	No	No	No	No
15	1	190	1	41	No	No	No	No	No	No	No	No	No	No
16	1	133	1	29	No	No	No	No	No	No	No	No	No	No
17	1	76	1	16	No	No	No	No	No	No	No	No	No	No
18	1	76	1	16	No	No	No	No	No	No	No	No	No	No
19	1	42	1	9	No	No	No	No	No	No	No	No	No	No
20	1	24	1	5	No	No	No	No	No	No	No	No	No	No
21	1	14	1	3	No	No	No	No	No	No	No	No	No	No
22	1	5	1	1	No	No	No	No	No	No	No	No	No	No
23	1	5	1	1	No	No	No	No	No	No	No	No	No	No
24	1	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	4	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:24
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	103
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	578
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 265: Adam Court/Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	81	163	78
2	79	158	76
3	77	155	74
4	72	145	69
5	64	129	62
6	63	127	61
7	62	126	60
8	57	114	55
9	56	112	54
10	55	111	53
11	48	96	46
12	45	90	43
13	44	88	42
14	32	65	31
15	32	65	31
16	23	46	22
17	13	26	12
18	13	26	12
19	7	15	7
20	4	8	4
21	2	5	2
22	1	2	1
23	1	2	1
24	1	2	1

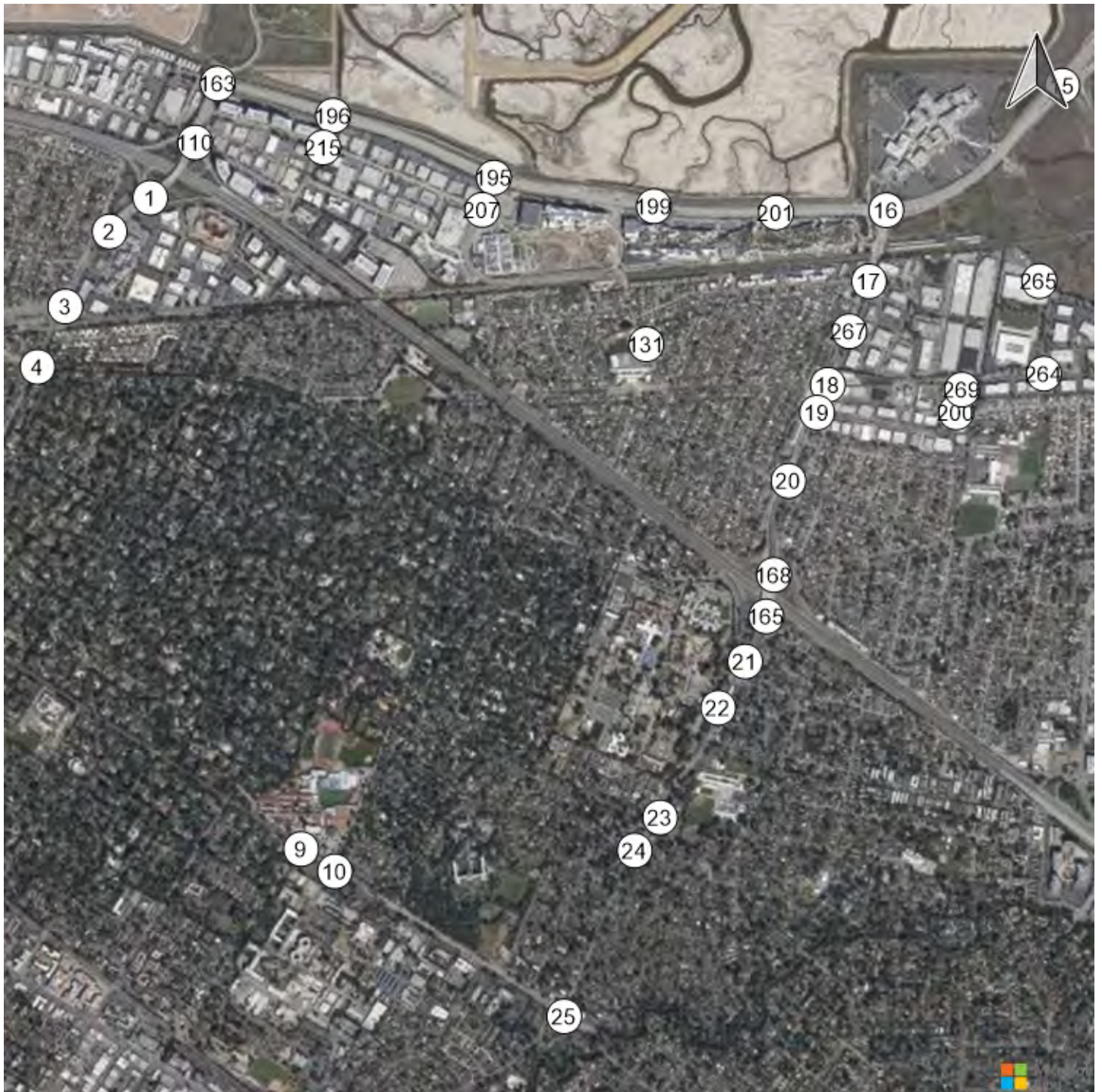
## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	244	1	78	No	No	No	No	No	No	No	No	No	No
2	1	237	1	76	No	No	No	No	No	No	No	No	No	No
3	1	232	1	74	No	No	No	No	No	No	No	No	No	No
4	1	217	1	69	No	No	No	No	No	No	No	No	No	No
5	1	193	1	62	No	No	No	No	No	No	No	No	No	No
6	1	190	1	61	No	No	No	No	No	No	No	No	No	No
7	1	188	1	60	No	No	No	No	No	No	No	No	No	No
8	1	171	1	55	No	No	No	No	No	No	No	No	No	No
9	1	168	1	54	No	No	No	No	No	No	No	No	No	No
10	1	166	1	53	No	No	No	No	No	No	No	No	No	No
11	1	144	1	46	No	No	No	No	No	No	No	No	No	No
12	1	135	1	43	No	No	No	No	No	No	No	No	No	No
13	1	132	1	42	No	No	No	No	No	No	No	No	No	No
14	1	97	1	31	No	No	No	No	No	No	No	No	No	No
15	1	97	1	31	No	No	No	No	No	No	No	No	No	No
16	1	69	1	22	No	No	No	No	No	No	No	No	No	No
17	1	39	1	12	No	No	No	No	No	No	No	No	No	No
18	1	39	1	12	No	No	No	No	No	No	No	No	No	No
19	1	22	1	7	No	No	No	No	No	No	No	No	No	No
20	1	12	1	4	No	No	No	No	No	No	No	No	No	No
21	1	7	1	2	No	No	No	No	No	No	No	No	No	No
22	1	3	1	1	No	No	No	No	No	No	No	No	No	No
23	1	3	1	1	No	No	No	No	No	No	No	No	No	No
24	1	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:13
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	78
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	322
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections

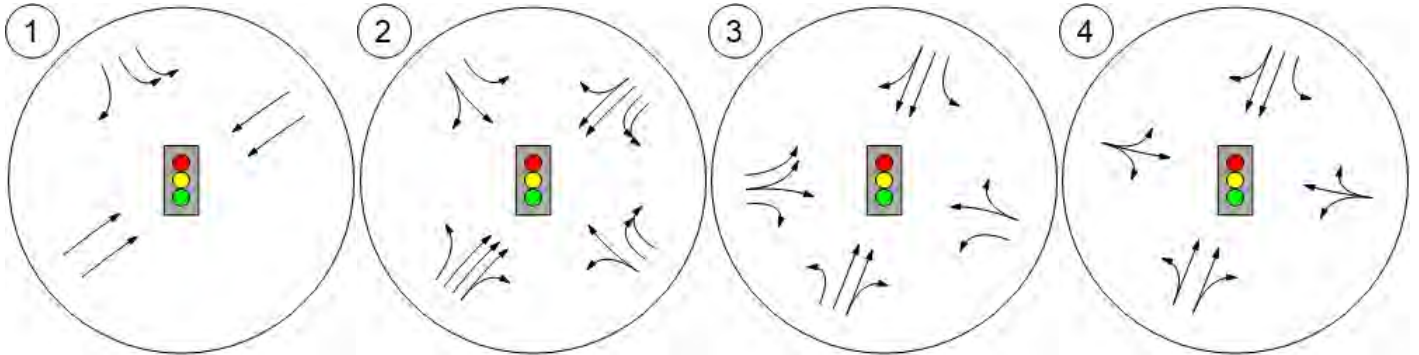


Lane Configuration and Traffic Control

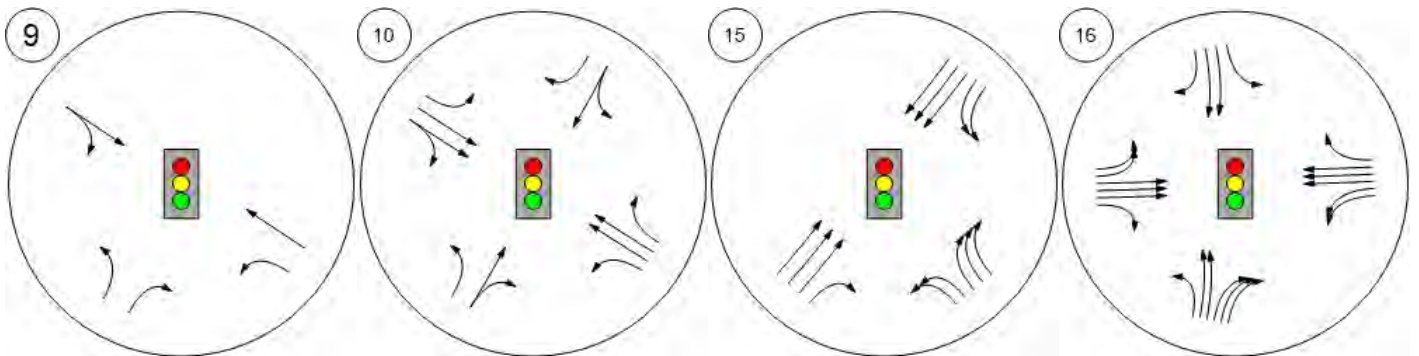


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



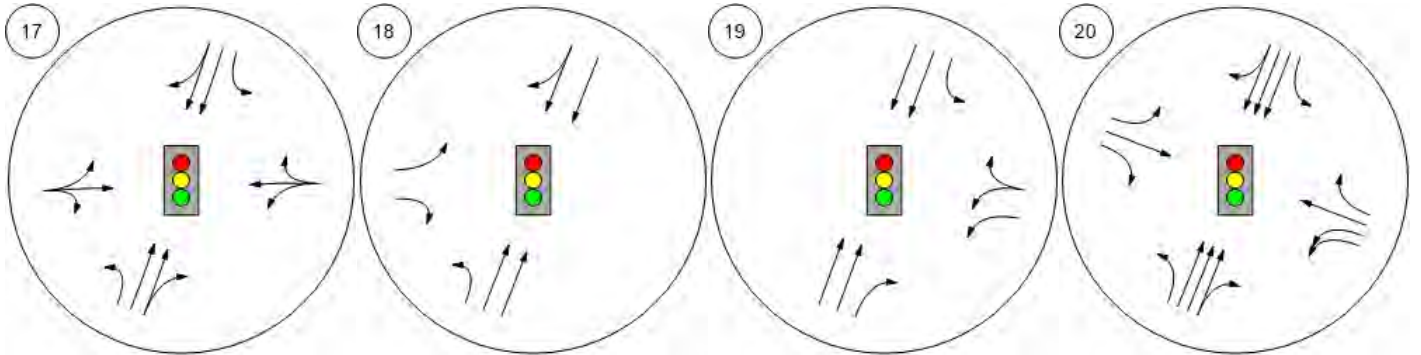
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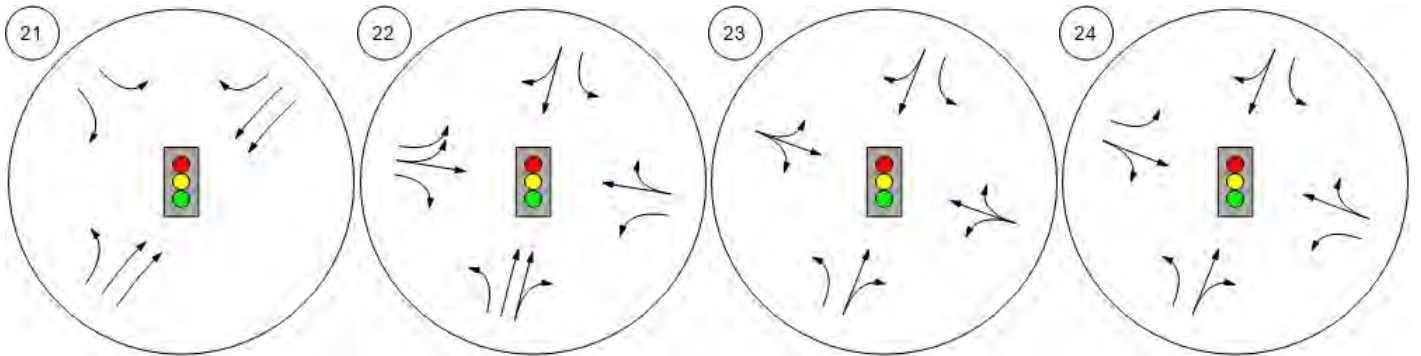
Lane Configuration and Traffic Control



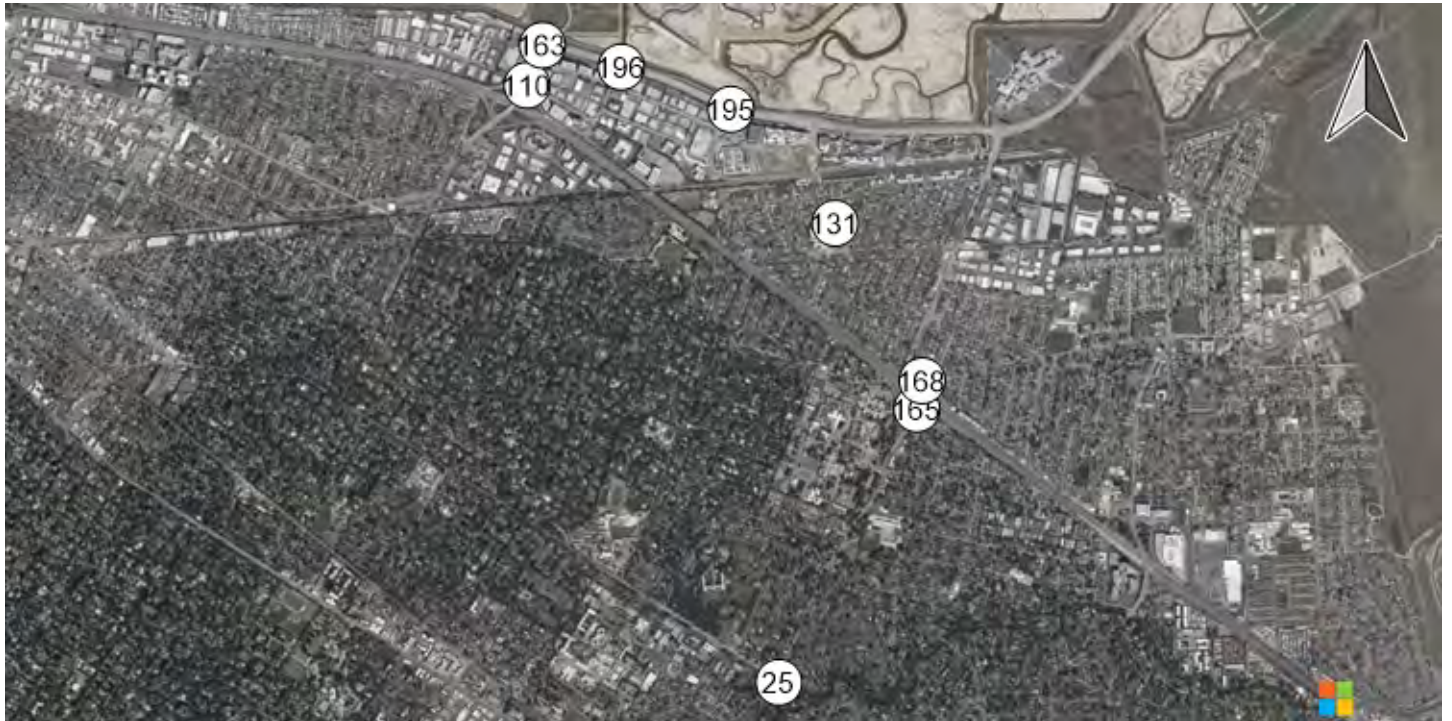
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



Lane Configuration and Traffic Control

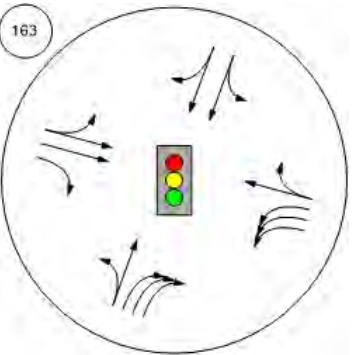
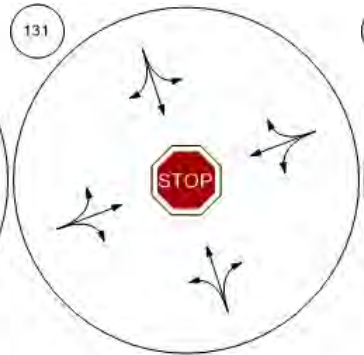
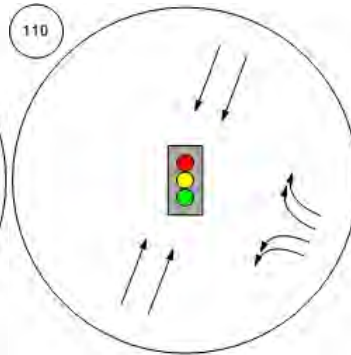
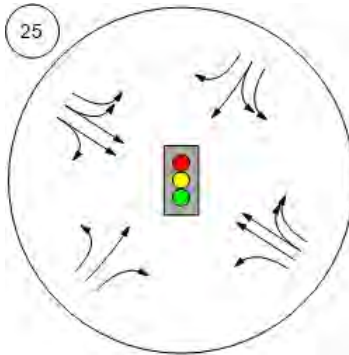


Middlefield Rd-Willow Rd

Marsh Road and US 101 NB

Chilco Street/Hamilton Avenue

Bayfront Expy/Marsh Rd

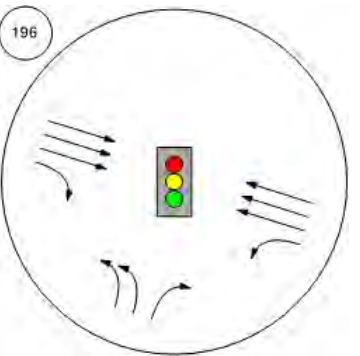
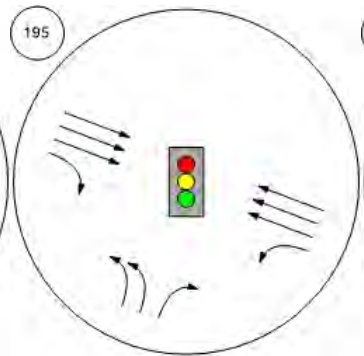
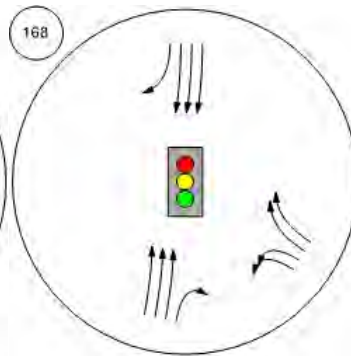
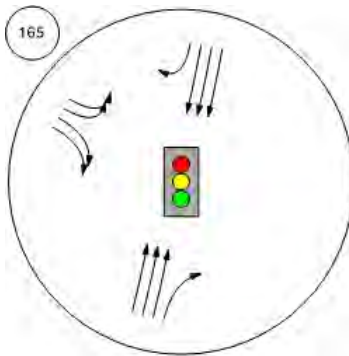


Willow Rd/US-101 SB Ramps

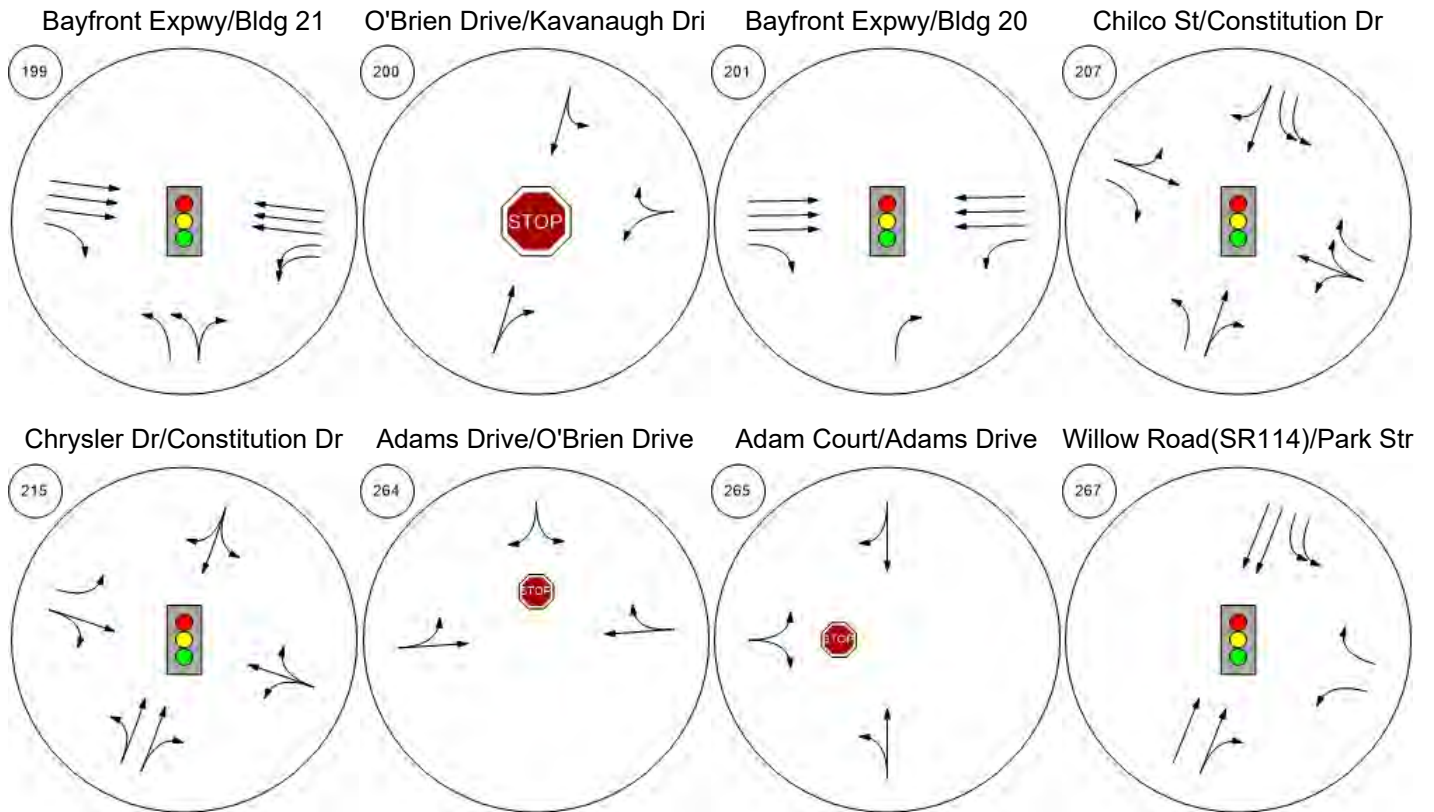
Willow Rd/US-101 NB Ramp

Bayfront Expy/Chilco St

Bayfront Expy/Chrysler Drive



Lane Configuration and Traffic Control

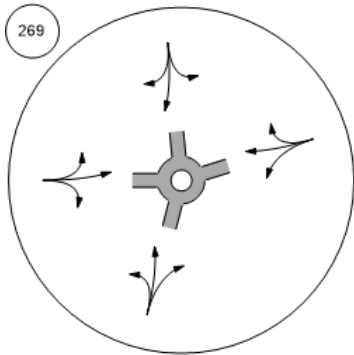




Lane Configuration and Traffic Control



O'Brien Drive/Loop Road

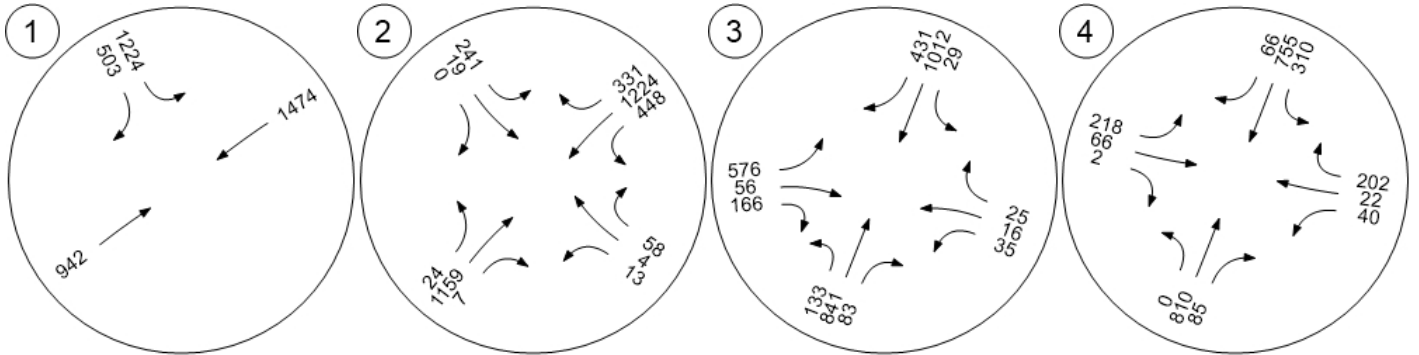


Traffic Volume - Base Volume

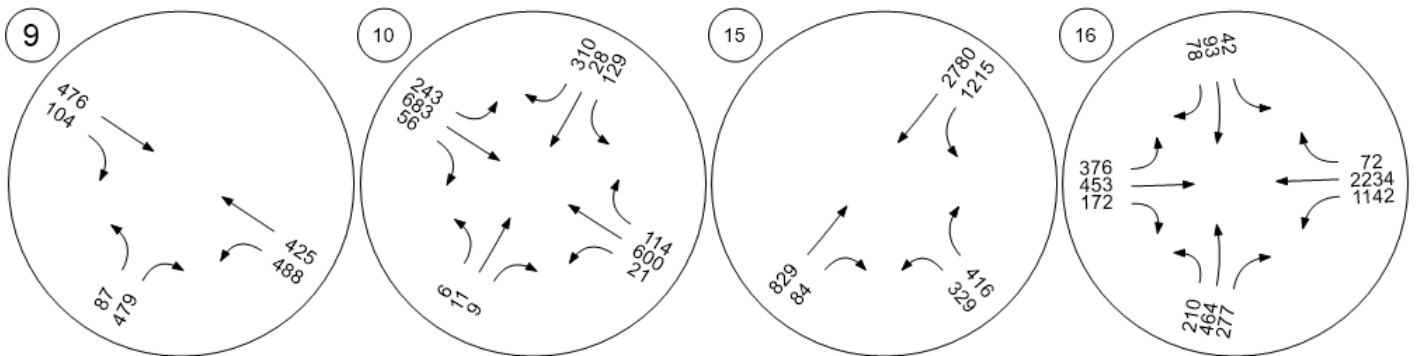


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



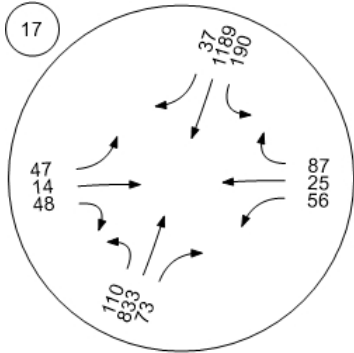
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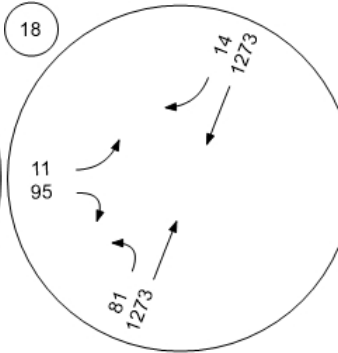
Traffic Volume - Base Volume



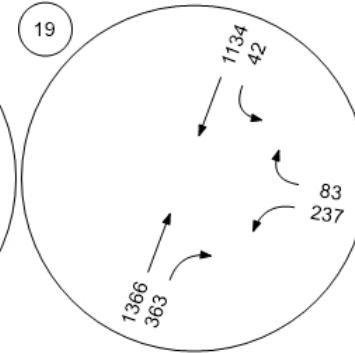
Willow Rd (SR 114)/Hamilton



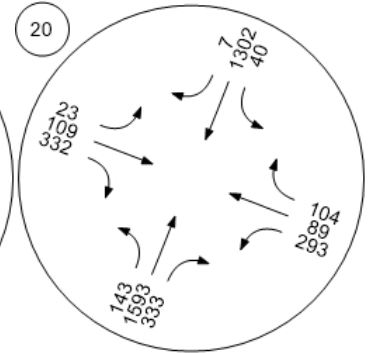
Willow Rd (SR 114)/Ivy Dr



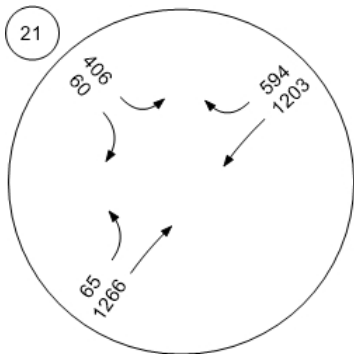
Willow Rd (SR 114)/O'Brien



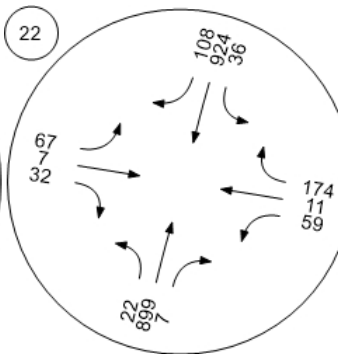
Willow Rd (SR 114)/Newbrid



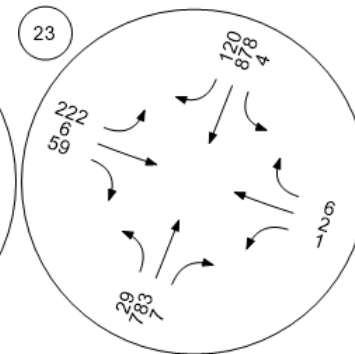
Willow Rd/Bay Rd



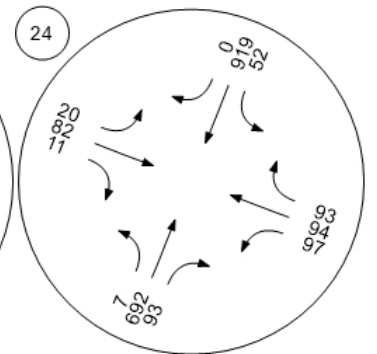
Willow Rd/Durham St-VA Me



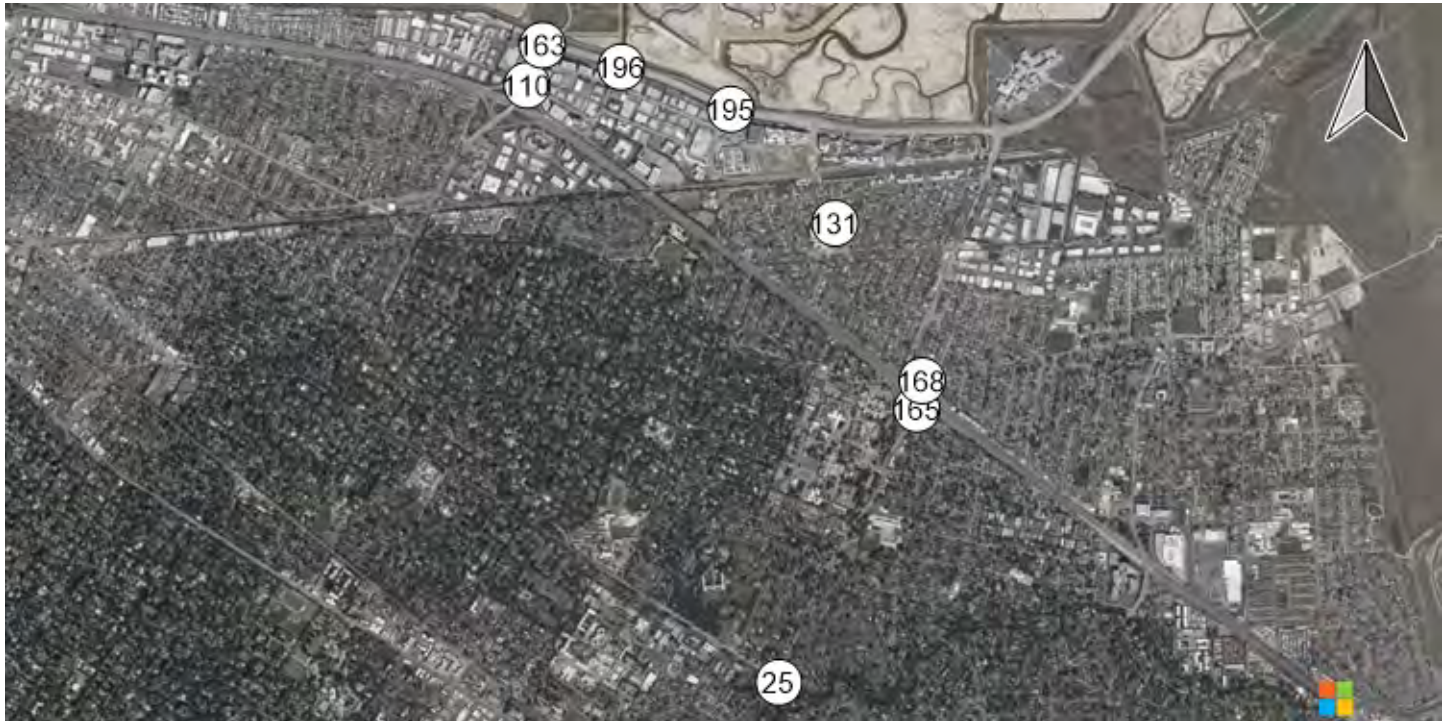
Willow Rd/Coleman Ave



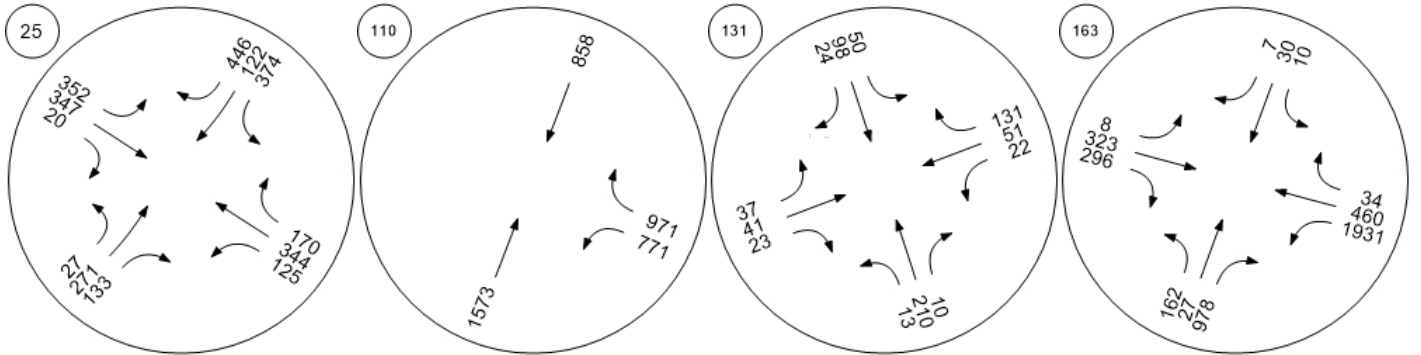
Willow Rd/Gilbert Ave



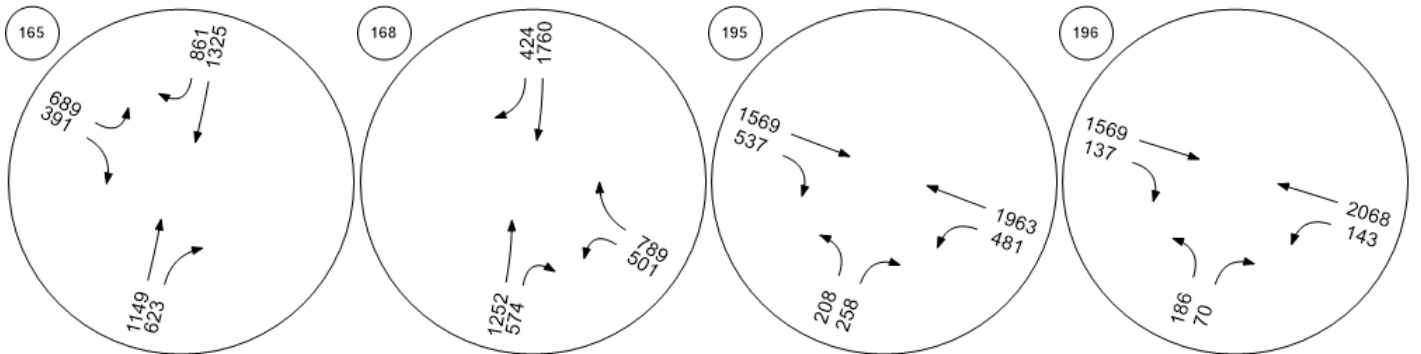
Traffic Volume - Base Volume



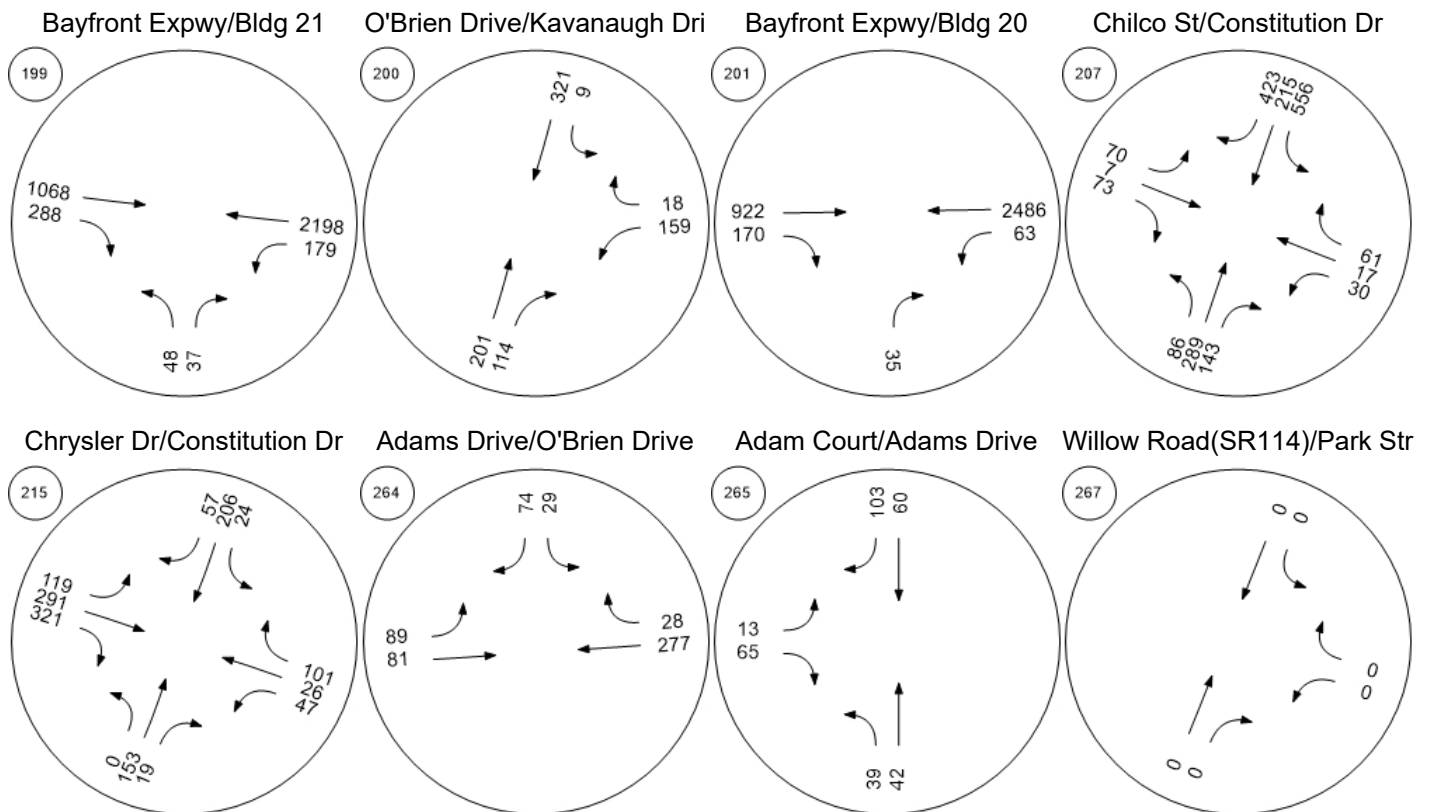
Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



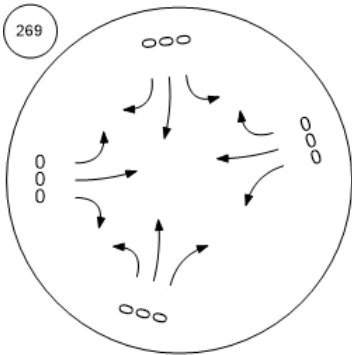
Traffic Volume - Base Volume



Traffic Volume - Base Volume



O'Brien Drive/Loop Road

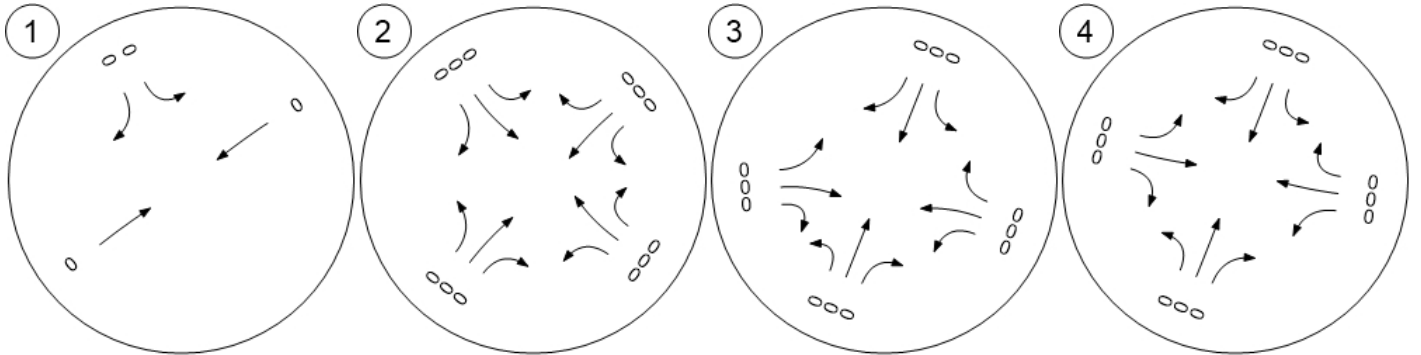


Traffic Volume - In-Process Volume

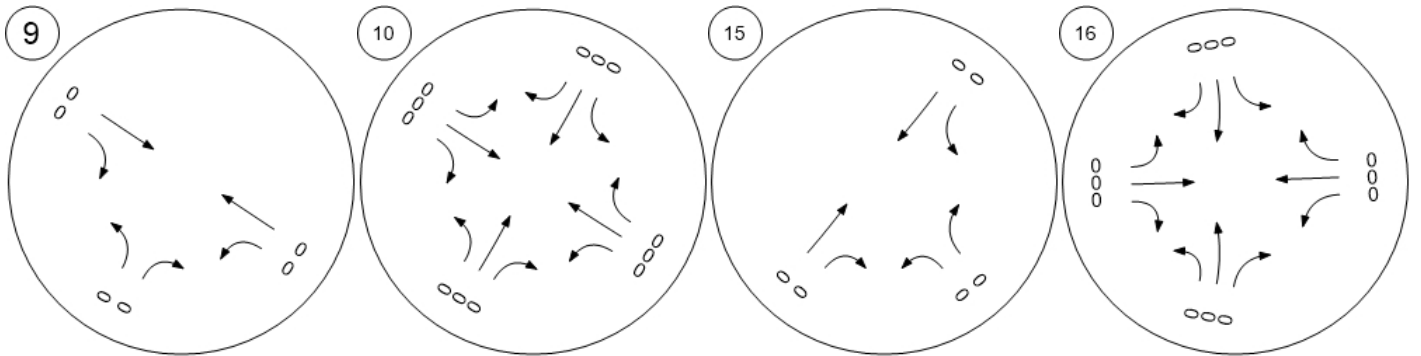


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



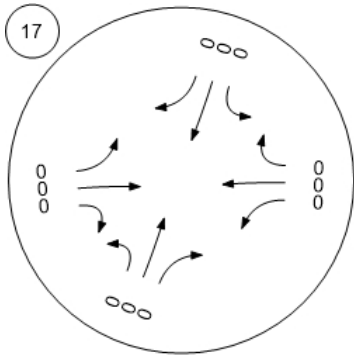
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



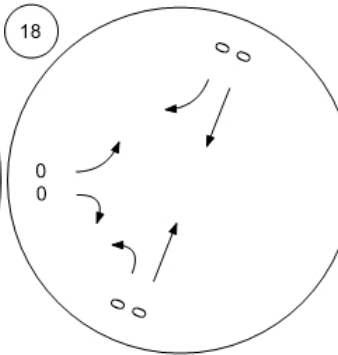
Traffic Volume - In-Process Volume



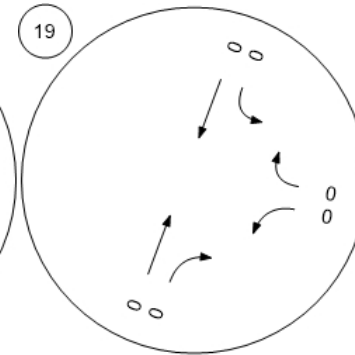
Willow Rd (SR 114)/Hamilton



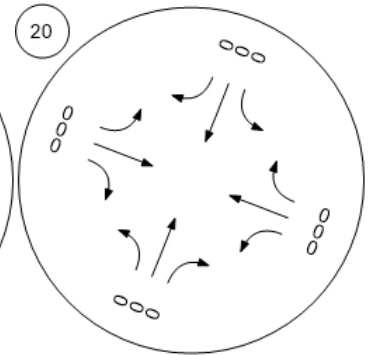
Willow Rd (SR 114)/Ivy Dr



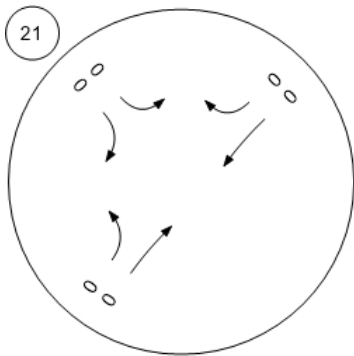
Willow Rd (SR 114)/O'Brien



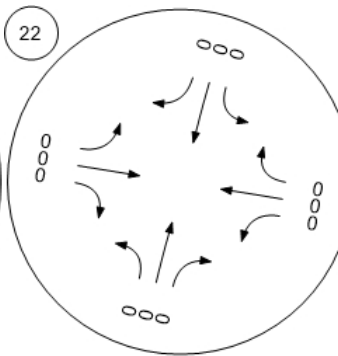
Willow Rd (SR 114)/Newbrid



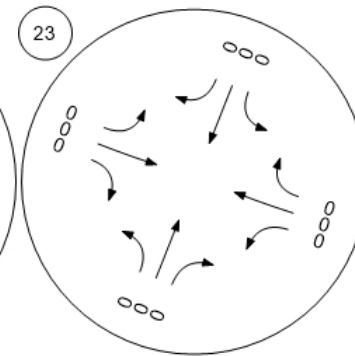
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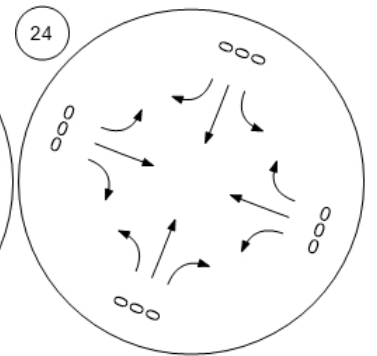
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave

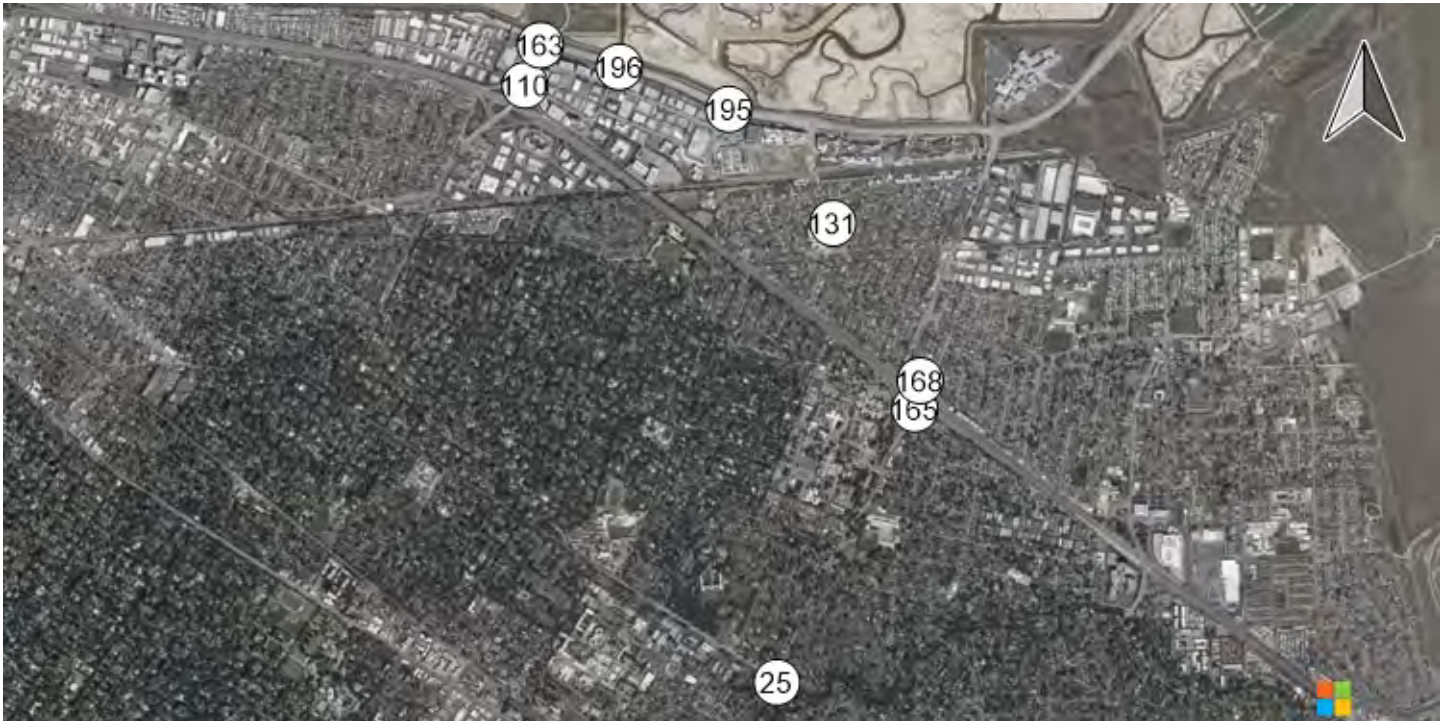


Willow Rd/Gilbert Ave

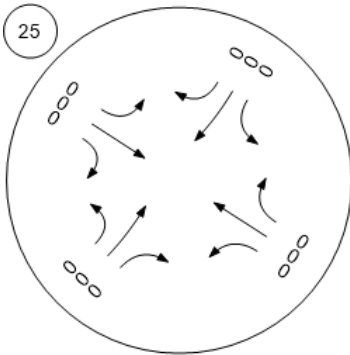




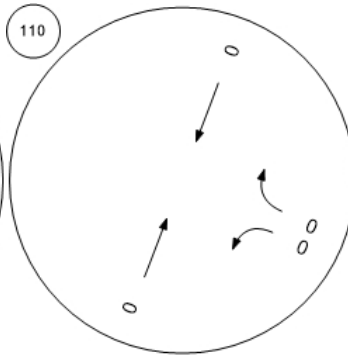
Traffic Volume - In-Process Volume



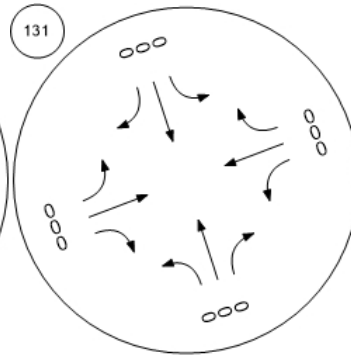
Middlefield Rd-Willow Rd



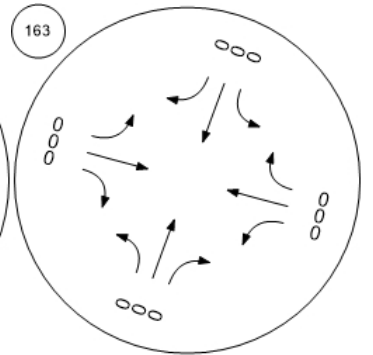
Marsh Road and US 101 NB



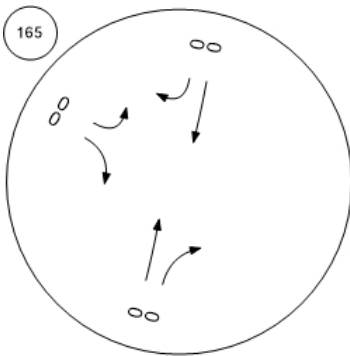
Chilco Street/Hamilton Avenue



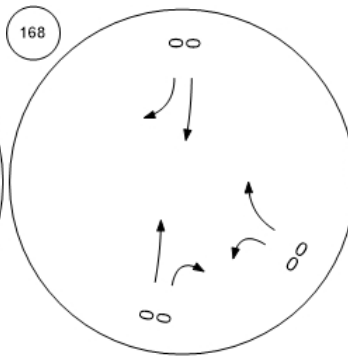
Bayfront Expy/Marsh Rd



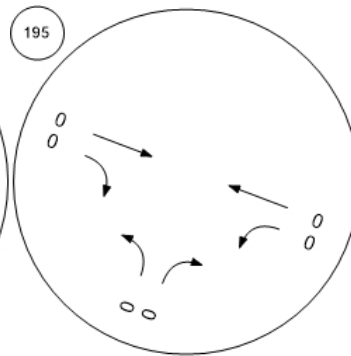
Willow Rd/US-101 SB Ramps



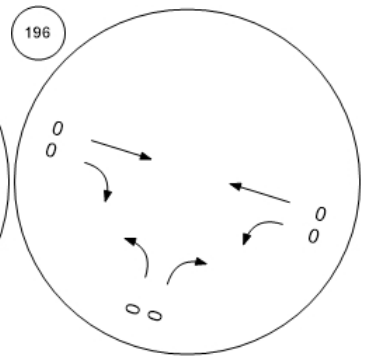
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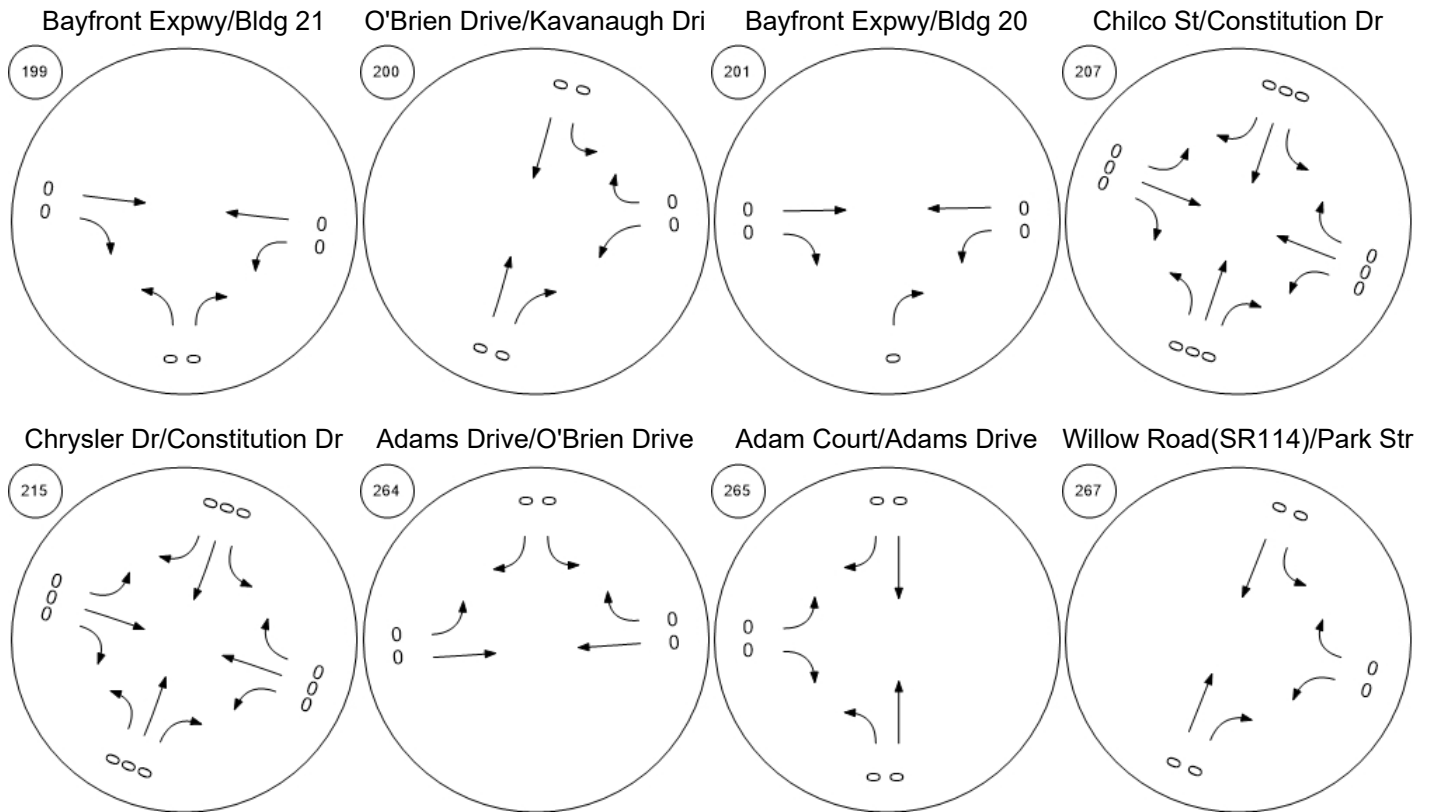
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



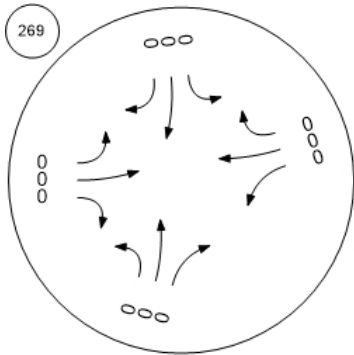
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

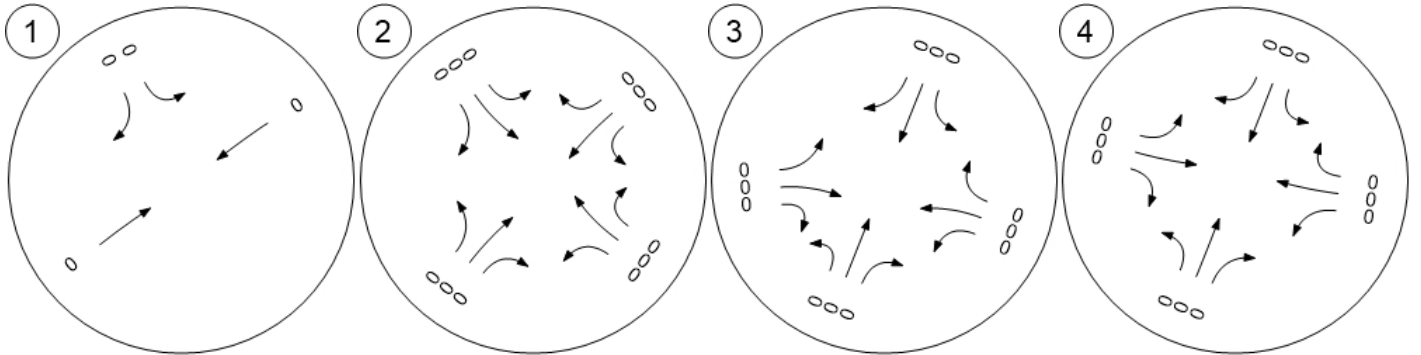


Traffic Volume - Net New Site Trips



Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd

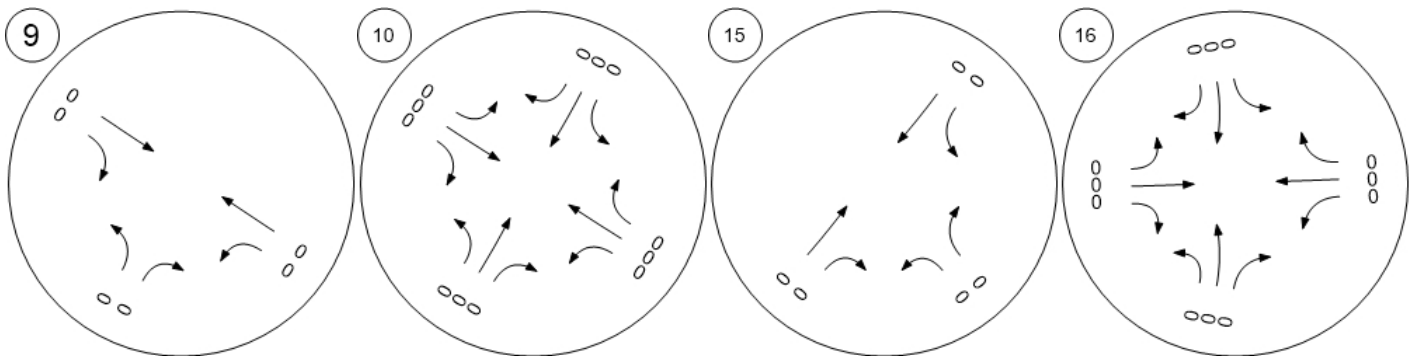


Middlefield Rd/Ravenswood

Middlefield Rd/Ringswood Av

Bayfront Expy (SR 84)/Univer

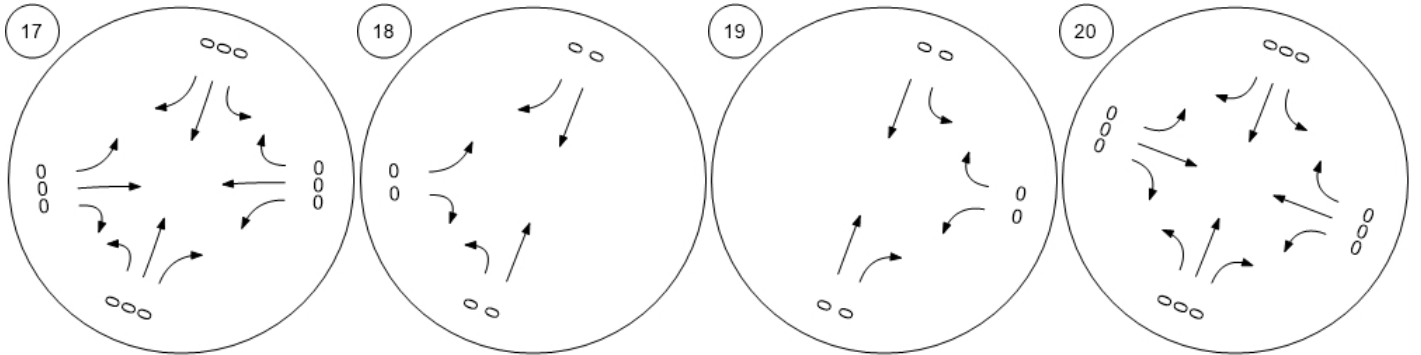
Bayfront Expy (SR 84)/Willow



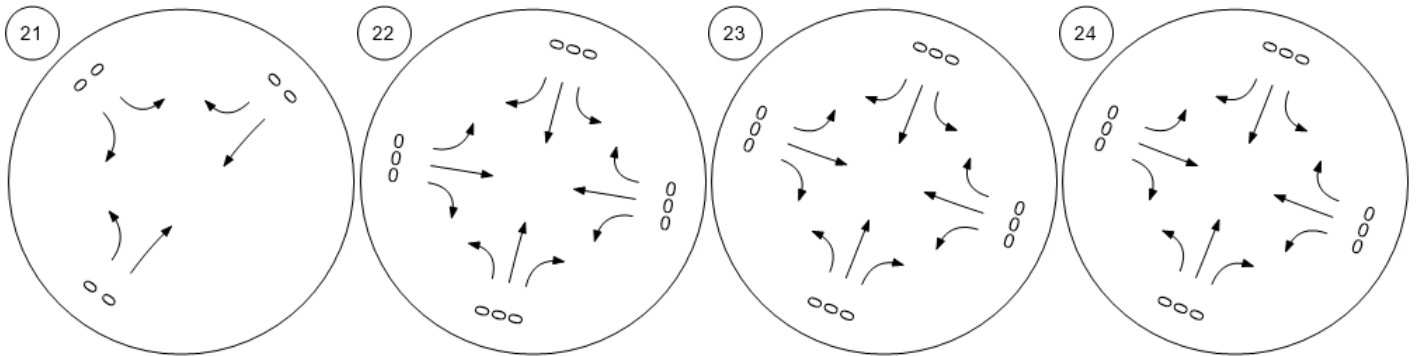
Traffic Volume - Net New Site Trips



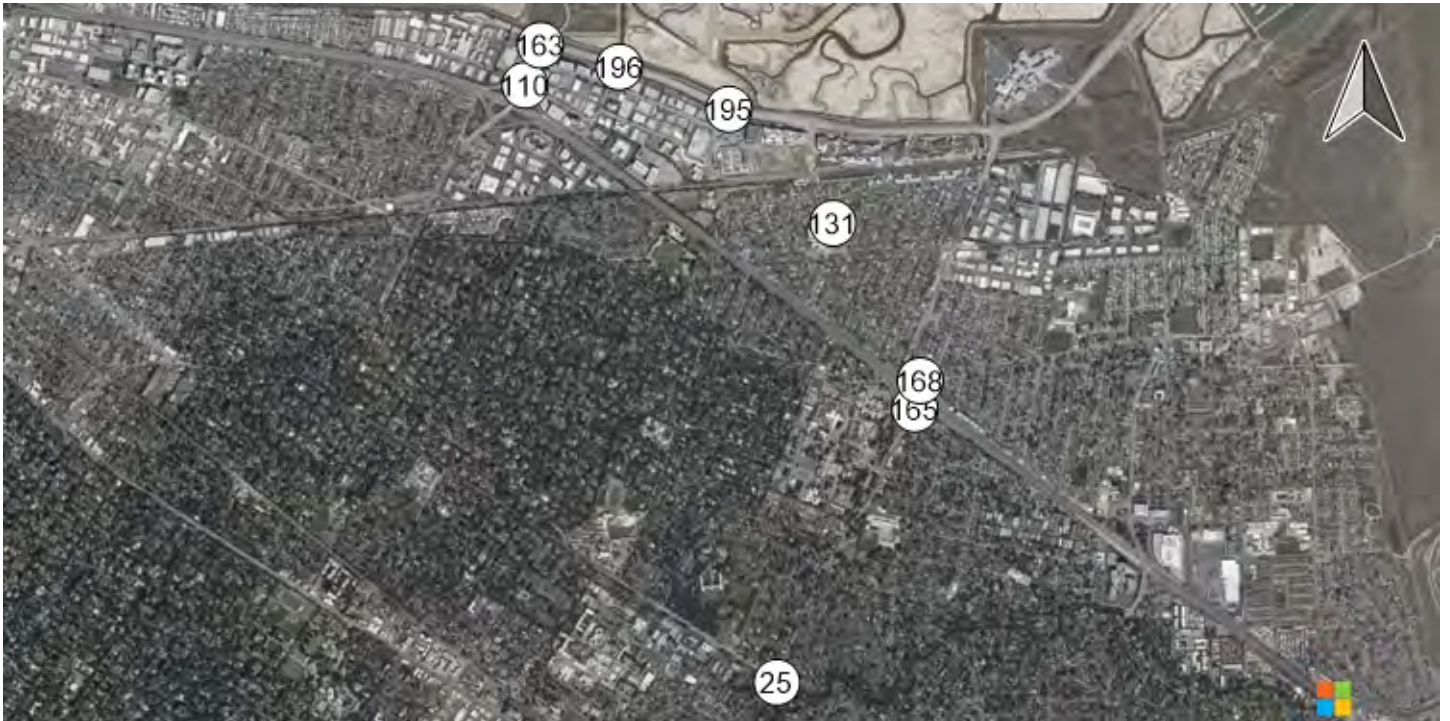
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



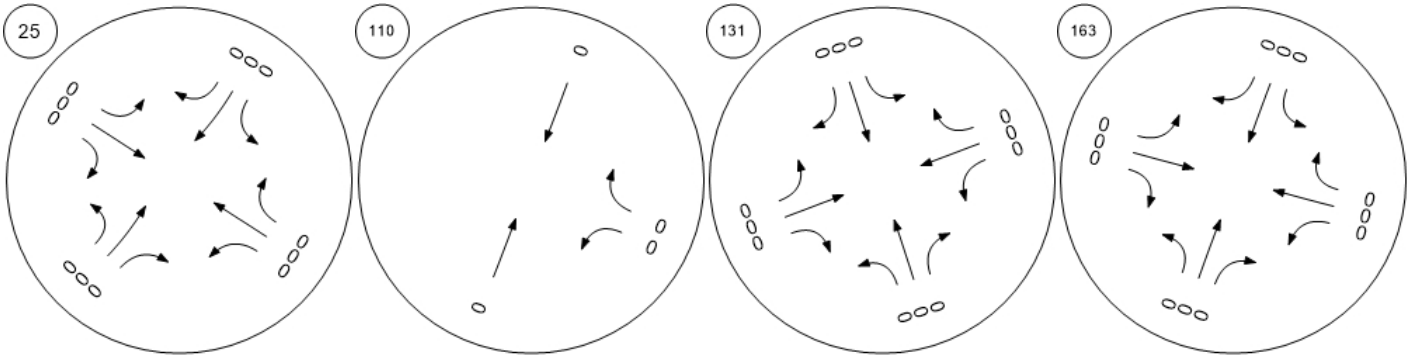
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



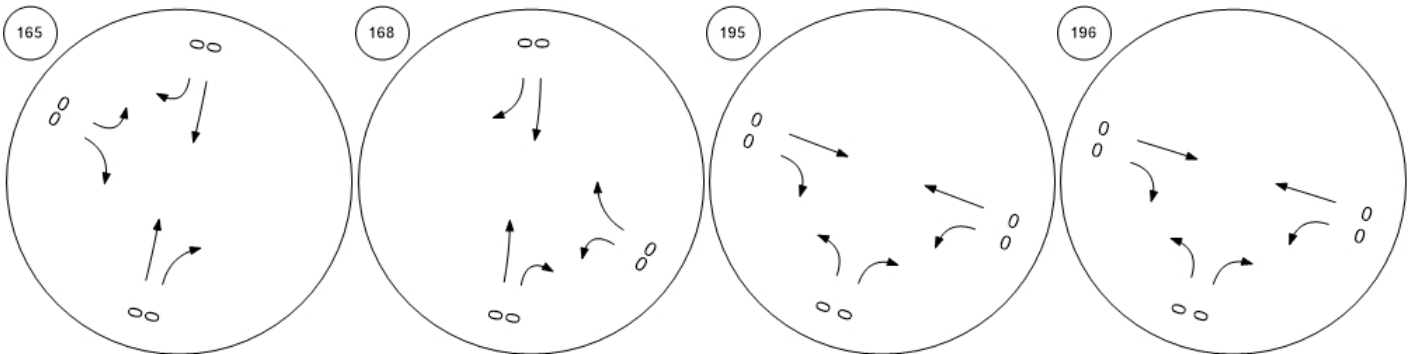
Traffic Volume - Net New Site Trips



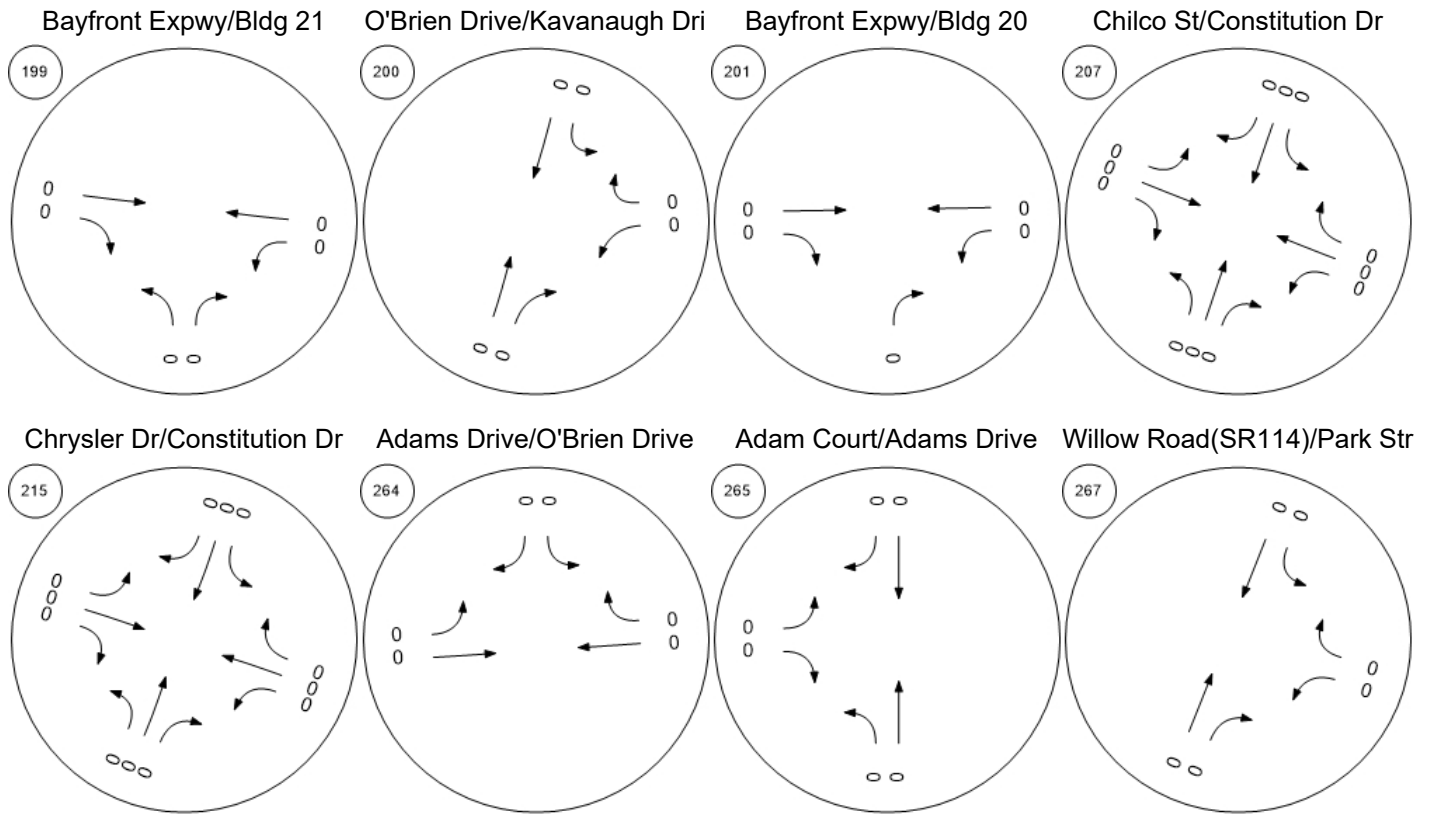
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



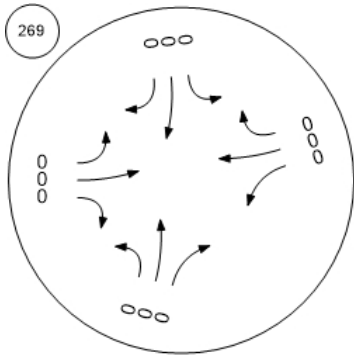
Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road



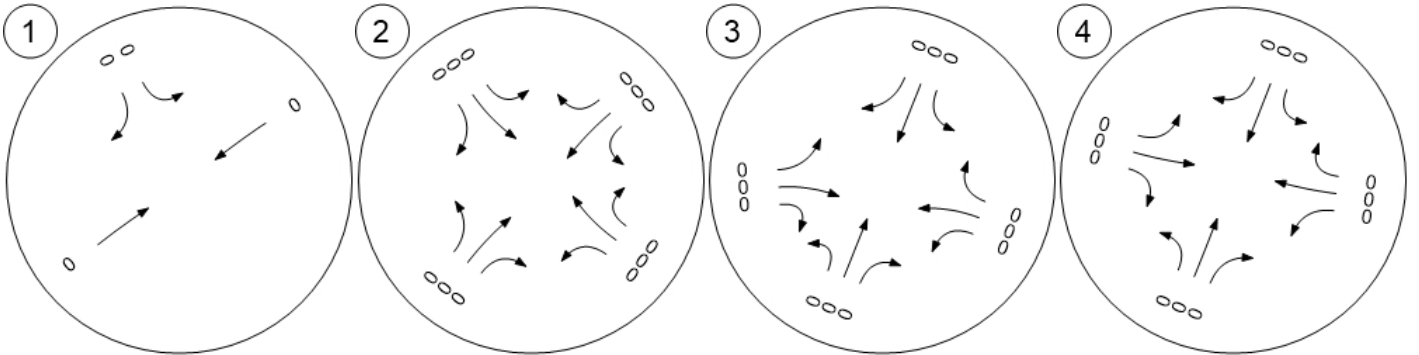


Traffic Volume - Other Volume

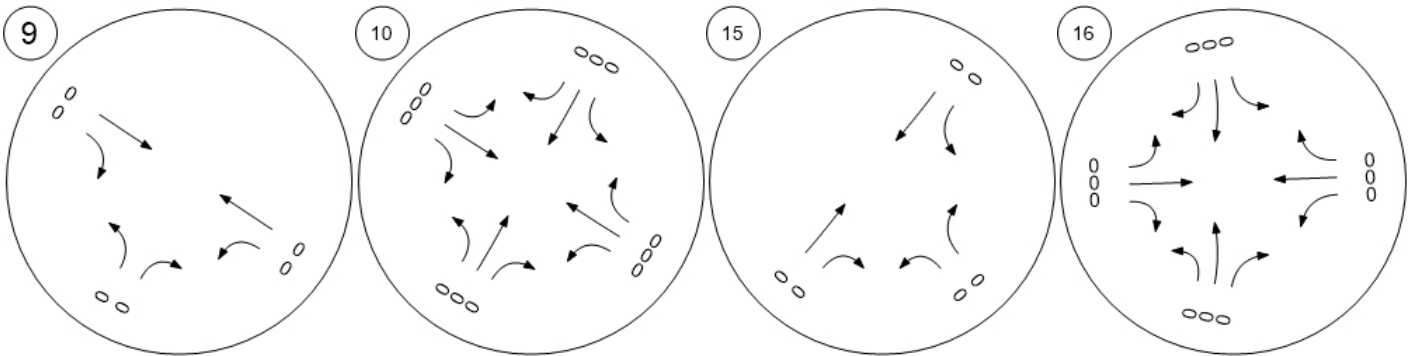


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



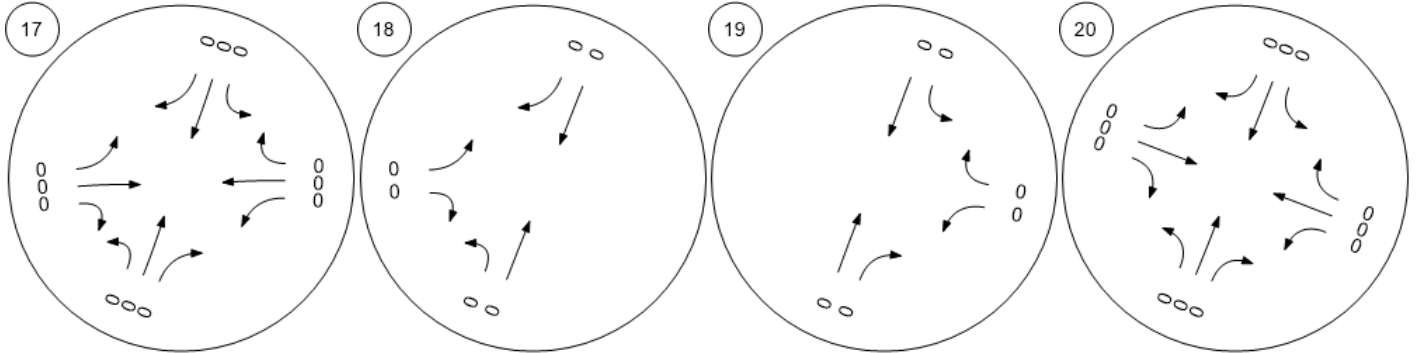
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



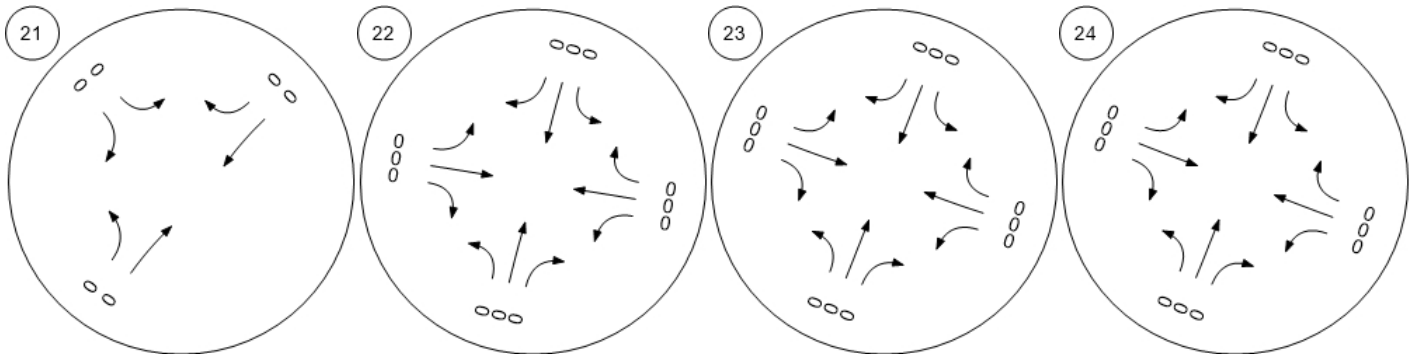
Traffic Volume - Other Volume



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



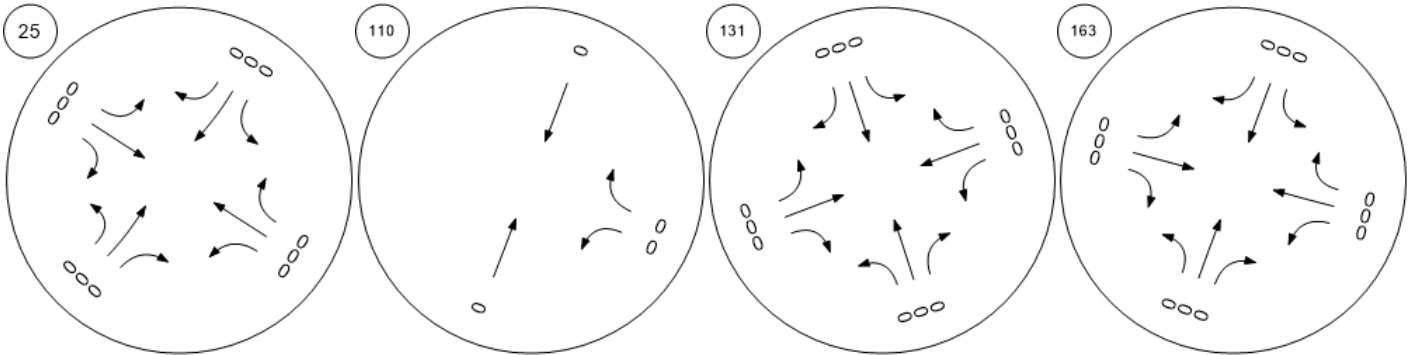
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



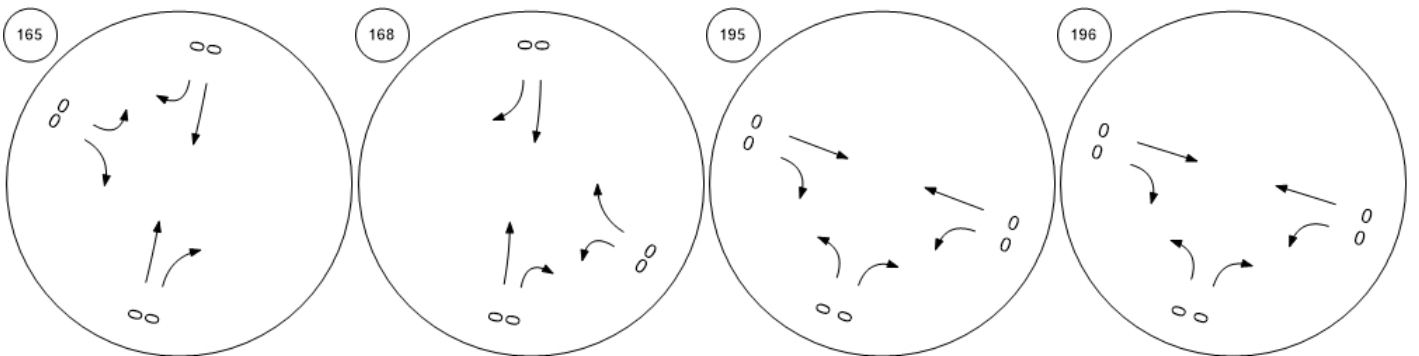
Traffic Volume - Other Volume



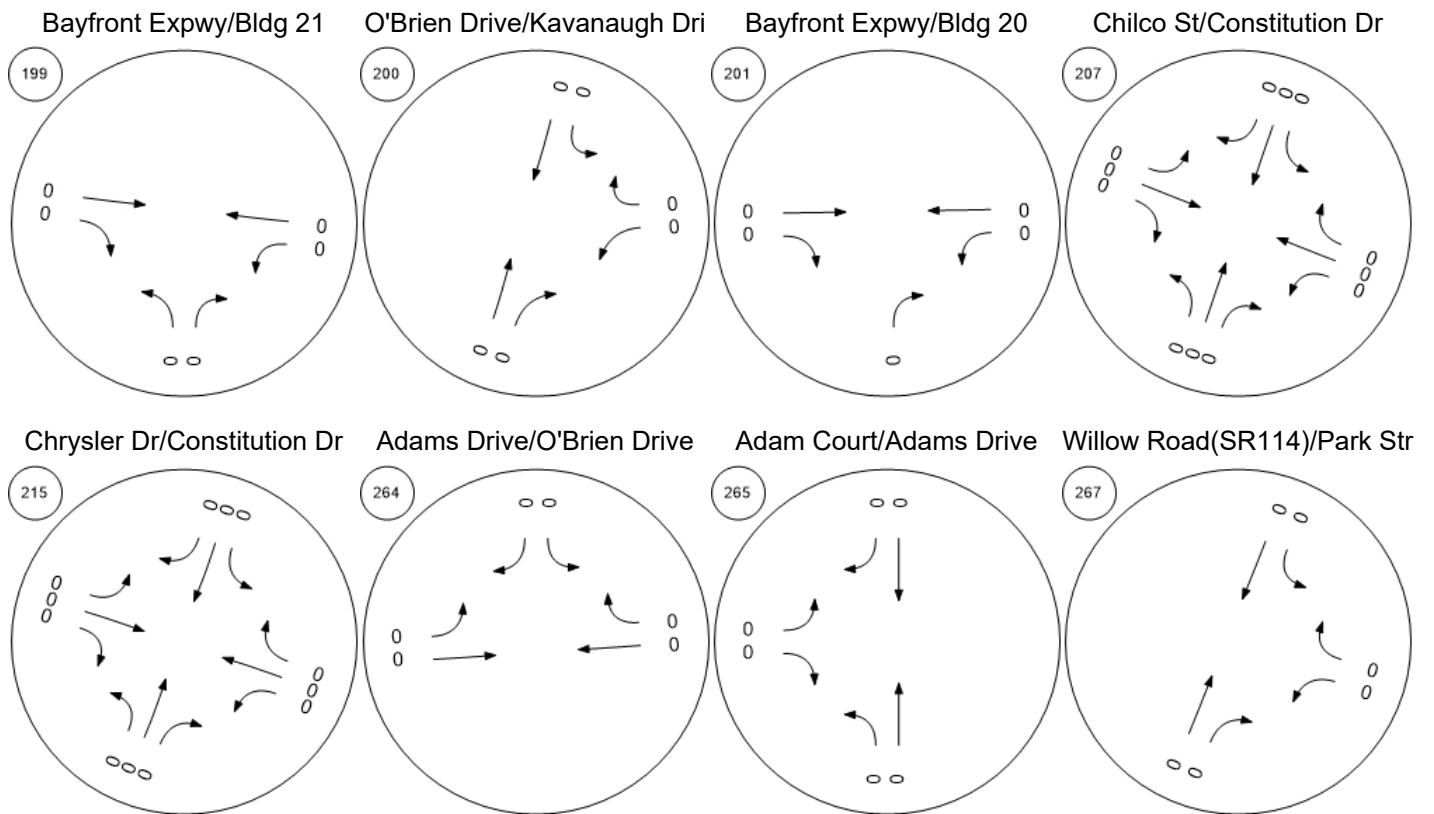
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



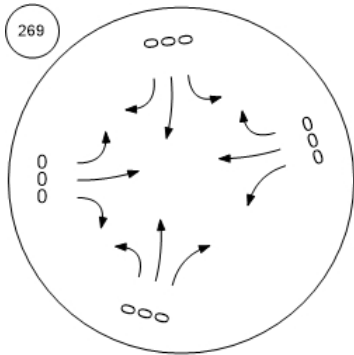
Traffic Volume - Other Volume



Traffic Volume - Other Volume



O'Brien Drive/Loop Road

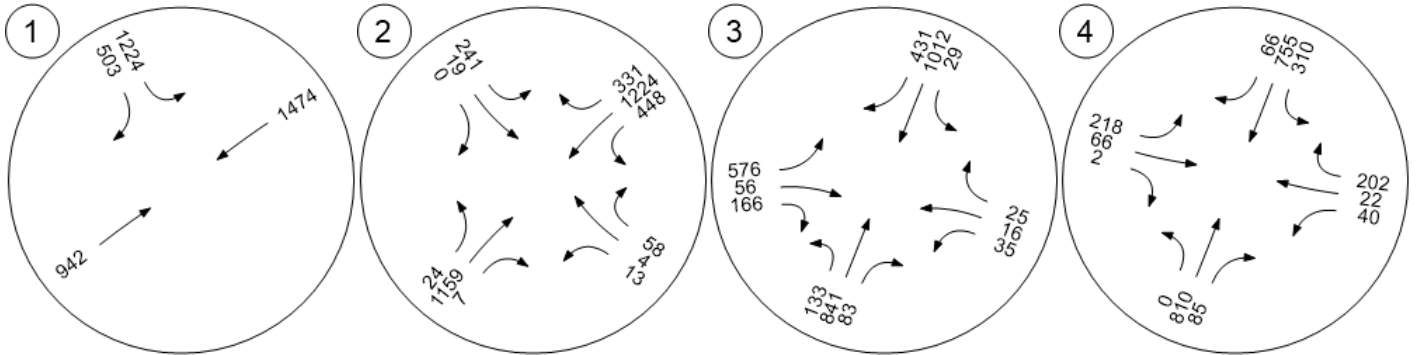


Traffic Volume - Future Total Volume

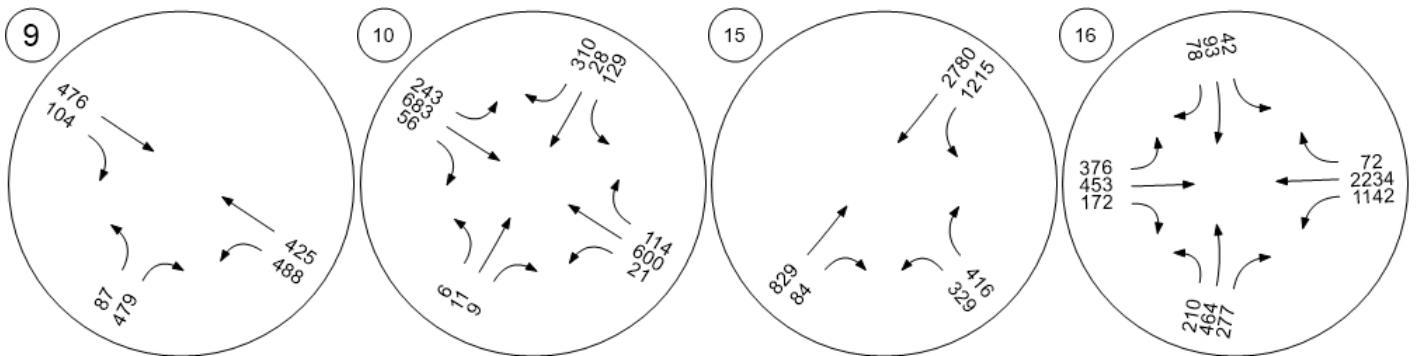


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



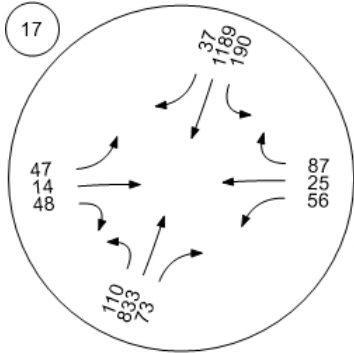
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



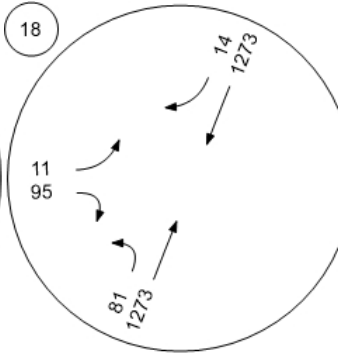
Traffic Volume - Future Total Volume



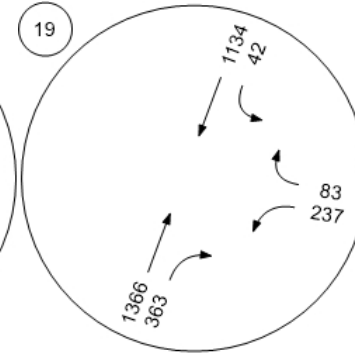
Willow Rd (SR 114)/Hamilton



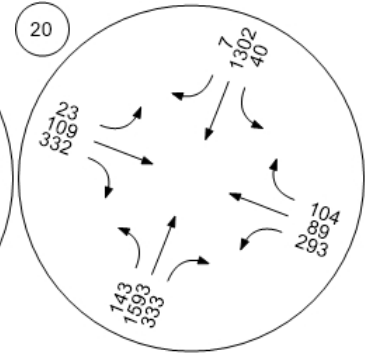
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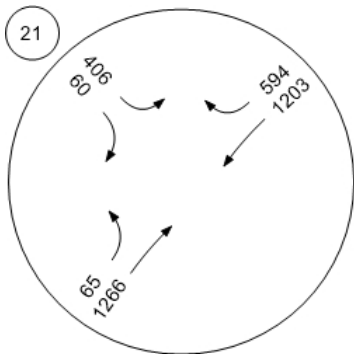
Willow Rd (SR 114)/O'Brien



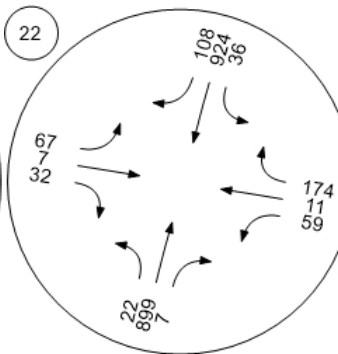
Willow Rd (SR 114)/Newbrid



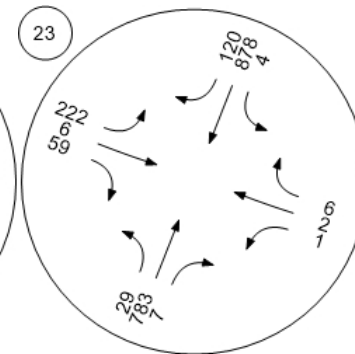
Willow Rd/Bay Rd



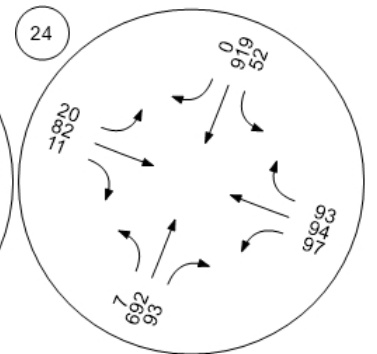
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



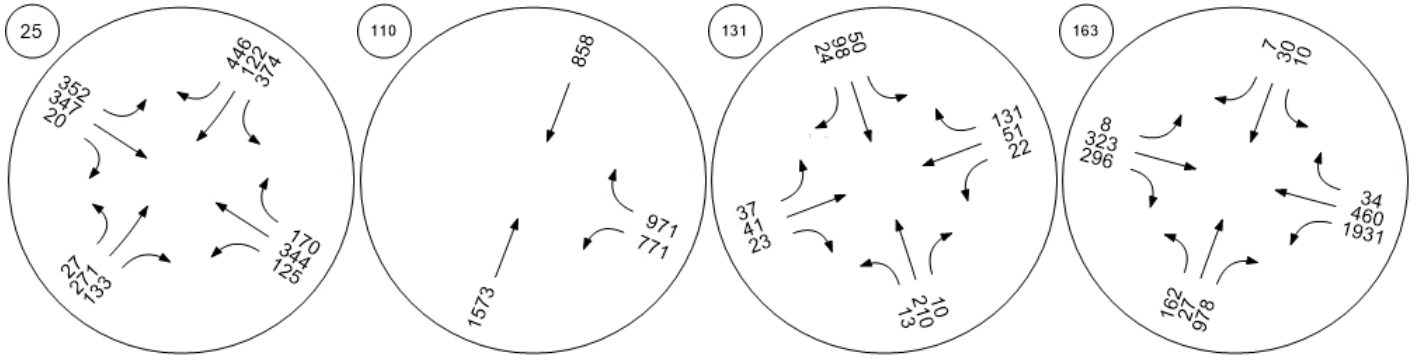
Willow Rd/Gilbert Ave



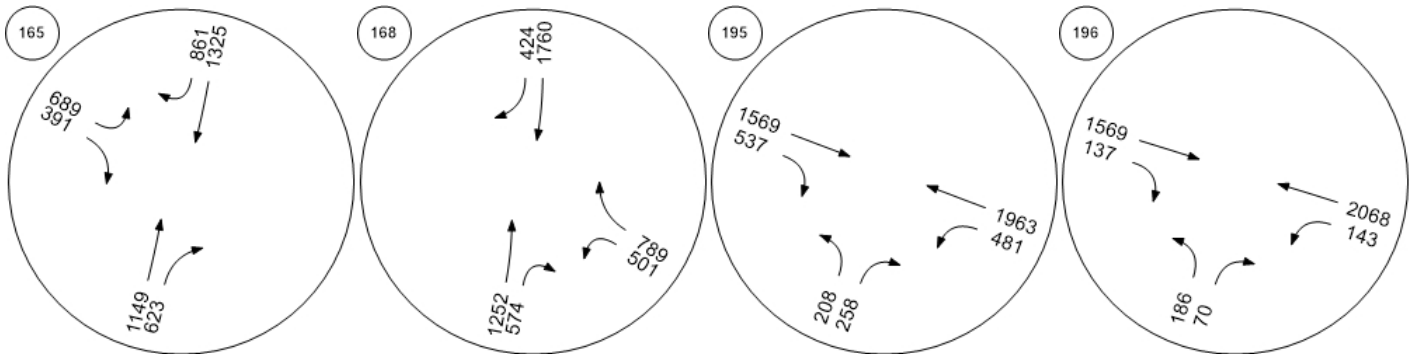
Traffic Volume - Future Total Volume



Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



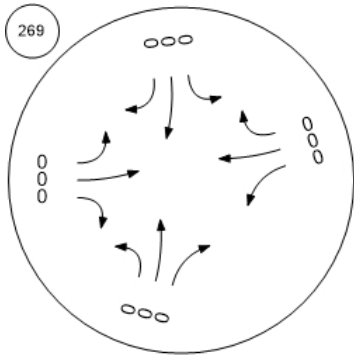




Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road

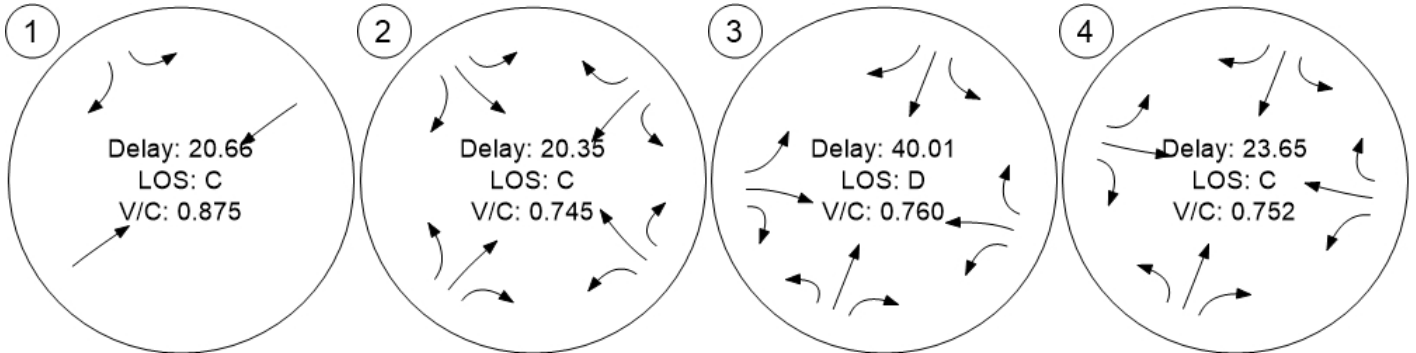


Traffic Conditions

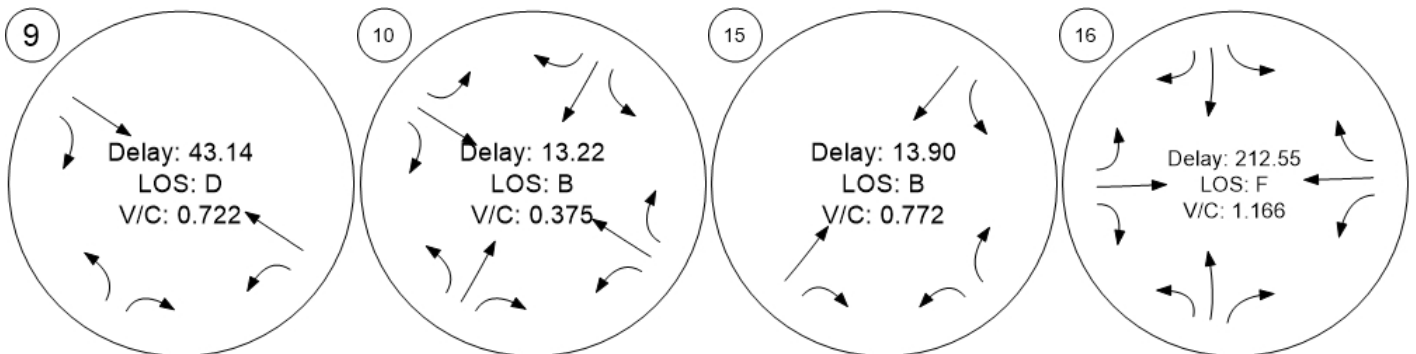


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



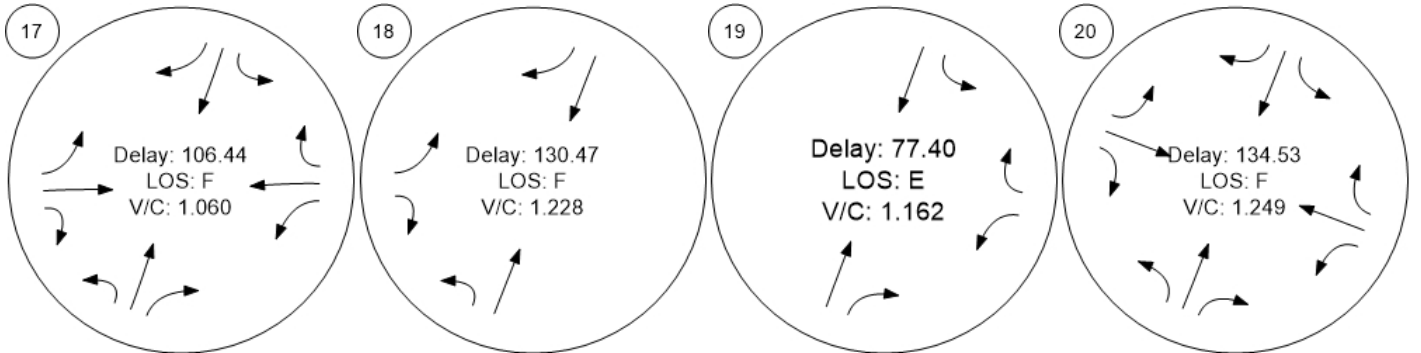
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



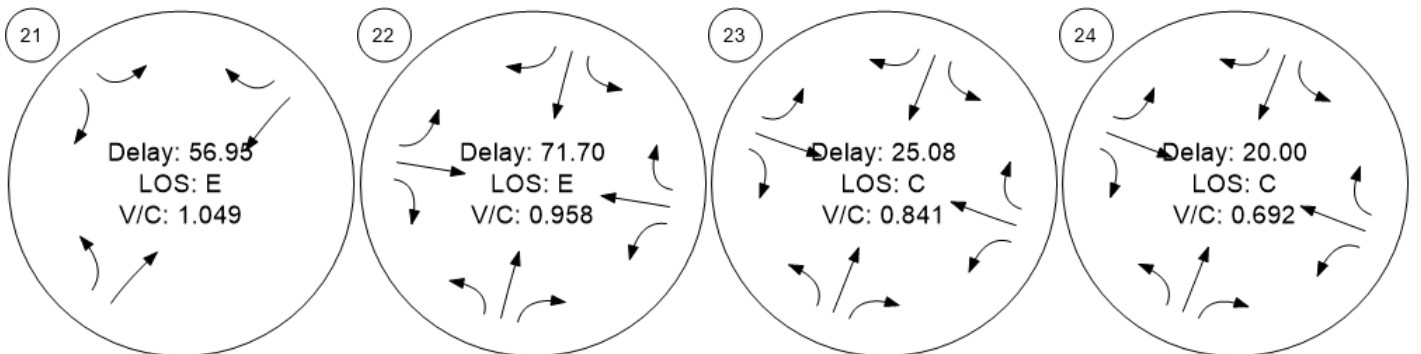
Traffic Conditions



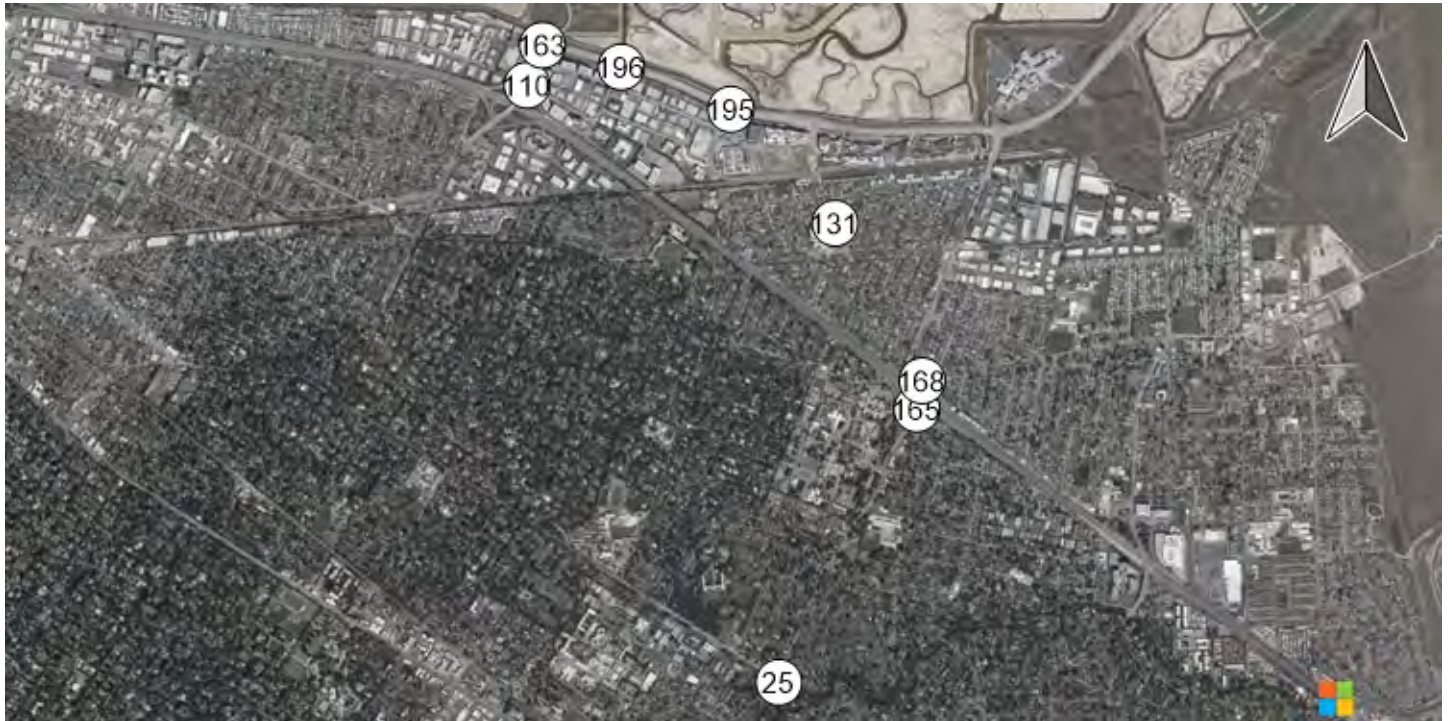
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



Traffic Conditions

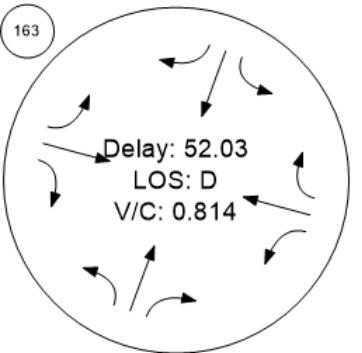
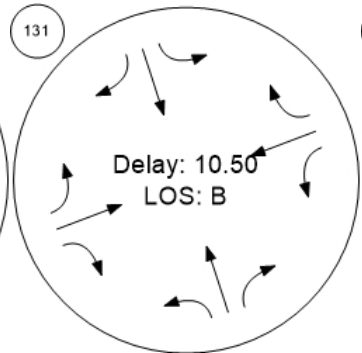
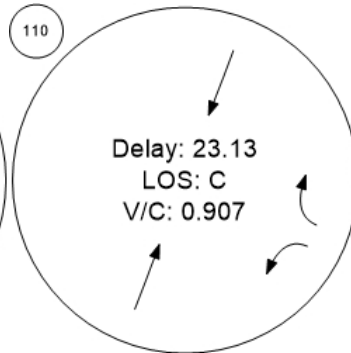
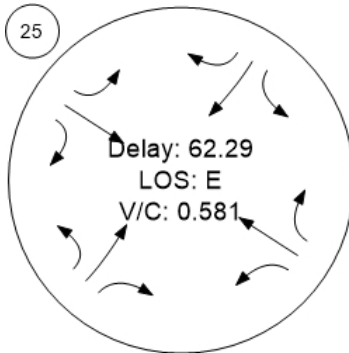


Middlefield Rd-Willow Rd

Marsh Road and US 101 NB

Chilco Street/Hamilton Avenue

Bayfront Expy/Marsh Rd

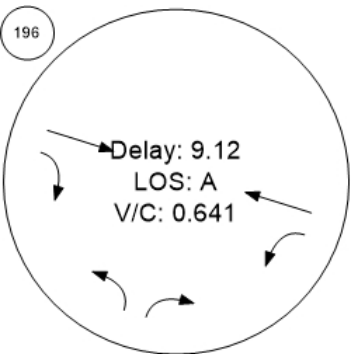
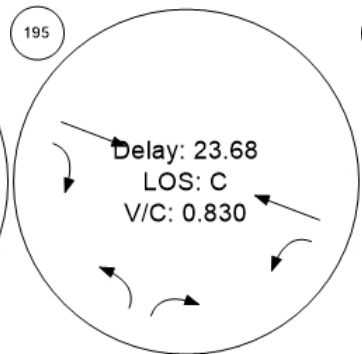
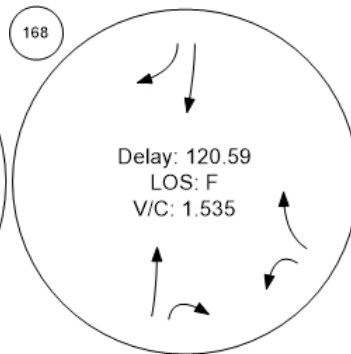
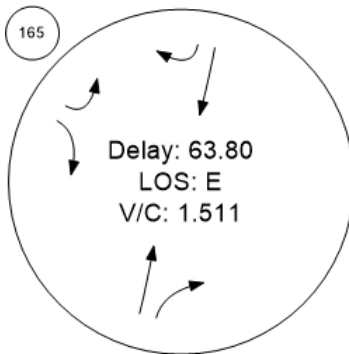


Willow Rd/US-101 SB Ramps

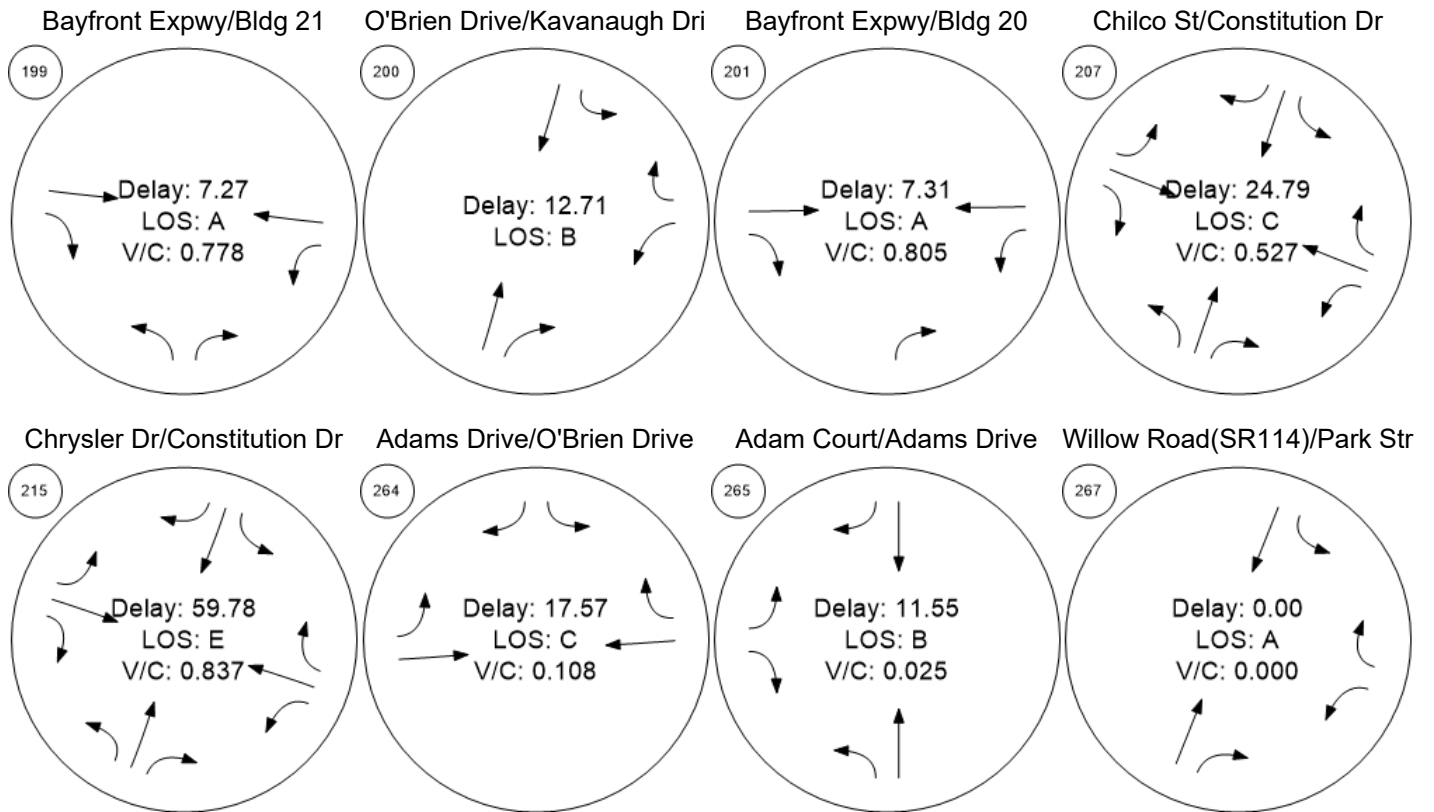
Willow Rd/US-101 NB Ramp

Bayfront Expy/Chilco St

Bayfront Expy/Chrysler Drive



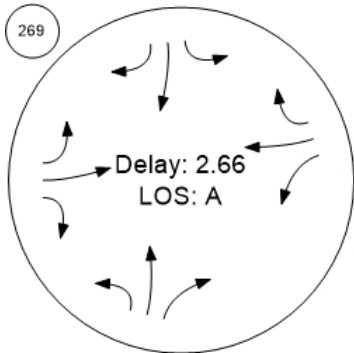
Traffic Conditions

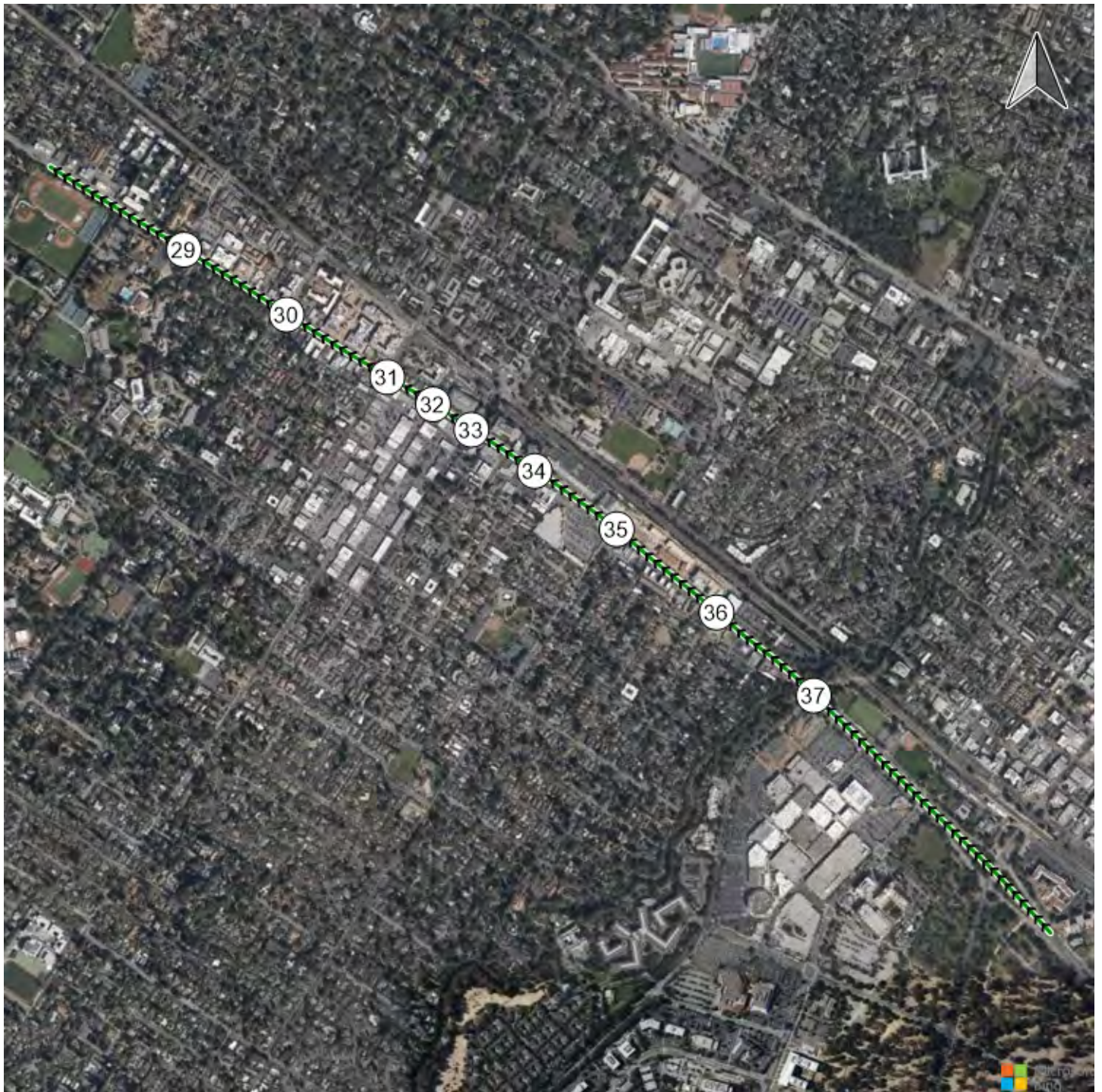


Traffic Conditions



O'Brien Drive/Loop Road







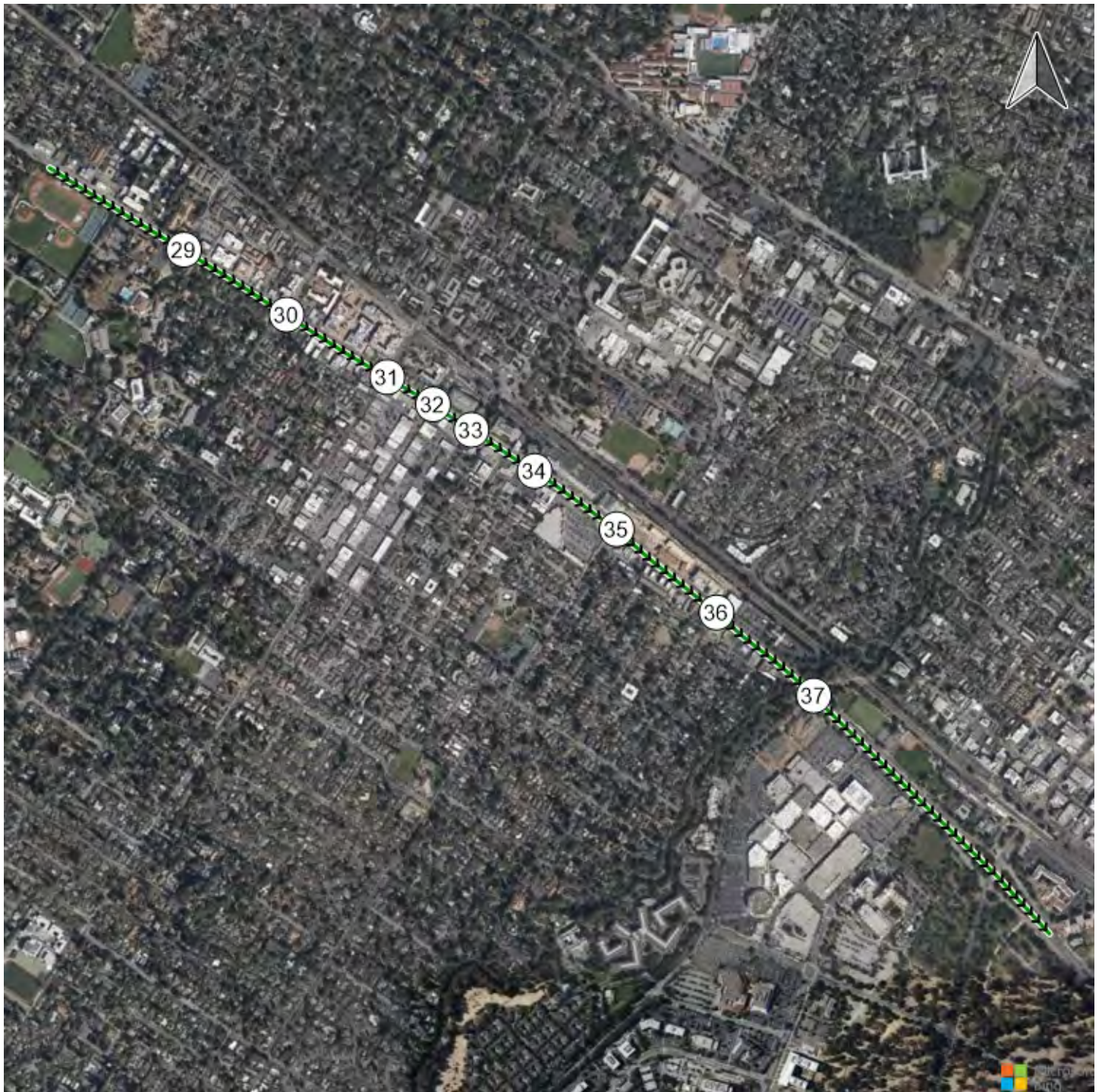
Generated with  PTV VISTRO

Version 2021 (SP 0-6)

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Route 1: ECR NB

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Version 2021 (SP 0-6)

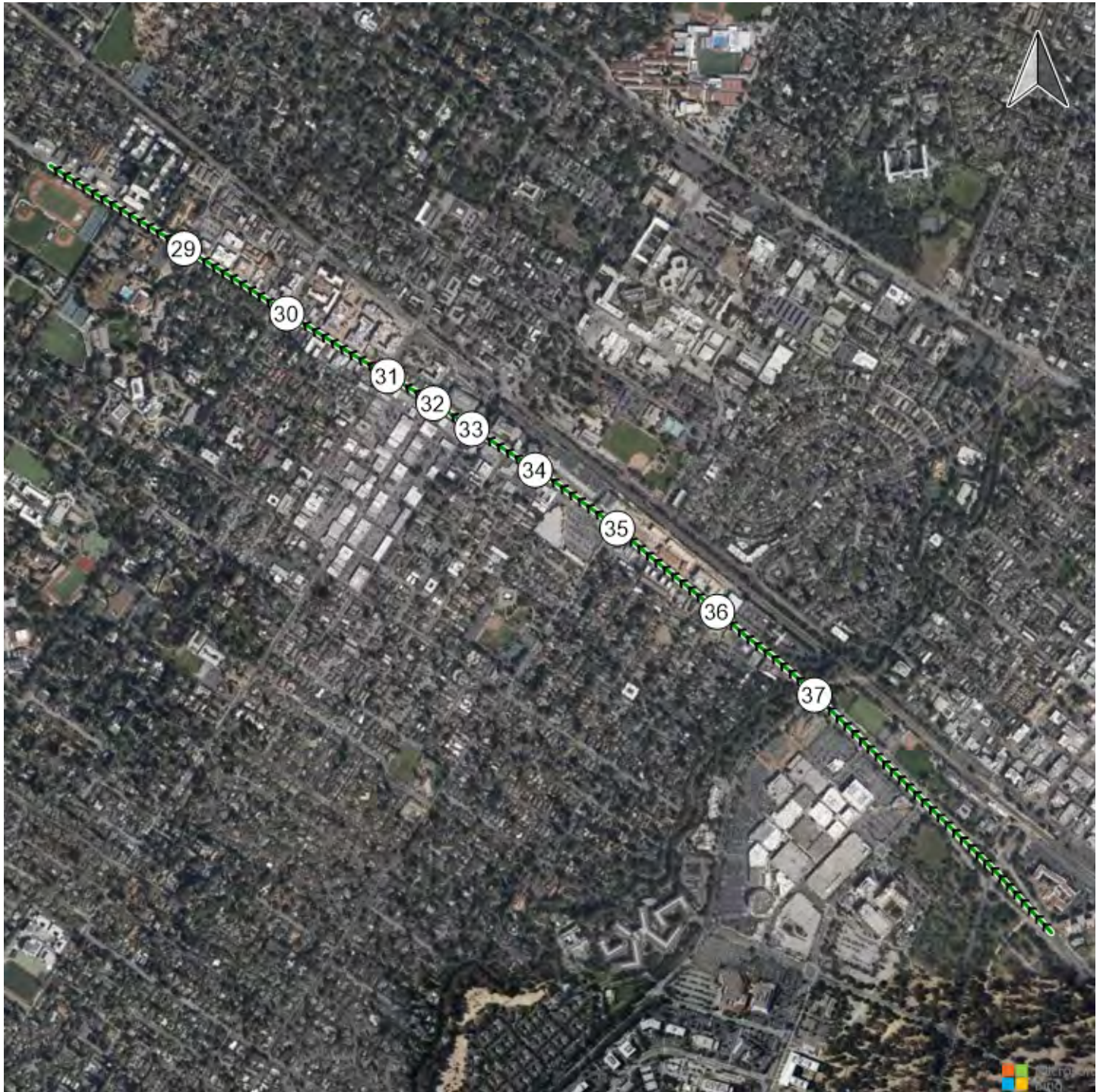
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



Generated with  PTV VISTRO

Version 2021 (SP 0-6)

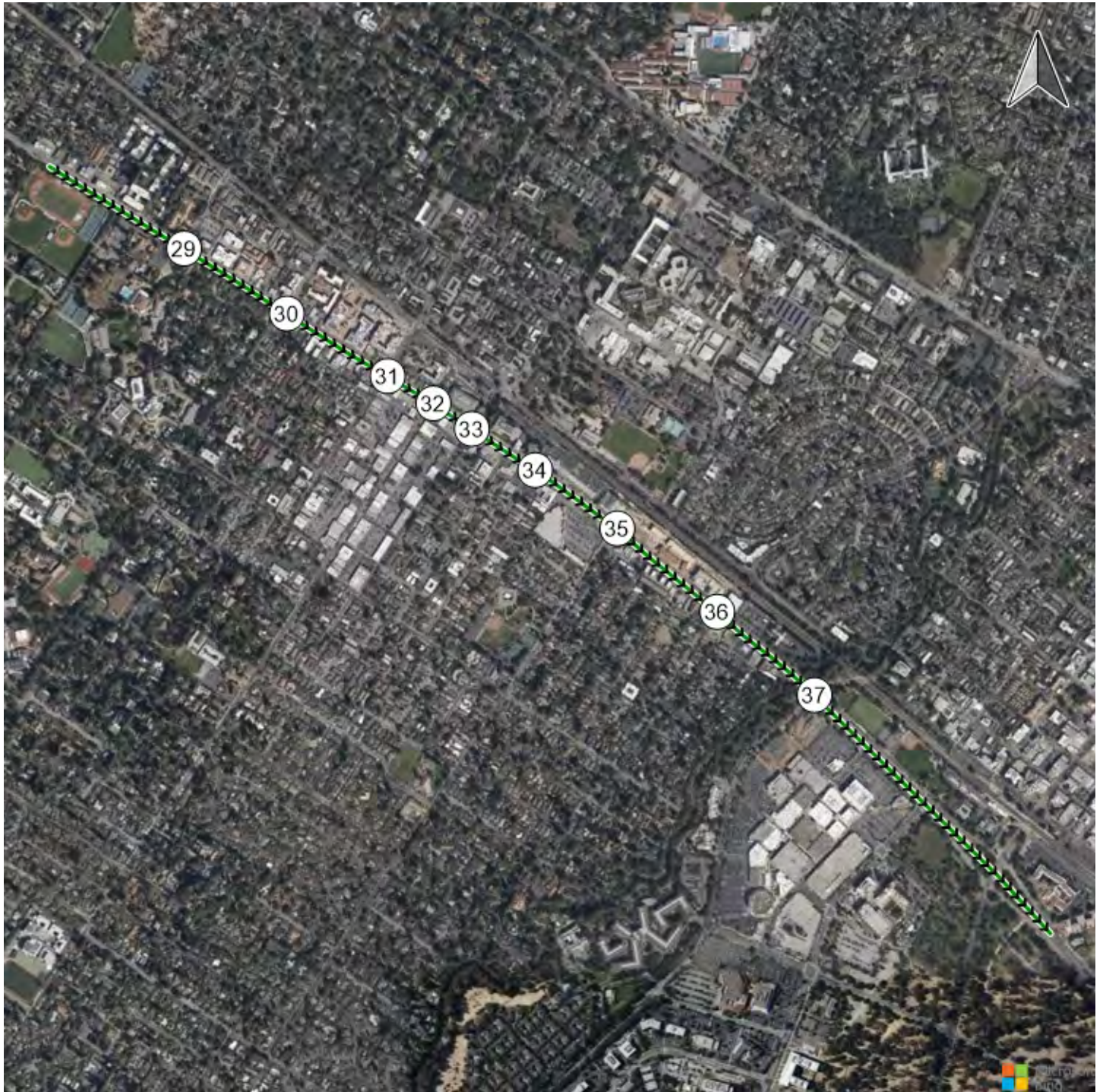
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



Generated with 

Version 2021 (SP 0-6)

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Route 2: ECR SB

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Vistro File: P:\...\Vistro\_AllScenarios\_PM\_2021-12-29\_ChilconConstitution\_OZ.vistro

Scenario 17 Near-Term PM (2025 vols)

Report File: P:\...\Near-Term PM.pdf

12/30/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Left	0.730	17.6	B
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.493	15.9	B
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.720	36.3	D
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.641	18.7	B
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NEB Left	2.415	17.6	B
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 6th Edition	NEB Left	0.427	15.2	B
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Right	1.077	105.8	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	EB Thru	1.023	172.1	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	WB Left	1.284	172.5	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	SB Right	1.081	66.5	E
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	WB Right	1.462	196.9	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.318	166.2	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.379	194.7	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.258	210.0	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.654	11.0	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.537	13.0	B
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NWB Right	0.615	34.5	C
			HCM 6th				



110	Marsh Road/101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	0.858	15.8	B
131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	SB Thru	0.802	19.0	C
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	SB Right	0.882	34.9	C
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.740	105.0	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.137	152.9	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.953	34.1	C
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.818	17.3	B
199	Bafront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.807	13.7	B
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	0.936	29.6	D
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.799	9.7	A
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.712	42.9	D
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	WB Right	0.515	28.5	C
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	0.430	34.0	D
265	Adam Court/ Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.064	11.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↶↷↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	959	1010	279	1255	363
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	959	1010	279	1255	363
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	245	258	70	320	93
Total Analysis Volume [veh/h]	0	979	1031	279	1281	370
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	7	0	5	0
Pedestrian Clearance [s]	0	0	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	43	41	33	33
g / C, Green / Cycle	0.54	0.51	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.24	0.29	0.38	0.23
s, saturation flow rate [veh/h]	4000	3540	3414	1609
c, Capacity [veh/h]	2148	1808	1389	654
d1, Uniform Delay [s]	11.34	13.49	22.50	18.26
k, delay calibration	0.50	0.50	0.04	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.70	1.31	1.19	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.46	0.57	0.92	0.57
d, Delay for Lane Group [s/veh]	12.04	14.80	23.70	19.03
Lane Group LOS	B	B	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.86	5.98	10.77	5.08
50th-Percentile Queue Length [ft/ln]	121.55	149.38	269.27	127.03
95th-Percentile Queue Length [veh/ln]	8.48	9.98	16.15	8.78
95th-Percentile Queue Length [ft/ln]	211.95	249.60	403.83	219.45

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.04	14.80	0.00	23.70	19.03
Movement LOS		B	B		C	B
d_A, Approach Delay [s/veh]	12.04		14.80		22.65	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	17.60					
Intersection LOS	B					
Intersection V/C	0.730					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	29.73
I_p,int, Pedestrian LOS Score for Intersection	2.804	0.000	2.470
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.81	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.367	2.410	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.493

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	38	1327	7	55	892	194	15	5	388	273	6	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	3.70	0.00	1.70	1.30	7.70	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	326	0	0	0
Total Hourly Volume [veh/h]	38	1327	7	55	892	194	15	5	62	273	6	4
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	346	2	14	232	51	4	1	16	71	2	1
Total Analysis Volume [veh/h]	40	1382	7	57	929	202	16	5	65	284	6	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			0			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			0			1	
v_co, Outbound Pedestrian Volume crossing		0			0			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			1			0			0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	51	0	12	48	0	0	41	0	0	36	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	102	102	101	101	101	8	8	17	17
g / C, Green / Cycle	0.04	0.73	0.73	0.72	0.72	0.72	0.06	0.06	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.26	0.26	0.06	0.31	0.31	0.01	0.02	0.08	0.08
s, saturation flow rate [veh/h]	1761	3549	1859	887	1877	1748	1830	2820	1791	1697
c, Capacity [veh/h]	76	2575	1349	664	1356	1262	105	162	215	204
d1, Uniform Delay [s]	65.50	7.09	7.09	7.18	7.84	7.88	62.86	63.60	59.15	59.16
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.09	0.38	0.73	0.02	1.00	1.09	0.68	1.19	3.10	3.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.35	0.35	0.09	0.43	0.43	0.20	0.40	0.70	0.70
d, Delay for Lane Group [s/veh]	69.59	7.48	7.82	7.20	8.83	8.97	63.54	64.79	62.25	62.42
Lane Group LOS	E	A	A	A	A	A	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.48	4.77	5.13	0.25	6.87	6.53	0.74	1.16	5.38	5.11
50th-Percentile Queue Length [ft/ln]	37.04	119.23	128.17	6.22	171.65	163.22	18.55	28.94	134.62	127.84
95th-Percentile Queue Length [veh/ln]	2.67	8.35	8.84	0.45	11.16	10.72	1.34	2.08	9.19	8.82
95th-Percentile Queue Length [ft/ln]	66.67	208.77	221.00	11.20	279.09	267.98	33.39	52.08	229.77	220.55

**Movement, Approach, & Intersection Results**

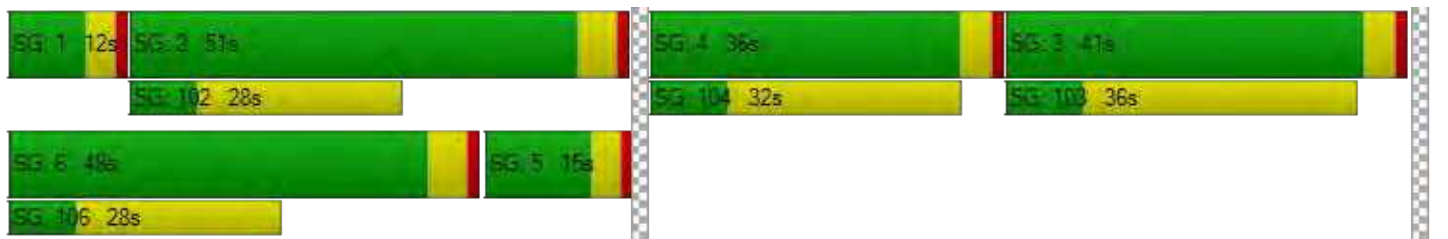
d_M, Delay for Movement [s/veh]	69.59	7.60	7.82	7.20	8.88	8.97	63.54	63.54	64.79	62.33	62.42	62.42
Movement LOS	E	A	A	A	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	9.33			8.82			64.49			62.34		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	15.91											
Intersection LOS	B											
Intersection V/C	0.493											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	58.49			58.49			59.41			59.41		
I_p,int, Pedestrian LOS Score for Intersection	2.924			3.142			2.918			2.108		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	657			615			526			454		
d_b, Bicycle Delay [s]	31.53			33.60			38.01			41.79		
I_b,int, Bicycle LOS Score for Intersection	2.346			2.540			2.239			2.045		
Bicycle LOS	B			B			B			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	196	675	39	13	810	384	446	22	175	109	52	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	174	0	0	0
Total Hourly Volume [veh/h]	196	675	39	13	810	384	446	22	1	109	52	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	181	10	3	218	103	120	6	0	29	14	11
Total Analysis Volume [veh/h]	211	726	42	14	871	413	480	24	1	117	56	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			1			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			2			1	
v_co, Outbound Pedestrian Volume crossing		0			3			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			2			3			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	55	55	12	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	89	89	4	73	73	24	24	24	14	14
g / C, Green / Cycle	0.14	0.64	0.64	0.03	0.52	0.52	0.17	0.17	0.17	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.12	0.21	0.21	0.01	0.36	0.37	0.14	0.14	0.00	0.07	0.06
s, saturation flow rate [veh/h]	1771	1852	1812	1714	1867	1635	1774	1818	1571	1751	1748
c, Capacity [veh/h]	252	1185	1159	45	978	857	309	317	274	179	179
d1, Uniform Delay [s]	58.38	11.47	11.48	66.82	24.81	25.26	55.42	55.42	47.67	60.33	59.67
k, delay calibration	0.43	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.00	0.74	0.76	1.45	3.98	5.00	3.70	3.61	0.00	2.96	1.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.84	0.33	0.33	0.31	0.69	0.71	0.80	0.80	0.00	0.65	0.55
d, Delay for Lane Group [s/veh]	82.37	12.20	12.23	68.27	28.78	30.26	59.11	59.03	47.67	63.29	61.65
Lane Group LOS	F	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.91	5.60	5.50	0.51	17.38	16.19	8.83	9.04	0.03	4.19	3.48
50th-Percentile Queue Length [ft/ln]	222.85	139.91	137.48	12.71	434.43	404.82	220.78	226.05	0.74	104.63	86.94
95th-Percentile Queue Length [veh/ln]	13.81	9.48	9.34	0.91	24.21	22.79	13.70	13.97	0.05	7.53	6.26
95th-Percentile Queue Length [ft/ln]	345.26	236.91	233.62	22.87	605.34	569.81	342.62	349.34	1.34	188.33	156.50

**Movement, Approach, & Intersection Results**

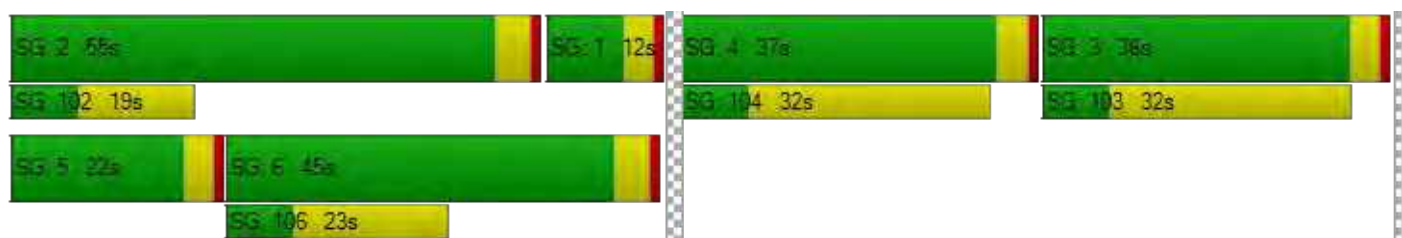
d_M, Delay for Movement [s/veh]	82.37	12.22	12.23	68.27	29.12	30.26	59.07	59.03	47.67	63.29	61.65	61.65
Movement LOS	F	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	27.34			29.90			59.05			62.54		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	36.33											
Intersection LOS	D											
Intersection V/C	0.720											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	59.37	59.37	59.37	59.37
I_p,int, Pedestrian LOS Score for Intersection	2.880	3.029	2.676	2.041
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	721	578	458	469
d_b, Bicycle Delay [s]	28.63	35.41	41.66	41.01
I_b,int, Bicycle LOS Score for Intersection	2.367	2.630	2.680	1.916
Bicycle LOS	B	B	B	A

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	745	58	167	687	102	69	16	2	65	14	280
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	745	58	167	687	102	69	16	2	65	14	280
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	209	16	47	193	29	19	4	1	18	4	79
Total Analysis Volume [veh/h]	2	837	65	188	772	115	78	18	2	73	16	315
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			6			0			6	
v_di, Inbound Pedestrian Volume crossing in		0			6			0			6	
v_co, Outbound Pedestrian Volume crossing		0			3			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			1			5			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	35	35	12	50	50	26	26
g / C, Green / Cycle	0.43	0.43	0.15	0.62	0.62	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.10	0.24	0.24	0.13	0.25
s, saturation flow rate [veh/h]	1863	1647	1795	1885	1787	740	1638
c, Capacity [veh/h]	853	714	273	1175	1114	317	576
d1, Uniform Delay [s]	17.28	17.31	32.18	7.49	7.51	21.49	24.37
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.32
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.66	3.63	3.09	0.96	1.03	1.17	4.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.56	0.59	0.69	0.39	0.39	0.31	0.70
d, Delay for Lane Group [s/veh]	19.94	20.94	35.27	8.45	8.53	22.66	28.85
Lane Group LOS	B	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.73	6.14	3.54	3.45	3.33	1.54	7.21
50th-Percentile Queue Length [ft/ln]	168.17	153.43	88.60	86.31	83.13	38.45	180.14
95th-Percentile Queue Length [veh/ln]	10.98	10.20	6.38	6.21	5.99	2.77	11.61
95th-Percentile Queue Length [ft/ln]	274.50	255.00	159.48	155.35	149.64	69.21	290.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	19.94	20.37	20.94	35.27	8.48	8.53	22.66	22.66	22.66	28.85	28.85	28.85
Movement LOS	B	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	20.41			13.17			22.66			28.85		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	18.74											
Intersection LOS	B											
Intersection V/C	0.641											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			29.79			29.79			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.929			1.805			0.000		
Crosswalk LOS	F			C			A			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	597			1072			682			682		
d_b, Bicycle Delay [s]	19.71			8.63			17.43			17.40		
I_b,int, Bicycle LOS Score for Intersection	2.305			2.446			1.721			2.226		
Bicycle LOS	B			B			A			B		

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.415

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	137	529	417	567	440	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.10	1.30	0.60	1.40	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	137	0	417	567	440	104
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	0	107	146	113	27
Total Analysis Volume [veh/h]	141	0	430	585	454	107
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing in	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	58.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	5	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.0	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	78	78	78	78	78
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	12	12	23	60	38
g / C, Green / Cycle	0.15	0.15	0.29	0.76	0.48
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.24	0.31	0.31
s, saturation flow rate [veh/h]	1781	1588	1791	1891	1802
c, Capacity [veh/h]	273	244	523	1442	862
d1, Uniform Delay [s]	30.59	0.00	25.94	3.21	15.55
k, delay calibration	0.08	0.08	0.14	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.12	0.00	4.20	0.18	3.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	0.82	0.41	0.65
d, Delay for Lane Group [s/veh]	31.71	0.00	30.14	3.39	19.35
Lane Group LOS	C	A	C	A	B
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.47	0.00	7.59	1.82	7.63
50th-Percentile Queue Length [ft/ln]	61.77	0.00	189.81	45.48	190.73
95th-Percentile Queue Length [veh/ln]	4.45	0.00	12.11	3.27	12.16
95th-Percentile Queue Length [ft/ln]	111.18	0.00	302.78	81.86	303.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.71	0.00	30.14	3.39	19.35	19.35
Movement LOS	C	A	C	A	B	B
d_A, Approach Delay [s/veh]	31.71		14.72		19.35	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	17.63					
Intersection LOS	B					
Intersection V/C	2.415					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.02	29.02	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.900	2.826	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1167	1666	775
d_b, Bicycle Delay [s]	6.85	1.11	14.80
I_b,int, Bicycle LOS Score for Intersection	1.560	3.234	2.485
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringwood Ave**

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.427

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↑			↑↵			↵↵↵			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	34	32	32	70	0	220	2	684	110	318	631	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	0.00	0.00	0.00	0.00	2.20	0.00	1.70	0.00	2.10	1.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	8	0	0	57	0	0	0
Total Hourly Volume [veh/h]	34	32	32	70	0	212	2	684	53	318	631	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	8	8	18	0	56	1	180	14	84	166	1
Total Analysis Volume [veh/h]	36	34	34	74	0	223	2	720	56	335	664	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing in	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	58.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.0	2.9	3.0	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	23	23	23	23	93	79	79	91	86	86
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.78	0.66	0.66	0.75	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.08	0.15	0.00	0.20	0.04	0.38	0.18	0.18
s, saturation flow rate [veh/h]	1420	1711	973	1527	807	3569	1563	870	1873	1870
c, Capacity [veh/h]	158	325	245	290	671	2356	1032	686	1348	1346
d1, Uniform Delay [s]	53.34	41.00	47.17	45.81	3.81	8.69	7.18	5.20	5.74	5.74
k, delay calibration	0.10	0.10	0.10	0.10	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.69	0.30	0.66	4.13	0.00	0.34	0.10	2.48	0.44	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.23	0.21	0.30	0.77	0.00	0.31	0.05	0.49	0.25	0.25
d, Delay for Lane Group [s/veh]	54.03	41.31	47.82	49.95	3.81	9.02	7.28	7.68	6.18	6.18
Lane Group LOS	D	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.09	1.77	2.07	6.59	0.01	3.83	0.51	2.56	2.69	2.69
50th-Percentile Queue Length [ft/ln]	27.15	44.17	51.71	164.71	0.26	95.64	12.67	64.02	67.36	67.30
95th-Percentile Queue Length [veh/ln]	1.96	3.18	3.72	10.80	0.02	6.89	0.91	4.61	4.85	4.85
95th-Percentile Queue Length [ft/ln]	48.88	79.50	93.07	269.95	0.47	172.16	22.80	115.24	121.25	121.14

**Movement, Approach, & Intersection Results**

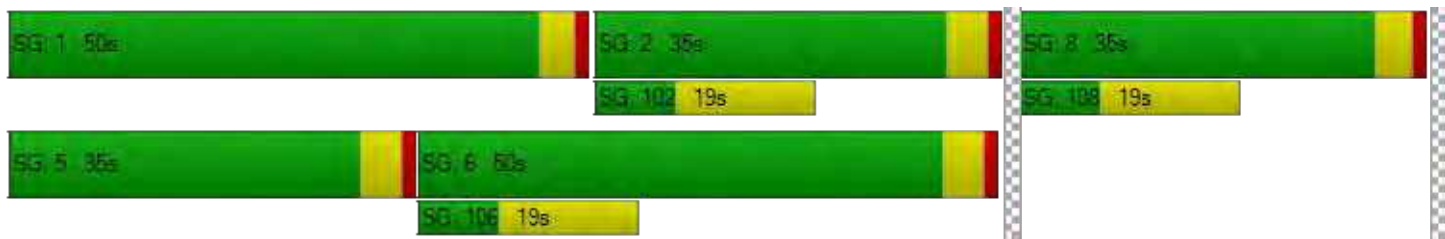
d_M, Delay for Movement [s/veh]	54.03	41.31	41.31	47.82	47.82	49.95	3.81	9.02	7.28	7.68	6.18	6.18
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	45.71			49.42			8.88			6.68		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	15.15											
Intersection LOS	B											
Intersection V/C	0.427											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersection	1.980	2.533	2.958	2.817
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	513	513	757	507
d_b, Bicycle Delay [s]	33.24	33.50	23.40	33.69
I_b,int, Bicycle LOS Score for Intersection	1.731	2.063	2.248	2.385
Bicycle LOS	A	B	B	B

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	105.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.077

**Intersection Setup**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	



**Volumes**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3417	49	372	975	71	1841
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	16.10	4.90	3.80	9.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3417	49	372	975	71	1841
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	872	13	95	249	18	470
Total Analysis Volume [veh/h]	3487	50	380	995	72	1879
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	90	140	50	140	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	5.8	1.5	5.8	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	154	154	154	154	154	154
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	7.80	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	5.80	2.00	0.00
g_i, Effective Green Time [s]	90	90	35	127	15	54
g / C, Green / Cycle	0.58	0.58	0.23	0.83	0.10	0.35
(v / s)_i Volume / Saturation Flow Rate	0.69	0.04	0.11	0.20	0.02	0.44
s, saturation flow rate [veh/h]	5077	1399	3378	5020	3264	4237
c, Capacity [veh/h]	2968	818	778	4146	318	1499
d1, Uniform Delay [s]	31.98	13.77	51.38	2.91	64.12	49.75
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	79.71	0.04	0.18	0.04	0.13	114.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.17	0.06	0.49	0.24	0.23	1.25
d, Delay for Lane Group [s/veh]	111.69	13.81	51.56	2.94	64.26	164.41
Lane Group LOS	F	B	D	A	E	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	54.58	0.72	6.21	1.43	1.31	34.87
50th-Percentile Queue Length [ft/ln]	1364.49	17.99	155.13	35.75	32.78	871.78
95th-Percentile Queue Length [veh/ln]	75.81	1.30	10.29	2.57	2.36	51.21
95th-Percentile Queue Length [ft/ln]	1895.26	32.38	257.26	64.35	59.01	1280.19

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	111.69	13.81	51.56	2.94	64.26	164.41
Movement LOS	F	B	D	A	E	F
d_A, Approach Delay [s/veh]	110.30		16.38		160.71	
Approach LOS	F		B		F	
d_I, Intersection Delay [s/veh]	105.82					
Intersection LOS	F					
Intersection V/C	1.077					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.19	0.00	68.19
I_p,int, Pedestrian LOS Score for Intersection	3.796	0.000	3.091
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	546	572	195
d_b, Bicycle Delay [s]	40.66	39.24	62.66
I_b,int, Bicycle LOS Score for Intersection	3.505	2.316	1.670
Bicycle LOS	D	B	A

**Sequence**

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	172.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.023

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
	151	110	1112	170	213	133	119	2079	172	588	814	34
Base Volume Input [veh/h]	151	110	1112	170	213	133	119	2079	172	588	814	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	70	0	0	45	0	0	1
Total Hourly Volume [veh/h]	151	110	1112	170	213	63	119	2079	127	588	814	33
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	28	287	44	55	16	31	536	33	152	210	9
Total Analysis Volume [veh/h]	156	113	1146	175	220	65	123	2143	131	606	839	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			11			11			0	
v_di, Inbound Pedestrian Volume crossing in		0			11			11			0	
v_co, Outbound Pedestrian Volume crossing		8			0			8			0	
v_ci, Inbound Pedestrian Volume crossing mi		8			0			8			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			3			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.0	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	0	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	2.5	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	4.50	4.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	2.50	2.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	11	13	39	9	12	12	66	40	40	66	56	56
g / C, Green / Cycle	0.11	0.13	0.38	0.09	0.12	0.12	0.64	0.38	0.38	0.64	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.09	0.08	0.28	0.10	0.14	0.04	0.12	0.69	0.15	0.42	0.17	0.02
s, saturation flow rate [veh/h]	1749	1479	4142	1748	1606	1478	987	3084	889	1451	4959	1615
c, Capacity [veh/h]	190	186	1566	151	188	173	641	1185	342	925	2683	874
d1, Uniform Delay [s]	45.47	43.10	27.72	47.59	45.98	42.31	7.95	32.07	23.16	24.66	13.20	11.21
k, delay calibration	0.11	0.11	0.15	0.39	0.20	0.11	0.11	0.15	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.61	3.17	0.93	114.16	96.51	1.34	0.14	364.54	0.71	0.79	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	0.61	0.73	1.16	1.17	0.37	0.19	1.81	0.38	0.66	0.31	0.04
d, Delay for Lane Group [s/veh]	54.08	46.26	28.65	161.76	142.49	43.65	8.09	396.61	23.86	25.46	13.27	11.22
Lane Group LOS	D	D	C	F	F	D	A	F	C	C	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	4.30	1.42	7.84	8.75	4.99	1.63	0.52	49.58	2.36	2.90	3.51	0.36
50th-Percentile Queue Length [ft/ln]	107.49	35.60	196.06	218.83	124.72	40.71	12.98	1239.59	58.97	72.55	87.75	9.12
95th-Percentile Queue Length [veh/ln]	7.70	2.56	12.43	14.32	8.98	2.93	0.93	80.71	4.25	5.22	6.32	0.66
95th-Percentile Queue Length [ft/ln]	192.50	64.08	310.87	358.07	224.50	73.27	23.36	2017.79	106.15	130.58	157.96	16.42



**Movement, Approach, & Intersection Results**

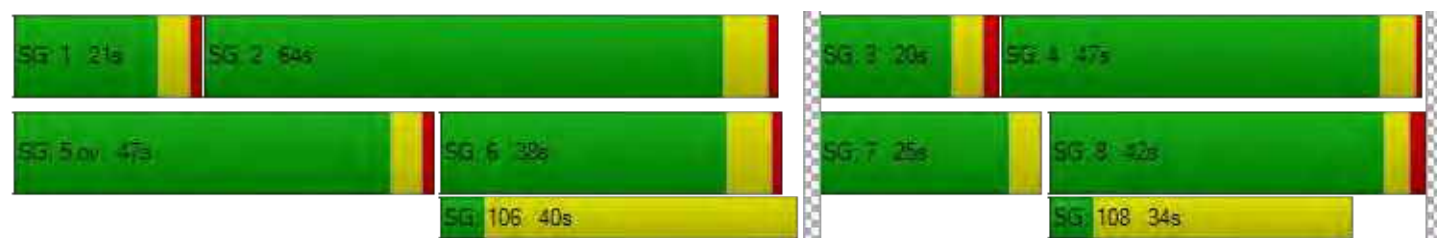
d_M, Delay for Movement [s/veh]	54.08	46.26	28.65	161.76	142.49	43.65	8.09	396.61	23.86	25.46	13.27	11.22
Movement LOS	D	D	C	F	F	D	A	F	C	C	B	B
d_A, Approach Delay [s/veh]	32.86			135.85			356.30			18.22		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	172.14											
Intersection LOS	F											
Intersection V/C	1.023											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.44	0.00	43.44	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.465	0.000	3.235	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	818	720	615	1114
d_b, Bicycle Delay [s]	18.18	21.34	24.97	10.21
I_b,int, Bicycle LOS Score for Intersection	2.727	1.997	2.903	2.374
Bicycle LOS	B	A	C	B

**Sequence**





Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	172.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.284

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	43	1065	7	142	837	54	94	17	35	193	18	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.50	33.30	7.70	3.50	0.00	0.60	26.70	5.10	0.70	5.90	1.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	1065	7	142	837	54	94	17	35	193	18	138
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	303	2	40	238	15	27	5	10	55	5	39
Total Analysis Volume [veh/h]	49	1210	8	161	951	61	107	19	40	219	20	157
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			86			11			85	
v_di, Inbound Pedestrian Volume crossing in		11			85			12			86	
v_co, Outbound Pedestrian Volume crossing		13			14			14			13	
v_ci, Inbound Pedestrian Volume crossing mi		13			14			14			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			18			7			15	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	90	73	73	90	83	83	33	33
g / C, Green / Cycle	0.69	0.56	0.56	0.69	0.64	0.64	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.74	0.74	0.33	0.62	0.62	0.37	0.58
s, saturation flow rate [veh/h]	627	826	824	491	826	803	453	681
c, Capacity [veh/h]	182	464	463	163	527	512	160	204
d1, Uniform Delay [s]	32.00	28.46	28.46	43.40	22.41	22.72	53.15	47.44
k, delay calibration	0.16	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.14	155.89	156.43	67.00	32.63	34.96	81.79	442.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.27	1.31	1.31	0.99	0.97	0.98	1.04	1.94
d, Delay for Lane Group [s/veh]	33.14	184.35	184.89	110.40	55.04	57.68	134.94	489.96
Lane Group LOS	C	F	F	F	E	E	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.45	33.31	33.28	4.72	18.45	18.55	8.97	31.66
50th-Percentile Queue Length [ft/ln]	11.23	832.63	831.88	117.91	461.16	463.83	224.31	791.60
95th-Percentile Queue Length [veh/ln]	0.81	51.44	51.42	8.28	25.49	25.62	14.17	52.44
95th-Percentile Queue Length [ft/ln]	20.21	1285.96	1285.49	206.95	637.26	640.44	354.29	1311.07

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.14	184.62	184.89	110.40	56.26	57.68	134.94	134.94	134.94	489.96	489.96	489.96
Movement LOS	C	F	F	F	E	E	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	178.76			63.76			134.94			489.96		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	172.46											
Intersection LOS	F											
Intersection V/C	1.284											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.41	54.41
I_p,int, Pedestrian LOS Score for Intersection	3.296	3.054	1.898	2.102
Crosswalk LOS	C	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1124	1078	505	508
d_b, Bicycle Delay [s]	12.47	13.93	36.42	36.41
I_b,int, Bicycle LOS Score for Intersection	2.605	2.527	1.834	2.213
Bicycle LOS	B	B	A	B

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	66.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.081

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↵		↵		↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	80	933	1204	24	35	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	3.30	2.80	0.00	0.00	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	80	933	1204	24	35	114
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	251	324	6	9	31
Total Analysis Volume [veh/h]	86	1003	1295	26	38	123
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing in	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	24	106	90	90	24	24
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	10	103	90	90	20	20
g / C, Green / Cycle	0.08	0.79	0.69	0.69	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.64	0.79	0.80	0.04	0.14
s, saturation flow rate [veh/h]	1270	1576	831	824	1021	897
c, Capacity [veh/h]	99	1252	576	571	155	136
d1, Uniform Delay [s]	59.15	7.56	19.94	19.94	48.49	53.90
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.19	5.46	85.07	88.82	0.30	20.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.87	0.80	1.15	1.16	0.25	0.90
d, Delay for Lane Group [s/veh]	67.34	13.02	105.01	108.75	48.80	74.84
Lane Group LOS	E	B	F	F	D	E
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.99	6.60	28.16	28.52	1.11	4.73
50th-Percentile Queue Length [ft/ln]	74.65	165.06	704.01	713.12	27.67	118.17
95th-Percentile Queue Length [veh/ln]	5.37	10.82	41.15	41.87	1.99	8.29
95th-Percentile Queue Length [ft/ln]	134.36	270.42	1028.84	1046.70	49.80	207.31

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	67.34	13.02	106.84	108.75	48.80	74.84
Movement LOS	E	B	F	F	D	E
d_A, Approach Delay [s/veh]	17.31		106.88		68.69	
Approach LOS	B		F		E	
d_I, Intersection Delay [s/veh]	66.55					
Intersection LOS	E					
Intersection V/C	1.081					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	2.971	2.918	2.047
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.00	7.44	45.70
I_b,int, Bicycle LOS Score for Intersection	2.458	2.649	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	196.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.462

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1000	464	57	1095	274	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	6.50	2.80	2.70	1.80	6.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1000	464	57	1095	274	115
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	269	125	15	294	74	31
Total Analysis Volume [veh/h]	1075	499	61	1177	295	124
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	16.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	84	84	13	100	23	23
g / C, Green / Cycle	0.65	0.65	0.10	0.77	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.83	0.92	0.09	0.92	0.34	0.34
s, saturation flow rate [veh/h]	1293	540	643	1286	648	578
c, Capacity [veh/h]	838	350	63	989	114	101
d1, Uniform Delay [s]	22.83	21.66	58.46	15.00	53.56	53.56
k, delay calibration	0.50	0.50	0.10	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	136.04	207.02	43.45	95.79	456.35	460.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.28	1.42	0.97	1.19	1.95	1.95
d, Delay for Lane Group [s/veh]	158.87	228.68	101.91	110.79	509.91	514.41
Lane Group LOS	F	F	F	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	27.00	28.98	2.73	23.85	18.12	16.29
50th-Percentile Queue Length [ft/ln]	674.98	724.62	68.17	596.31	452.88	407.37
95th-Percentile Queue Length [veh/ln]	42.34	47.53	4.91	36.54	30.95	28.19
95th-Percentile Queue Length [ft/ln]	1058.46	1188.22	122.71	913.48	773.72	704.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	158.87	228.68	101.91	110.79	511.11	514.41
Movement LOS	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	181.00		110.35		512.03	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	196.86					
Intersection LOS	F					
Intersection V/C	1.462					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.276
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.14	3.46	44.22
I_b,int, Bicycle LOS Score for Intersection	2.858	2.581	2.251
Bicycle LOS	C	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	166.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.318

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	326	1311	272	78	1206	26	33	177	267	283	274	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	326	1311	272	78	1206	26	33	177	92	283	274	59
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	360	75	21	331	7	9	49	25	78	75	16
Total Analysis Volume [veh/h]	358	1441	299	86	1325	29	36	195	101	311	301	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	63	63	8	58	58	28	28	28	16	16	16
g / C, Green / Cycle	0.10	0.49	0.49	0.06	0.45	0.45	0.21	0.21	0.21	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.28	0.47	0.48	0.09	0.48	0.48	0.02	0.20	0.07	0.09	0.23	0.05
s, saturation flow rate [veh/h]	1273	2481	1190	952	1853	960	1810	965	1537	3409	1303	1414
c, Capacity [veh/h]	127	1208	580	59	831	430	388	207	330	414	158	172
d1, Uniform Delay [s]	58.48	32.34	32.88	60.98	35.84	35.84	40.92	50.26	42.79	55.21	57.10	52.30
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.04	0.16	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	835.70	19.16	33.95	221.06	52.38	65.01	0.04	24.13	0.19	1.04	428.88	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.81	0.97	0.99	1.46	1.07	1.08	0.09	0.94	0.31	0.75	1.90	0.38
d, Delay for Lane Group [s/veh]	894.19	51.50	66.83	282.04	88.22	100.84	40.96	74.39	42.98	56.25	485.98	52.81
Lane Group LOS	F	D	E	F	F	F	D	E	D	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	33.71	20.02	22.17	5.57	19.07	21.26	0.94	7.61	2.76	4.99	24.04	1.98
50th-Percentile Queue Length [ft/ln]	842.69	500.59	554.30	139.19	476.77	531.59	23.50	190.34	69.08	124.76	600.90	49.42
95th-Percentile Queue Length [veh/ln]	53.60	27.36	29.89	10.02	27.56	30.37	1.69	12.14	4.97	8.65	38.86	3.56
95th-Percentile Queue Length [ft/ln]	1339.96	684.05	747.36	250.54	688.99	759.16	42.30	303.47	124.35	216.35	971.41	88.95

**Movement, Approach, & Intersection Results**

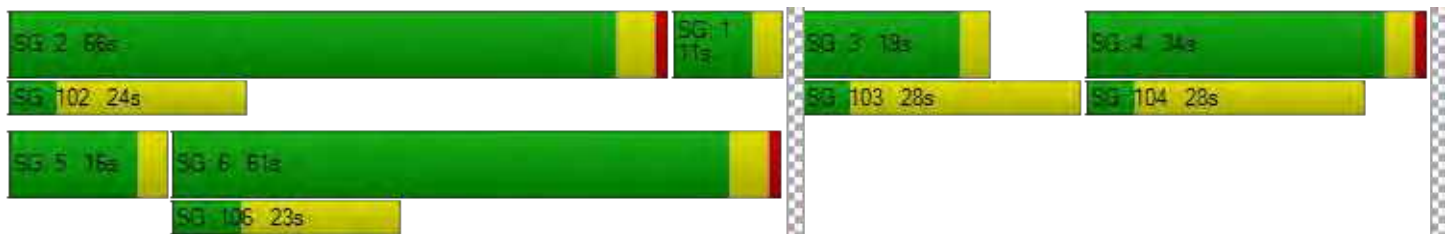
d_M, Delay for Movement [s/veh]	894.19	54.40	66.83	282.04	92.35	100.84	40.96	74.39	42.98	56.25	485.98	52.81
Movement LOS	F	D	E	F	F	F	D	E	D	E	F	D
d_A, Approach Delay [s/veh]	199.47			103.85			61.21			246.98		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	166.17											
Intersection LOS	F											
Intersection V/C	1.318											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.46	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.358	2.964	2.689	2.747
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	939	862	462	246
d_b, Bicycle Delay [s]	18.31	21.11	38.53	50.13
I_b,int, Bicycle LOS Score for Intersection	2.714	2.352	2.396	2.751
Bicycle LOS	B	B	B	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	194.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.379

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↵		↵		↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	20	1375	717	180	283	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	20	1375	717	0	283	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	354	185	0	73	0
Total Analysis Volume [veh/h]	21	1418	739	0	292	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	2	41	36	36	29	29
g / C, Green / Cycle	0.02	0.52	0.45	0.45	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.01	0.84	0.44	0.00	0.34	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	1615	850	1596
c, Capacity [veh/h]	35	865	762	731	308	579
d1, Uniform Delay [s]	38.73	19.27	21.26	0.00	24.62	0.00
k, delay calibration	0.04	0.40	0.15	0.15	0.24	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.18	291.59	12.32	0.00	24.53	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.61	1.64	0.97	0.00	0.95	0.00
d, Delay for Lane Group [s/veh]	44.90	310.86	33.58	0.00	49.16	0.00
Lane Group LOS	D	F	C	A	D	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.46	42.01	7.21	0.00	7.08	0.00
50th-Percentile Queue Length [ft/ln]	11.46	1050.33	180.21	0.00	177.05	0.00
95th-Percentile Queue Length [veh/ln]	0.83	69.10	11.61	0.00	11.45	0.00
95th-Percentile Queue Length [ft/ln]	20.63	1727.49	290.29	0.00	286.15	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.90	310.86	33.58	0.00	49.16	0.00
Movement LOS	D	F	C	A	D	A
d_A, Approach Delay [s/veh]	306.98		33.58		49.16	
Approach LOS	F		C		D	
d_I, Intersection Delay [s/veh]	194.70					
Intersection LOS	F					
Intersection V/C	1.379					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	29.50
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.190
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	906	906	906
d_b, Bicycle Delay [s]	11.95	11.93	11.91
I_b,int, Bicycle LOS Score for Intersection	2.747	2.353	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	210.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.258

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	9	1037	4	29	538	18	133	2	31	21	7	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	2.10	0.00	0.00	2.60	27.60	4.30	0.00	17.90	0.00	0.00	6.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	0
Total Hourly Volume [veh/h]	9	1037	4	29	538	18	133	2	13	21	7	46
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	288	1	8	149	5	37	1	4	6	2	13
Total Analysis Volume [veh/h]	10	1152	4	32	598	20	148	2	14	23	8	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing in	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	151	151	151	151	151	151	151	151	151	151
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	1	100	100	4	102	11	11	11	18	18
g / C, Green / Cycle	0.01	0.66	0.66	0.02	0.68	0.07	0.07	0.07	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.90	0.91	0.02	1.04	0.04	0.04	0.03	0.01	0.11
s, saturation flow rate [veh/h]	1095	688	589	1810	593	1748	1812	441	1810	553
c, Capacity [veh/h]	10	456	390	43	401	127	132	32	221	68
d1, Uniform Delay [s]	74.73	25.48	25.48	73.26	24.42	67.75	67.75	66.84	58.93	65.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	118.38	178.21	180.54	22.85	254.89	4.13	3.98	9.10	0.20	27.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	1.37	1.37	0.75	1.54	0.58	0.58	0.44	0.10	0.87
d, Delay for Lane Group [s/veh]	193.11	203.69	206.01	96.11	279.31	71.88	71.73	75.94	59.13	92.12
Lane Group LOS	F	F	F	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.73	38.05	32.81	1.52	41.91	2.98	3.08	0.61	0.81	2.76
50th-Percentile Queue Length [ft/ln]	18.36	951.24	820.32	37.92	1047.81	74.54	77.08	15.31	20.19	69.01
95th-Percentile Queue Length [veh/ln]	1.32	59.81	52.26	2.73	68.96	5.37	5.55	1.10	1.45	4.97
95th-Percentile Queue Length [ft/ln]	33.05	1495.33	1306.51	68.25	1724.04	134.18	138.75	27.57	36.35	124.23

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	193.11	204.75	206.01	96.11	279.31	279.31	71.81	71.73	75.94	59.13	92.12	92.12
Movement LOS	F	F	F	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	204.66			270.29			72.16			82.87		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	209.97											
Intersection LOS	F											
Intersection V/C	1.258											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.80	64.80	64.80	64.80
I_p,int, Pedestrian LOS Score for Intersection	2.525	2.748	2.199	1.997
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	265	265	398	398
d_b, Bicycle Delay [s]	56.81	56.99	48.41	48.41
I_b,int, Bicycle LOS Score for Intersection	2.522	2.632	1.860	1.695
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue					
Base Volume Input [veh/h]	14	693	5	2	701	101	111	2	37	15	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.10	0.00	0.00	3.70	2.40	3.90	0.00	3.20	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	693	5	2	701	101	111	2	37	15	4	6
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	190	1	1	193	28	30	1	10	4	1	2
Total Analysis Volume [veh/h]	15	762	5	2	770	111	122	2	41	16	4	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		19			15			19			15	
v_di, Inbound Pedestrian Volume crossing in		19			15			19			15	
v_co, Outbound Pedestrian Volume crossing		10			8			8			11	
v_ci, Inbound Pedestrian Volume crossing mi		11			8			8			10	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		8			4			4			4	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	76	76	76	76	16	16
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.41	0.00	0.49	0.12	0.02
s, saturation flow rate [veh/h]	640	1851	712	1796	1409	1518
c, Capacity [veh/h]	388	1399	469	1357	291	304
d1, Uniform Delay [s]	13.08	5.09	9.82	5.85	39.30	35.62
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	1.55	0.02	2.42	1.73	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.04	0.55	0.00	0.65	0.57	0.09
d, Delay for Lane Group [s/veh]	13.27	6.64	9.84	8.27	41.04	35.75
Lane Group LOS	B	A	A	A	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.19	5.99	0.02	7.63	3.93	0.58
50th-Percentile Queue Length [ft/ln]	4.87	149.74	0.52	190.86	98.30	14.40
95th-Percentile Queue Length [veh/ln]	0.35	10.00	0.04	12.17	7.08	1.04
95th-Percentile Queue Length [ft/ln]	8.76	250.09	0.94	304.14	176.93	25.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.27	6.64	6.64	9.84	8.27	8.27	41.04	41.04	41.04	35.75	35.75	35.75
Movement LOS	B	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	6.77			8.27			41.04			35.75		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	10.95											
Intersection LOS	B											
Intersection V/C	0.654											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.59			39.59			39.59			39.59		
I_p,int, Pedestrian LOS Score for Intersection	2.404			2.695			1.885			1.737		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.85			4.84			29.77			29.77		
I_b,int, Bicycle LOS Score for Intersection	2.850			3.017			1.832			1.604		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇐			⇑⇐⇑			⇑⇐⇑			⇑⇐⇑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	656	95	54	687	10	28	105	5	81	50	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	2.70	0.00	3.30	2.00	10.10	0.00	2.30	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	656	95	54	687	10	28	105	5	81	50	58
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	171	25	14	179	3	7	27	1	21	13	15
Total Analysis Volume [veh/h]	3	683	99	56	716	10	29	109	5	84	52	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing in	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	75	75	75	75	17	17	17	17
g / C, Green / Cycle	0.75	0.75	0.75	0.75	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.00	0.43	0.08	0.39	0.02	0.06	0.06	0.07
s, saturation flow rate [veh/h]	740	1806	702	1854	1261	1852	1294	1676
c, Capacity [veh/h]	496	1354	454	1390	181	312	190	282
d1, Uniform Delay [s]	9.13	5.53	11.29	5.15	42.74	36.84	44.16	37.05
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	1.80	0.56	1.41	0.41	0.72	1.61	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.58	0.12	0.52	0.16	0.37	0.44	0.40
d, Delay for Lane Group [s/veh]	9.15	7.33	11.85	6.56	43.15	37.56	45.78	37.95
Lane Group LOS	A	A	B	A	D	D	D	D
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	6.62	0.68	5.69	0.69	2.54	2.11	2.52
50th-Percentile Queue Length [ft/ln]	0.77	165.60	17.00	142.18	17.37	63.59	52.82	63.06
95th-Percentile Queue Length [veh/ln]	0.06	10.84	1.22	9.60	1.25	4.58	3.80	4.54
95th-Percentile Queue Length [ft/ln]	1.38	271.12	30.60	239.96	31.26	114.45	95.08	113.50



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	9.15	7.33	7.33	11.85	6.56	6.56	43.15	37.56	37.56	45.78	37.95	37.95
Movement LOS	A	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	7.34			6.94			38.69			41.31		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	13.02											
Intersection LOS	B											
Intersection V/C	0.537											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.60			39.60			39.60			39.60		
I_p,int, Pedestrian LOS Score for Intersection	2.495			2.493			2.006			2.149		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.87			4.86			29.79			29.82		
I_b,int, Bicycle LOS Score for Intersection	2.855			2.850			1.796			1.883		
Bicycle LOS	C			C			A			A		

**Sequence**


Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	34.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	30	240	244	372	96	291	120	439	204	277	494	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	1.10	0.00	1.70	0.00	2.40	1.10	0.50	2.30	6.40	0.00	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	120	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	30	240	124	372	96	0	120	439	204	277	494	15
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	63	33	98	25	0	32	116	54	73	130	4
Total Analysis Volume [veh/h]	32	253	131	392	101	0	126	462	215	292	520	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			6			12			6	
v_di, Inbound Pedestrian Volume crossing in		12			6			12			6	
v_co, Outbound Pedestrian Volume crossing		5			5			4			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			4			5			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		50			19			4			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	20	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	85	85	85	85	85	85	85	85	85	85	85	85	85
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	17	17	17	17	17	17	15	15	15	15	18	18	18
g / C, Green / Cycle	0.20	0.20	0.20	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.02	0.13	0.09	0.14	0.14	0.00	0.07	0.13	0.13	0.13	0.16	0.16	0.16
s, saturation flow rate [veh/h]	1778	1883	1455	1785	1845	1584	1794	1892	1870	1541	1718	1892	1702
c, Capacity [veh/h]	356	377	291	347	358	308	323	341	337	278	362	399	359
d1, Uniform Delay [s]	27.93	31.68	29.84	32.21	32.21	0.00	31.00	32.99	33.00	33.01	31.64	31.64	31.67
k, delay calibration	0.11	0.12	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	2.32	1.09	2.56	2.47	0.00	0.77	2.62	2.68	3.59	2.97	2.69	3.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.09	0.67	0.45	0.70	0.70	0.00	0.39	0.70	0.70	0.72	0.74	0.74	0.74
d, Delay for Lane Group [s/veh]	28.03	33.99	30.93	34.77	34.69	0.00	31.77	35.61	35.68	36.60	34.61	34.33	34.71
Lane Group LOS	C	C	C	C	C	A	C	D	D	D	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.54	4.95	2.38	4.87	5.02	0.00	2.32	4.79	4.74	4.10	5.32	5.83	5.31
50th-Percentile Queue Length [ft/ln]	13.39	123.73	59.60	121.70	125.57	0.00	57.91	119.6	118.6	102.4	133.08	145.64	132.66
95th-Percentile Queue Length [veh/ln]	0.96	8.60	4.29	8.49	8.70	0.00	4.17	8.37	8.32	7.38	9.11	9.78	9.08
95th-Percentile Queue Length [ft/ln]	24.10	214.95	107.27	212.17	217.46	0.00	104.2	209.3	207.9	184.4	227.67	244.60	227.11

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.03	33.99	30.93	34.74	34.69	0.00	31.77	35.64	36.60	34.59	34.51	34.71
Movement LOS	C	C	C	C	C	A	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	32.57			34.73			35.27			34.54		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	34.49											
Intersection LOS	C											
Intersection V/C	0.615											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.58	31.58	31.58	31.58
I_p,int, Pedestrian LOS Score for Intersection	2.487	4.247	4.353	2.748
Crosswalk LOS	B	D	E	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	672	966	639	803
d_b, Bicycle Delay [s]	19.34	11.52	19.83	15.42
I_b,int, Bicycle LOS Score for Intersection	2.444	4.023	3.047	2.243
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road/101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	15.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.858

**Intersection Setup**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1↑↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	1842	0	0	946	570	639
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1842	0	0	946	570	639
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	465	0	0	239	144	161
Total Analysis Volume [veh/h]	1861	0	0	956	576	645
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	0	5	0
Pedestrian Clearance [s]	12	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	52	52	23	23
g / C, Green / Cycle	0.66	0.66	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.53	0.27	0.17	0.25
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2291	2317	970	743
d1, Uniform Delay [s]	10.10	6.47	24.43	26.99
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.27	0.54	0.22	1.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.41	0.59	0.87
d, Delay for Lane Group [s/veh]	13.37	7.01	24.64	28.23
Lane Group LOS	B	A	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.53	3.30	4.51	5.68
50th-Percentile Queue Length [ft/ln]	263.13	82.38	112.87	141.96
95th-Percentile Queue Length [veh/ln]	15.85	5.93	8.00	9.59
95th-Percentile Queue Length [ft/ln]	396.14	148.28	199.99	239.66

**Movement, Approach, & Intersection Results**

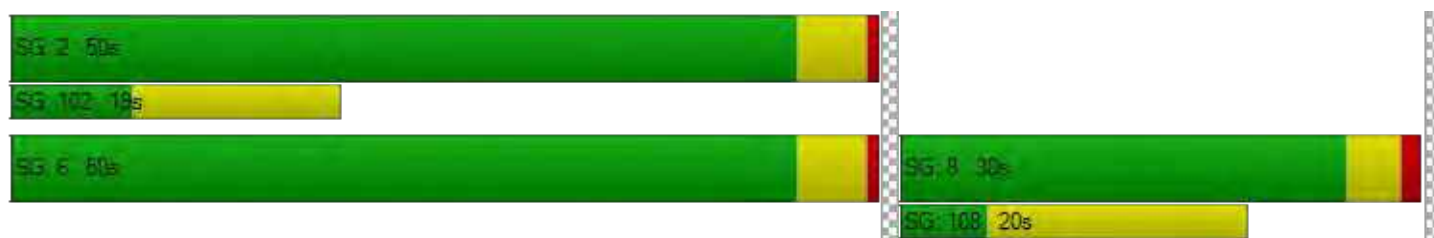
d_M, Delay for Movement [s/veh]	13.37	0.00	0.00	7.01	24.64	28.23
Movement LOS	B			A	C	C
d_A, Approach Delay [s/veh]	13.37		7.01		26.54	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	15.85					
Intersection LOS	B					
Intersection V/C	0.858					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.971	2.422
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.47	18.31
I_b,int, Bicycle LOS Score for Intersection	3.095	2.348	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	19.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.802

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	21	112	18	73	424	36	22	124	22	7	16	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	112	18	73	424	36	22	124	22	7	16	47
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	30	5	20	115	10	6	35	6	2	4	13
Total Analysis Volume [veh/h]	23	121	19	79	459	39	25	140	25	8	17	51
Pedestrian Volume [ped/h]	3			4			2			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	648	719	604	610
Degree of Utilization, x	0.25	0.80	0.31	0.12

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.99	8.29	1.34	0.42
95th-Percentile Queue Length [ft]	24.80	207.21	33.56	10.62
Approach Delay [s/veh]	10.41	25.01	11.67	9.75
Approach LOS	B	D	B	A
Intersection Delay [s/veh]	18.97			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	179	40	1676	12	31	5	9	567	208	2034	393	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	40	1676	12	31	5	9	567	208	2034	393	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	10	436	3	8	1	2	148	54	530	102	4
Total Analysis Volume [veh/h]	186	42	1746	13	32	5	9	591	217	2119	409	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			4			4			0	
v_di, Inbound Pedestrian Volume crossing in		0			4			4			0	
v_co, Outbound Pedestrian Volume crossing		0			13			0			13	
v_ci, Inbound Pedestrian Volume crossing mi		0			13			0			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			13			8			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	6	4	6	4	1	4	1	2	8
Auxiliary Signal Groups			2,3									
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	10	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	10	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	58	11	11	25	32	25	32	59	32	59	58	0
Vehicle Extension [s]	4.5	2.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0	4.5	0.0
Walk [s]	5	0	0	10	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	10	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.1	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	35	125	10	10	29	29	29	76	76
g / C, Green / Cycle	0.22	0.78	0.06	0.06	0.18	0.18	0.18	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.12	0.42	0.02	0.01	0.17	0.17	0.14	0.41	0.25
s, saturation flow rate [veh/h]	1826	4190	1707	1588	1891	1724	1552	5150	1671
c, Capacity [veh/h]	402	3181	137	97	345	315	284	2454	796
d1, Uniform Delay [s]	55.62	7.95	71.59	71.56	64.08	64.08	61.91	37.26	29.39
k, delay calibration	0.14	0.50	0.04	0.04	0.04	0.04	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.68	0.69	0.27	0.45	3.81	4.15	1.63	4.34	2.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.55	0.20	0.23	0.91	0.91	0.77	0.86	0.53
d, Delay for Lane Group [s/veh]	57.30	8.64	71.86	72.01	67.89	68.22	63.54	41.60	31.93
Lane Group LOS	E	A	E	E	E	E	E	D	C
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.47	8.00	1.10	0.89	12.95	11.83	8.53	25.43	12.14
50th-Percentile Queue Length [ft/ln]	211.82	200.09	27.52	22.30	323.82	295.82	213.37	635.80	303.39
95th-Percentile Queue Length [veh/ln]	13.25	12.64	1.98	1.61	18.86	17.47	13.33	33.70	17.85
95th-Percentile Queue Length [ft/ln]	331.16	316.09	49.54	40.15	471.38	436.86	333.15	842.56	446.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	57.30	57.30	8.64	71.86	71.94	72.01	67.89	68.05	63.54	41.60	31.93	31.93
Movement LOS	E	E	A	E	E	E	E	E	E	D	C	C
d_A, Approach Delay [s/veh]	14.26			71.92			66.85			39.99		
Approach LOS	B			E			E			D		
d_I, Intersection Delay [s/veh]	34.93											
Intersection LOS	C											
Intersection V/C	0.882											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.505			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			693			654		
d_b, Bicycle Delay [s]	73.73			54.89			34.33			36.27		
I_b,int, Bicycle LOS Score for Intersection	4.817			1.601			2.234			5.756		
Bicycle LOS	E			A			B			F		

**Sequence**

Ring 1	-	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	105.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.740

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	961	199	0	943	699	0	0	0	0	612	352
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	4.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	961	199	0	943	699	0	0	0	0	612	352
Peak Hour Factor	1.0000	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	258	50	0	253	188	0	0	0	0	153	98
Total Analysis Volume [veh/h]	0	1033	199	0	1014	752	0	0	0	0	612	391
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	0	30	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	21	0	0	0	0	0	59	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		Yes			Yes						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	44	44	44		28	28
g / C, Green / Cycle	0.55	0.55	0.55		0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	1.08		0.17	0.31
s, saturation flow rate [veh/h]	5094	5012	693		3514	1271
c, Capacity [veh/h]	2784	2739	379		1241	449
d1, Uniform Delay [s]	10.29	10.28	17.53		20.21	24.10
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.38	0.39	452.20		0.30	5.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.37	0.37	1.98		0.49	0.87
d, Delay for Lane Group [s/veh]	10.67	10.67	469.73		20.52	29.45
Lane Group LOS	B	B	F		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	3.21	3.15	53.43		4.30	3.57
50th-Percentile Queue Length [ft/ln]	80.14	78.66	1335.87		107.41	89.17
95th-Percentile Queue Length [veh/ln]	5.77	5.66	90.86		7.70	6.42
95th-Percentile Queue Length [ft/ln]	144.26	141.59	2271.44		192.39	160.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	10.67	0.00	0.00	10.67	469.73	0.00	0.00	0.00	0.00	20.52	29.45
Movement LOS		B			B	F					C	C
d_A, Approach Delay [s/veh]	10.67		206.15				0.00		24.00			
Approach LOS	B		F				A		C			
d_I, Intersection Delay [s/veh]	104.98											
Intersection LOS	F											
Intersection V/C	1.740											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.929	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	426	426	0	1377
d_b, Bicycle Delay [s]	24.77	24.88	39.95	3.88
I_b,int, Bicycle LOS Score for Intersection	2.128	2.531	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	152.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.137

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		



**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1211	361	0	1366	535	0	0	0	271	0	859
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1211	361	0	1366	535	0	0	0	271	0	859
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	309	92	0	348	134	0	0	0	68	0	239
Total Analysis Volume [veh/h]	0	1236	368	0	1394	535	0	0	0	271	0	954
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	20	0	0	20	0	0	0	0	60	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	24	24	24		48	48
g / C, Green / Cycle	0.30	0.30	0.30		0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.41	0.23	0.46		0.08	0.57
s, saturation flow rate [veh/h]	3051	1579	3051		3514	1685
c, Capacity [veh/h]	917	474	917		2106	1010
d1, Uniform Delay [s]	27.95	25.32	27.95		6.95	14.78
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	164.04	11.76	239.95		0.03	5.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	1.35	0.78	1.52		0.13	0.94
d, Delay for Lane Group [s/veh]	191.99	37.08	267.89		6.97	20.17
Lane Group LOS	F	D	F		A	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	19.45	7.58	25.89		0.89	7.36
50th-Percentile Queue Length [ft/ln]	486.27	189.54	647.32		22.25	184.00
95th-Percentile Queue Length [veh/ln]	31.12	12.10	41.85		1.60	11.81
95th-Percentile Queue Length [ft/ln]	777.94	302.43	1046.23		40.04	295.23

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	191.99	37.08	0.00	267.89	0.00	0.00	0.00	0.00	6.97	0.00	20.17
Movement LOS		F	D		F					A		C
d_A, Approach Delay [s/veh]	156.45		267.89		0.00		17.25					
Approach LOS	F		F		A		B					
d_I, Intersection Delay [s/veh]	152.86											
Intersection LOS	F											
Intersection V/C	1.137											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	31.48	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.089	1.419	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400	0	1401
d_b, Bicycle Delay [s]	25.60	25.63	39.97	3.59
I_b,int, Bicycle LOS Score for Intersection	2.442	2.326	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.953

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←↔→		↑↑↑↔		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	556	419	2402	213	180	1281
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	556	419	2402	213	180	1281
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	149	113	646	57	48	344
Total Analysis Volume [veh/h]	598	451	2583	229	194	1377
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	10	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	91	91	91	91	91	91
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	62	62
g / C, Green / Cycle	0.22	0.22	0.55	0.55	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.18	0.29	0.51	0.15	0.60	0.28
s, saturation flow rate [veh/h]	3361	1544	5049	1579	324	4979
c, Capacity [veh/h]	734	337	2754	861	280	3353
d1, Uniform Delay [s]	34.02	35.58	19.36	11.04	24.29	6.75
k, delay calibration	0.04	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.85	170.68	0.77	0.06	13.21	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	1.34	0.94	0.27	0.69	0.41
d, Delay for Lane Group [s/veh]	34.87	206.26	20.12	11.10	37.50	6.78
Lane Group LOS	C	F	C	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.26	23.27	15.45	2.33	2.23	3.45
50th-Percentile Queue Length [ft/ln]	156.47	581.69	386.15	58.17	55.87	86.22
95th-Percentile Queue Length [veh/ln]	10.36	35.85	21.89	4.19	4.02	6.21
95th-Percentile Queue Length [ft/ln]	259.04	896.25	547.28	104.70	100.57	155.20



**Movement, Approach, & Intersection Results**

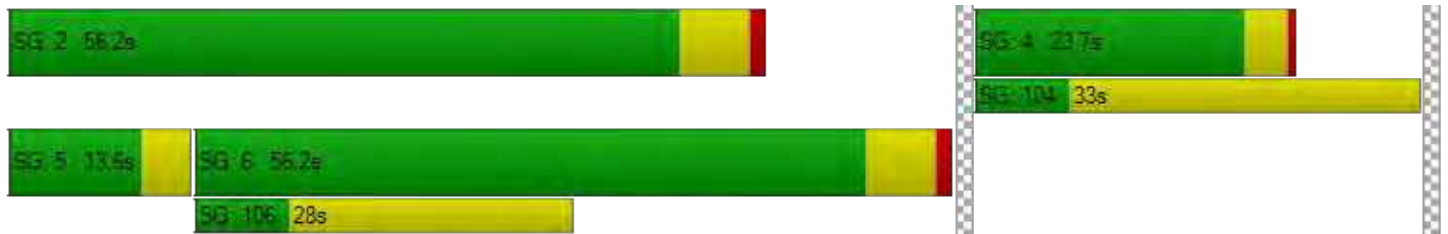
d_M, Delay for Movement [s/veh]	34.87	206.26	20.12	11.10	37.50	6.78
Movement LOS	C	F	C	B	D	A
d_A, Approach Delay [s/veh]	108.55		19.39		10.57	
Approach LOS	F		B		B	
d_I, Intersection Delay [s/veh]	34.06					
Intersection LOS	C					
Intersection V/C	0.953					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.40	35.40	35.40
I_p,int, Pedestrian LOS Score for Intersection	2.849	3.261	3.236
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	437	1093	1093
d_b, Bicycle Delay [s]	28.03	9.41	9.40
I_b,int, Bicycle LOS Score for Intersection	1.560	3.106	2.424
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	17.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.818

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	706	103	2460	56	56	1634
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	706	103	2460	56	56	1634
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	180	26	628	14	14	417
Total Analysis Volume [veh/h]	720	105	2510	57	57	1667
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	20	20	50	50	4	58
g / C, Green / Cycle	0.23	0.23	0.56	0.56	0.04	0.65
(v / s)_i Volume / Saturation Flow Rate	0.21	0.07	0.50	0.04	0.03	0.34
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	787	367	2844	901	79	3241
d1, Uniform Delay [s]	33.52	28.40	16.93	8.85	42.00	8.12
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.88	0.16	0.38	0.01	4.67	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.92	0.29	0.88	0.06	0.73	0.51
d, Delay for Lane Group [s/veh]	35.40	28.56	17.30	8.86	46.67	8.17
Lane Group LOS	D	C	B	A	D	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.67	1.86	12.09	0.43	1.28	4.21
50th-Percentile Queue Length [ft/ln]	191.64	46.49	302.13	10.74	32.03	105.26
95th-Percentile Queue Length [veh/ln]	12.21	3.35	17.79	0.77	2.31	7.58
95th-Percentile Queue Length [ft/ln]	305.16	83.68	444.66	19.33	57.65	189.39

**Movement, Approach, & Intersection Results**

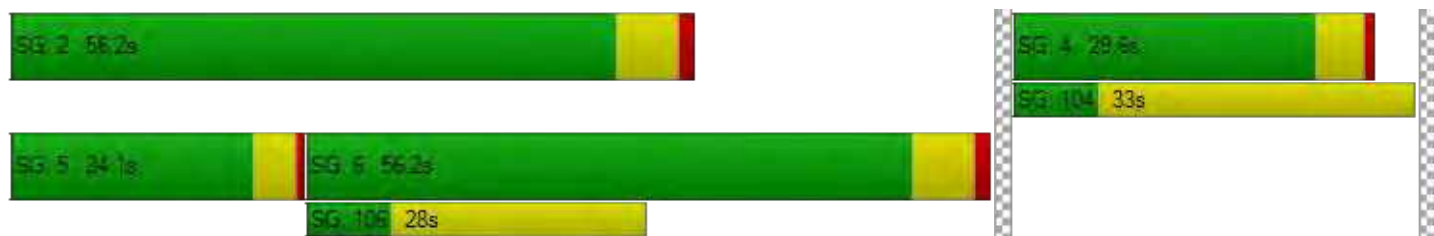
d_M, Delay for Movement [s/veh]	35.40	28.56	17.30	8.86	46.67	8.17
Movement LOS	D	C	B	A	D	A
d_A, Approach Delay [s/veh]	34.53		17.12		9.44	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	17.34					
Intersection LOS	B					
Intersection V/C	0.818					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.07	34.07	34.07
I_p,int, Pedestrian LOS Score for Intersection	2.321	3.630	3.499
Crosswalk LOS	B	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	563	1126	1126
d_b, Bicycle Delay [s]	22.91	8.47	8.47
I_b,int, Bicycle LOS Score for Intersection	1.560	2.971	2.508
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bafront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

**Intersection Setup**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑↑		⇐⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	422	119	2100	43	35	1113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.80	14.80	4.10	4.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	422	119	2100	43	35	1113
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	30	536	11	9	284
Total Analysis Volume [veh/h]	431	121	2143	44	36	1136
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	10	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	56	56	56	56	56	56
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	13	13	28	28	34	34
g / C, Green / Cycle	0.23	0.23	0.50	0.50	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.48	0.03	0.06	0.25
s, saturation flow rate [veh/h]	1438	1364	4507	1406	622	4470
c, Capacity [veh/h]	326	309	2233	697	462	2672
d1, Uniform Delay [s]	20.99	20.99	13.68	7.40	11.26	6.11
k, delay calibration	0.05	0.05	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.49	3.72	1.42	0.01	0.03	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.87	0.87	0.96	0.06	0.08	0.43
d, Delay for Lane Group [s/veh]	24.47	24.71	15.10	7.42	11.29	6.15
Lane Group LOS	C	C	B	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.56	3.40	7.11	0.23	0.06	1.74
50th-Percentile Queue Length [ft/ln]	88.98	84.98	177.66	5.75	1.59	43.42
95th-Percentile Queue Length [veh/ln]	6.41	6.12	11.48	0.41	0.11	3.13
95th-Percentile Queue Length [ft/ln]	160.17	152.97	286.95	10.34	2.86	78.16

**Movement, Approach, & Intersection Results**

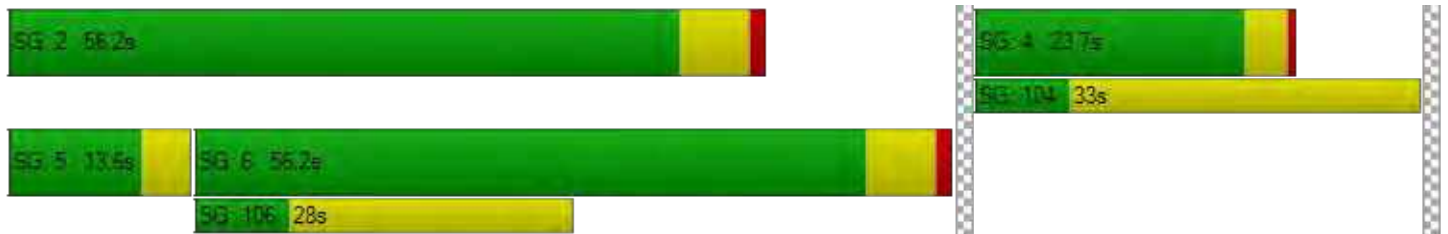
d_M, Delay for Movement [s/veh]	24.55	24.71	15.10	7.42	11.29	6.15
Movement LOS	C	C	B	A	B	A
d_A, Approach Delay [s/veh]	24.59		14.95		6.31	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	13.72					
Intersection LOS	B					
Intersection V/C	0.807					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.19	18.19	18.19
I_p,int, Pedestrian LOS Score for Intersection	2.286	3.090	3.118
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	711	1778	1778
d_b, Bicycle Delay [s]	11.67	0.35	0.35
I_b,int, Bicycle LOS Score for Intersection	2.470	2.762	2.204
Bicycle LOS	B	C	B

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	29.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	417	231	18	224	80	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	417	231	18	224	80	17
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	66	5	64	23	5
Total Analysis Volume [veh/h]	479	266	21	257	92	20
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	796	687	565
Degree of Utilization, x	0.94	0.40	0.20

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	13.82	1.96	0.73
95th-Percentile Queue Length [ft]	345.53	49.05	18.31
Approach Delay [s/veh]	39.04	11.75	10.94
Approach LOS	E	B	B
Intersection Delay [s/veh]	29.58		
Intersection LOS	D		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	9.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

**Intersection Setup**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	0	130	2151	17	36	1181
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	19.20	3.80	3.80	8.60	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	130	2151	17	36	1181
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	36	591	5	10	324
Total Analysis Volume [veh/h]	0	143	2364	19	40	1298
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	10	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	0.5	0.5	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	48	48	48	48	48
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	6	26	26	32	32
g / C, Green / Cycle	0.13	0.54	0.54	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.12	0.52	0.01	0.14	0.30
s, saturation flow rate [veh/h]	1233	4518	1410	288	4342
c, Capacity [veh/h]	165	2459	767	338	2874
d1, Uniform Delay [s]	20.55	10.54	5.09	10.57	3.94
k, delay calibration	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.34	1.35	0.00	0.06	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.87	0.96	0.02	0.12	0.45
d, Delay for Lane Group [s/veh]	25.89	11.88	5.10	10.63	3.98
Lane Group LOS	C	B	A	B	A
Critical Lane Group	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.66	5.65	0.06	0.07	1.03
50th-Percentile Queue Length [ft/ln]	41.44	141.18	1.58	1.83	25.76
95th-Percentile Queue Length [veh/ln]	2.98	9.54	0.11	0.13	1.85
95th-Percentile Queue Length [ft/ln]	74.60	238.61	2.85	3.29	46.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	25.89	11.88	5.10	10.63	3.98
Movement LOS		C	B	A	B	A
d_A, Approach Delay [s/veh]	25.89		11.83		4.18	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	9.70					
Intersection LOS	A					
Intersection V/C	0.799					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	-6.2	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.74	14.39	14.39
I_p,int, Pedestrian LOS Score for Intersection	1.841	3.071	3.094
Crosswalk LOS	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	829	2071	2071
d_b, Bicycle Delay [s]	8.28	0.03	0.03
I_b,int, Bicycle LOS Score for Intersection	1.560	2.870	2.296
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	42.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

**Intersection Setup**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Base Volume Input [veh/h]	18	268	20	95	327	36	331	15	267	196	13	492
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	268	20	95	327	36	331	15	267	196	13	492
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	76	6	27	93	10	94	4	76	56	4	140
Total Analysis Volume [veh/h]	20	305	23	108	372	41	376	17	303	223	15	559
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing in	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing mi	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	10	31	0	18	39	0	0	38	38	0	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	20	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	23	5	26	25	25	26	26
g / C, Green / Cycle	0.02	0.24	0.05	0.27	0.26	0.26	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.01	0.18	0.03	0.23	0.22	0.21	0.24	0.25
s, saturation flow rate [veh/h]	1767	1832	3431	1788	1770	1463	1685	1577
c, Capacity [veh/h]	39	444	178	487	465	384	463	433
d1, Uniform Delay [s]	45.94	33.19	44.06	32.68	33.17	31.95	32.91	33.18
k, delay calibration	0.11	0.13	0.11	0.25	0.23	0.20	0.28	0.29
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.41	2.96	3.33	9.23	8.74	6.49	12.67	16.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.74	0.61	0.85	0.85	0.79	0.88	0.90
d, Delay for Lane Group [s/veh]	56.34	36.15	47.39	41.91	41.91	38.43	45.58	49.35
Lane Group LOS	E	D	D	D	D	D	D	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.57	7.18	1.31	9.99	9.48	6.89	10.32	10.35
50th-Percentile Queue Length [ft/ln]	14.35	179.49	32.83	249.63	236.94	172.28	258.07	258.84
95th-Percentile Queue Length [veh/ln]	1.03	11.57	2.36	15.17	14.53	11.20	15.59	15.63
95th-Percentile Queue Length [ft/ln]	25.83	289.35	59.09	379.19	363.16	279.91	389.80	390.77

**Movement, Approach, & Intersection Results**

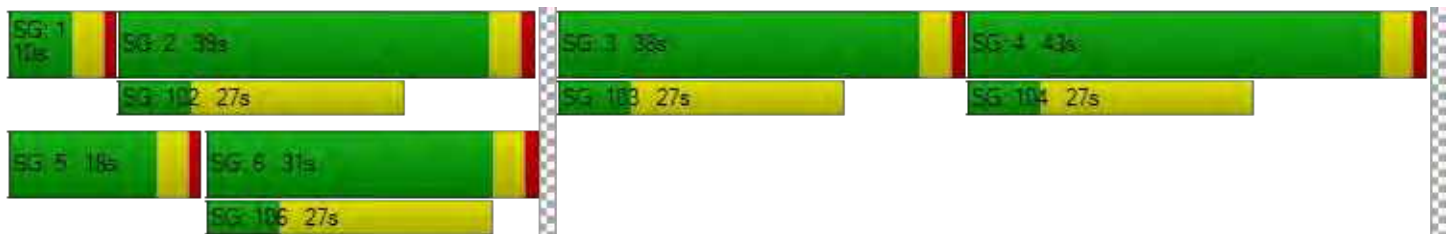
d_M, Delay for Movement [s/veh]	56.34	36.15	36.15	47.39	41.91	41.91	41.91	41.91	38.43	45.58	45.58	48.24
Movement LOS	E	D	D	D	D	D	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	37.31			43.05			40.40			47.43		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.90											
Intersection LOS	D											
Intersection V/C	0.712											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.02	37.02	37.02	37.02
I_p,int, Pedestrian LOS Score for Intersection	2.347	2.645	2.193	2.364
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	570	739	718	823
d_b, Bicycle Delay [s]	24.23	18.85	19.48	16.41
I_b,int, Bicycle LOS Score for Intersection	2.134	2.419	2.708	2.875
Bicycle LOS	B	B	B	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	28.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Chrysler Drive						Constitution Drive					
Base Volume Input [veh/h]	39	36	25	334	36	3	18	4	114	0	490	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	36	25	334	36	3	18	4	114	0	490	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	9	6	84	9	1	5	1	29	0	123	4
Total Analysis Volume [veh/h]	39	36	25	334	36	3	18	4	114	0	490	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			8			7		
v_di, Inbound Pedestrian Volume crossing in	0			0			7			8		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	41	0	0	27	0	0	22	0	0	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	42	21	21	15	42	42
g / C, Green / Cycle	0.47	0.23	0.23	0.17	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.10	0.21	0.02	0.15	0.15	0.16
s, saturation flow rate [veh/h]	971	1609	1663	896	1710	1538
c, Capacity [veh/h]	508	376	388	150	836	717
d1, Uniform Delay [s]	14.10	33.39	27.10	36.81	15.21	15.22
k, delay calibration	0.50	0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.87	7.21	0.11	17.65	0.99	1.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.20	0.89	0.10	0.91	0.32	0.33
d, Delay for Lane Group [s/veh]	14.97	40.61	27.21	54.46	16.21	16.48
Lane Group LOS	B	D	C	D	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.24	7.62	0.66	3.61	3.51	3.21
50th-Percentile Queue Length [ft/ln]	30.91	190.54	16.57	90.36	87.72	80.27
95th-Percentile Queue Length [veh/ln]	2.23	12.15	1.19	6.51	6.32	5.78
95th-Percentile Queue Length [ft/ln]	55.63	303.73	29.83	162.64	157.90	144.48

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	14.97	14.97	14.97	40.61	27.21	27.21	54.46	54.46	54.46	16.21	16.33	16.48
Movement LOS	B	B	B	D	C	C	D	D	D	B	B	B
d_A, Approach Delay [s/veh]	14.97			39.21			54.46			16.34		
Approach LOS	B			D			D			B		
d_I, Intersection Delay [s/veh]	28.54											
Intersection LOS	C											
Intersection V/C	0.515											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.70	34.70	34.70	34.70
I_p,int, Pedestrian LOS Score for Intersection	2.277	2.070	1.880	2.122
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	822	511	400	822
d_b, Bicycle Delay [s]	15.63	24.96	28.82	15.63
I_b,int, Bicycle LOS Score for Intersection	1.725	2.175	1.784	1.975
Bicycle LOS	A	B	A	A

**Sequence**




Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	34.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.430

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	73	65	229	252	107	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	65	229	252	107	15
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	20	69	76	32	5
Total Analysis Volume [veh/h]	88	78	276	304	129	18
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.43	0.09	0.20	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	33.96	20.37	8.17	0.00	0.00	0.00
Movement LOS	D	C	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.80	2.80	0.72	0.72	0.00	0.00
95th-Percentile Queue Length [ft/ln]	70.02	70.02	18.11	18.11	0.00	0.00
d_A, Approach Delay [s/veh]	27.57		3.89		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	7.65					
Intersection LOS	D					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/ Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.064

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	32	209	35	15	30	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.90	7.90	14.00	14.00	12.70	17.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	209	35	15	30	49
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	65	11	5	9	15
Total Analysis Volume [veh/h]	40	258	43	19	37	60
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.06	0.06
d_M, Delay for Movement [s/veh]	7.46	0.00	0.00	0.00	11.94	9.38
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.00	0.00	0.43	0.43
95th-Percentile Queue Length [ft/ln]	2.05	2.05	0.00	0.00	10.77	10.77
d_A, Approach Delay [s/veh]	1.00		0.00		10.35	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.85					
Intersection LOS	B					



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Scenario 17 Near-Term PM (2025 vols)

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12/30/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	959		1010		1255	363	3587

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	38	1327	7	55	892	194	15	5	388	273	6	4	3204

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	196	675	39	13	810	384	446	22	175	109	52	40	2961

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	2	745	58	167	687	102	69	16	2	65	14	280	2207

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	137	529	417	567	440	104	2194

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	34	32	32	70	0	220	2	684	110	318	631	2	2135

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	3417	49	372	975	71	1841	6725

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	151	110	1112	170	213	133	119	2079	172	588	814	34	5695

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	43	1065	7	142	837	54	94	17	35	193	18	138	2643

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	80	933	1204	24	35	114	2390

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1000	464	57	1095	274	115	3005

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	326	1311	272	78	1206	26	33	177	267	283	274	104	4357

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	20	1375	717	180	283	40	2615

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	9	1037	4	29	538	18	133	2	31	21	7	46	1875

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	14	693	5	2	701	101	111	2	37	15	4	6	1691

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	3	656	95	54	687	10	28	105	5	81	50	58	1832

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	30	240	244	372	96	291	120	439	204	277	494	15	2822

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road/101 NB Ramps	1842		946		570	639	3997

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	21	112	18	73	424	36	22	124	22	7	16	47	922

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	179	40	1676	12	31	5	9	567	208	2034	393	14	5168

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	961	199	943	699	612	352	3766

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1211	361	1366	535	271	859	4603

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	556	419	2402	213	180	1281	5051

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	706	103	2460	56	56	1634	5015

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	422	119	2100	43	35	1113	3832

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	417	231	18	224	80	17	987

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	130		2151	17	36	1181	3515

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	18	268	20	95	327	36	331	15	267	196	13	492	2078

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	39	36	25	334	36	3	18	4	114	0	490	14	1113

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	73	65	229	252	107	15	741

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	32	209	35	15	30	49	370

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Scenario 17 Near-Term PM (2025 vols)

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12/30/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	959		1010		1255	363	3587
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>959</b>		<b>1010</b>		<b>1255</b>	<b>363</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	38	1327	7	55	892	194	15	5	388	273	6	4	3204	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>38</b>	<b>1327</b>	<b>7</b>	<b>55</b>	<b>892</b>	<b>194</b>	<b>15</b>	<b>5</b>	<b>388</b>	<b>273</b>	<b>6</b>	<b>4</b>	<b>3204</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	196	675	39	13	810	384	446	22	175	109	52	40	2961	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>196</b>	<b>675</b>	<b>39</b>	<b>13</b>	<b>810</b>	<b>384</b>	<b>446</b>	<b>22</b>	<b>175</b>	<b>109</b>	<b>52</b>	<b>40</b>	<b>2961</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	2	745	58	167	687	102	69	16	2	65	14	280	2207	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>2</b>	<b>745</b>	<b>58</b>	<b>167</b>	<b>687</b>	<b>102</b>	<b>69</b>	<b>16</b>	<b>2</b>	<b>65</b>	<b>14</b>	<b>280</b>	<b>2207</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	137	529	417	567	440	104	2194
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>137</b>	<b>529</b>	<b>417</b>	<b>567</b>	<b>440</b>	<b>104</b>	<b>2194</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	Final Base	34	32	32	70	0	220	2	684	110	318	631	2	2135
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>34</b>	<b>32</b>	<b>32</b>	<b>70</b>	<b>0</b>	<b>220</b>	<b>2</b>	<b>684</b>	<b>110</b>	<b>318</b>	<b>631</b>	<b>2</b>	<b>2135</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	3417	49	372	975	71	1841	6725
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3417</b>	<b>49</b>	<b>372</b>	<b>975</b>	<b>71</b>	<b>1841</b>	<b>6725</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	151	110	1112	170	213	133	119	2079	172	588	814	34	5695
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>151</b>	<b>110</b>	<b>1112</b>	<b>170</b>	<b>213</b>	<b>133</b>	<b>119</b>	<b>2079</b>	<b>172</b>	<b>588</b>	<b>814</b>	<b>34</b>	<b>5695</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	43	1065	7	142	837	54	94	17	35	193	18	138	2643	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>43</b>	<b>1065</b>	<b>7</b>	<b>142</b>	<b>837</b>	<b>54</b>	<b>94</b>	<b>17</b>	<b>35</b>	<b>193</b>	<b>18</b>	<b>138</b>	<b>2643</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	80	933	1204	24	35	114	2390
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>80</b>	<b>933</b>	<b>1204</b>	<b>24</b>	<b>35</b>	<b>114</b>	<b>2390</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1000	464	57	1095	274	115	3005
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1000</b>	<b>464</b>	<b>57</b>	<b>1095</b>	<b>274</b>	<b>115</b>	<b>3005</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
20	Willow Rd (SR 114)/Newbridge St	Final Base	326	1311	272	78	1206	26	33	177	267	283	274	104	4357	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>326</b>	<b>1311</b>	<b>272</b>	<b>78</b>	<b>1206</b>	<b>26</b>	<b>33</b>	<b>177</b>	<b>267</b>	<b>283</b>	<b>274</b>	<b>104</b>	<b>4357</b>	

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	20	1375	717	180	283	40	2615
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>20</b>	<b>1375</b>	<b>717</b>	<b>180</b>	<b>283</b>	<b>40</b>	<b>2615</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	9	1037	4	29	538	18	133	2	31	21	7	46	1875
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>1037</b>	<b>4</b>	<b>29</b>	<b>538</b>	<b>18</b>	<b>133</b>	<b>2</b>	<b>31</b>	<b>21</b>	<b>7</b>	<b>46</b>	<b>1875</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	14	693	5	2	701	101	111	2	37	15	4	6	1691
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>14</b>	<b>693</b>	<b>5</b>	<b>2</b>	<b>701</b>	<b>101</b>	<b>111</b>	<b>2</b>	<b>37</b>	<b>15</b>	<b>4</b>	<b>6</b>	<b>1691</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	3	656	95	54	687	10	28	105	5	81	50	58	1832
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3</b>	<b>656</b>	<b>95</b>	<b>54</b>	<b>687</b>	<b>10</b>	<b>28</b>	<b>105</b>	<b>5</b>	<b>81</b>	<b>50</b>	<b>58</b>	<b>1832</b>



ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd- Willow Rd	Final Base	30	240	244	372	96	291	120	439	204	277	494	15	2822
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>30</b>	<b>240</b>	<b>244</b>	<b>372</b>	<b>96</b>	<b>291</b>	<b>120</b>	<b>439</b>	<b>204</b>	<b>277</b>	<b>494</b>	<b>15</b>	<b>2822</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road/101 NB Ramps	Final Base	1842		946		570	639	3997
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1842</b>		<b>946</b>		<b>570</b>	<b>639</b>	<b>3997</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	21	112	18	73	424	36	22	124	22	7	16	47	922
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>21</b>	<b>112</b>	<b>18</b>	<b>73</b>	<b>424</b>	<b>36</b>	<b>22</b>	<b>124</b>	<b>22</b>	<b>7</b>	<b>16</b>	<b>47</b>	<b>922</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	179	40	1676	12	31	5	9	567	208	2034	393	14	5168
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>179</b>	<b>40</b>	<b>1676</b>	<b>12</b>	<b>31</b>	<b>5</b>	<b>9</b>	<b>567</b>	<b>208</b>	<b>2034</b>	<b>393</b>	<b>14</b>	<b>5168</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	961	199	943	699	612	352	3766
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>961</b>	<b>199</b>	<b>943</b>	<b>699</b>	<b>612</b>	<b>352</b>	<b>3766</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1211	361	1366	535	271	859	4603
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1211</b>	<b>361</b>	<b>1366</b>	<b>535</b>	<b>271</b>	<b>859</b>	<b>4603</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	556	419	2402	213	180	1281	5051
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>556</b>	<b>419</b>	<b>2402</b>	<b>213</b>	<b>180</b>	<b>1281</b>	<b>5051</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	706	103	2460	56	56	1634	5015
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>706</b>	<b>103</b>	<b>2460</b>	<b>56</b>	<b>56</b>	<b>1634</b>	<b>5015</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	Final Base	422	119	2100	43	35	1113	3832
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>422</b>	<b>119</b>	<b>2100</b>	<b>43</b>	<b>35</b>	<b>1113</b>	<b>3832</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	417	231	18	224	80	17	987
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>417</b>	<b>231</b>	<b>18</b>	<b>224</b>	<b>80</b>	<b>17</b>	<b>987</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	130	2151	17	36	1181	3515	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>130</b>	<b>2151</b>	<b>17</b>	<b>36</b>	<b>1181</b>	<b>3515</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	18	268	20	95	327	36	331	15	267	196	13	492	2078
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>18</b>	<b>268</b>	<b>20</b>	<b>95</b>	<b>327</b>	<b>36</b>	<b>331</b>	<b>15</b>	<b>267</b>	<b>196</b>	<b>13</b>	<b>492</b>	<b>2078</b>

ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	39	36	25	334	36	3	18	4	114	0	490	14	1113
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>39</b>	<b>36</b>	<b>25</b>	<b>334</b>	<b>36</b>	<b>3</b>	<b>18</b>	<b>4</b>	<b>114</b>	<b>0</b>	<b>490</b>	<b>14</b>	<b>1113</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	73	65	229	252	107	15	741
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>73</b>	<b>65</b>	<b>229</b>	<b>252</b>	<b>107</b>	<b>15</b>	<b>741</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	Final Base	32	209	35	15	30	49	370
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>32</b>	<b>209</b>	<b>35</b>	<b>15</b>	<b>30</b>	<b>49</b>	<b>370</b>

## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	151	533	70	168
2	146	517	68	163
3	143	506	67	160
4	134	474	62	150
5	119	421	55	133
6	118	416	55	131
7	116	410	54	129
8	106	373	49	118
9	104	368	48	116
10	103	362	48	114
11	89	314	41	99
12	83	293	39	92
13	82	288	38	91
14	60	213	28	67
15	60	213	28	67
16	42	149	20	47
17	24	85	11	27
18	24	85	11	27
19	14	48	6	15
20	8	27	4	8
21	5	16	2	5
22	2	5	1	2
23	2	5	1	2
24	2	5	1	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	684	1	168	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	1	663	1	163	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
3	1	649	1	160	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
4	1	608	1	150	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
5	1	540	1	133	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
6	1	534	1	131	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
7	1	526	1	129	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
8	1	479	1	118	No	No	Yes	Yes	No	No	No	Yes	No	No
9	1	472	1	116	No	No	Yes	Yes	No	No	No	Yes	No	No
10	1	465	1	114	No	No	Yes	Yes	No	No	No	Yes	No	No
11	1	403	1	99	No	No	No	Yes	No	No	No	No	No	No
12	1	376	1	92	No	No	No	Yes	No	No	No	No	No	No
13	1	370	1	91	No	No	No	Yes	No	No	No	No	No	No
14	1	273	1	67	No	No	No	No	No	No	No	No	No	No
15	1	273	1	67	No	No	No	No	No	No	No	No	No	No
16	1	191	1	47	No	No	No	No	No	No	No	No	No	No
17	1	109	1	27	No	No	No	No	No	No	No	No	No	No
18	1	109	1	27	No	No	No	No	No	No	No	No	No	No
19	1	62	1	15	No	No	No	No	No	No	No	No	No	No
20	1	35	1	8	No	No	No	No	No	No	No	No	No	No
21	1	21	1	5	No	No	No	No	No	No	No	No	No	No
22	1	7	1	2	No	No	No	No	No	No	No	No	No	No
23	1	7	1	2	No	No	No	No	No	No	No	No	No	No
24	1	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	7	10	13	0	4	7	10	0	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.7	11.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:11	0:32
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	70	168
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	922	922
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	242	648	97
2	235	629	94
3	230	616	92
4	215	577	86
5	191	512	77
6	189	505	76
7	186	499	75
8	169	454	68
9	167	447	67
10	165	441	66
11	143	382	57
12	133	356	53
13	131	350	52
14	97	259	39
15	97	259	39
16	68	181	27
17	39	104	16
18	39	104	16
19	22	58	9
20	12	32	5
21	7	19	3
22	2	6	1
23	2	6	1
24	2	6	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	890	1	97	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
2	1	864	1	94	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
3	1	846	1	92	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
4	1	792	1	86	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
5	1	703	1	77	No	No	No	No	No	Yes	Yes	Yes	No	No
6	1	694	1	76	No	No	No	No	No	Yes	Yes	Yes	No	No
7	1	685	1	75	No	No	No	No	No	Yes	Yes	Yes	No	No
8	1	623	1	68	No	No	No	No	No	Yes	Yes	Yes	No	No
9	1	614	1	67	No	No	No	No	No	Yes	Yes	Yes	No	No
10	1	606	1	66	No	No	No	No	No	Yes	Yes	Yes	No	No
11	1	525	1	57	No	No	No	No	No	No	Yes	Yes	No	No
12	1	489	1	53	No	No	No	No	No	No	No	Yes	No	No
13	1	481	1	52	No	No	No	No	No	No	No	Yes	No	No
14	1	356	1	39	No	No	No	No	No	No	No	No	No	No
15	1	356	1	39	No	No	No	No	No	No	No	No	No	No
16	1	249	1	27	No	No	No	No	No	No	No	No	No	No
17	1	143	1	16	No	No	No	No	No	No	No	No	No	No
18	1	143	1	16	No	No	No	No	No	No	No	No	No	No
19	1	80	1	9	No	No	No	No	No	No	No	No	No	No
20	1	44	1	5	No	No	No	No	No	No	No	No	No	No
21	1	26	1	3	No	No	No	No	No	No	No	No	No	No
22	1	8	1	1	No	No	No	No	No	No	No	No	No	No
23	1	8	1	1	No	No	No	No	No	No	No	No	No	No
24	1	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	4	10	11	13	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:17
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	97
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	987
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	122	481	138
2	118	467	134
3	116	457	131
4	109	428	123
5	96	380	109
6	95	375	108
7	94	370	106
8	85	337	97
9	84	332	95
10	83	327	94
11	72	284	81
12	67	265	76
13	66	260	75
14	49	192	55
15	49	192	55
16	34	135	39
17	20	77	22
18	20	77	22
19	11	43	12
20	6	24	7
21	4	14	4
22	1	5	1
23	1	5	1
24	1	5	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	603	1	138	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
2	1	585	1	134	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	1	573	1	131	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
4	1	537	1	123	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
5	1	476	1	109	No	No	Yes	Yes	No	No	No	Yes	No	No
6	1	470	1	108	No	No	Yes	Yes	No	No	No	Yes	No	No
7	1	464	1	106	No	No	Yes	Yes	No	No	No	Yes	No	No
8	1	422	1	97	No	No	No	Yes	No	No	No	Yes	No	No
9	1	416	1	95	No	No	No	Yes	No	No	No	No	No	No
10	1	410	1	94	No	No	No	Yes	No	No	No	No	No	No
11	1	356	1	81	No	No	No	No	No	No	No	No	No	No
12	1	332	1	76	No	No	No	No	No	No	No	No	No	No
13	1	326	1	75	No	No	No	No	No	No	No	No	No	No
14	1	241	1	55	No	No	No	No	No	No	No	No	No	No
15	1	241	1	55	No	No	No	No	No	No	No	No	No	No
16	1	169	1	39	No	No	No	No	No	No	No	No	No	No
17	1	97	1	22	No	No	No	No	No	No	No	No	No	No
18	1	97	1	22	No	No	No	No	No	No	No	No	No	No
19	1	54	1	12	No	No	No	No	No	No	No	No	No	No
20	1	30	1	7	No	No	No	No	No	No	No	No	No	No
21	1	18	1	4	No	No	No	No	No	No	No	No	No	No
22	1	6	1	1	No	No	No	No	No	No	No	No	No	No
23	1	6	1	1	No	No	No	No	No	No	No	No	No	No
24	1	6	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	0	1	4	8	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	27.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	1:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	138
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	741
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 265: Adam Court/ Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	241	50	79
2	234	49	77
3	229	48	75
4	214	45	70
5	190	40	62
6	188	39	62
7	186	39	61
8	169	35	55
9	166	35	55
10	164	34	54
11	142	30	47
12	133	28	43
13	130	27	43
14	96	20	32
15	96	20	32
16	67	14	22
17	39	8	13
18	39	8	13
19	22	5	7
20	12	3	4
21	7	2	2
22	2	1	1
23	2	1	1
24	2	1	1

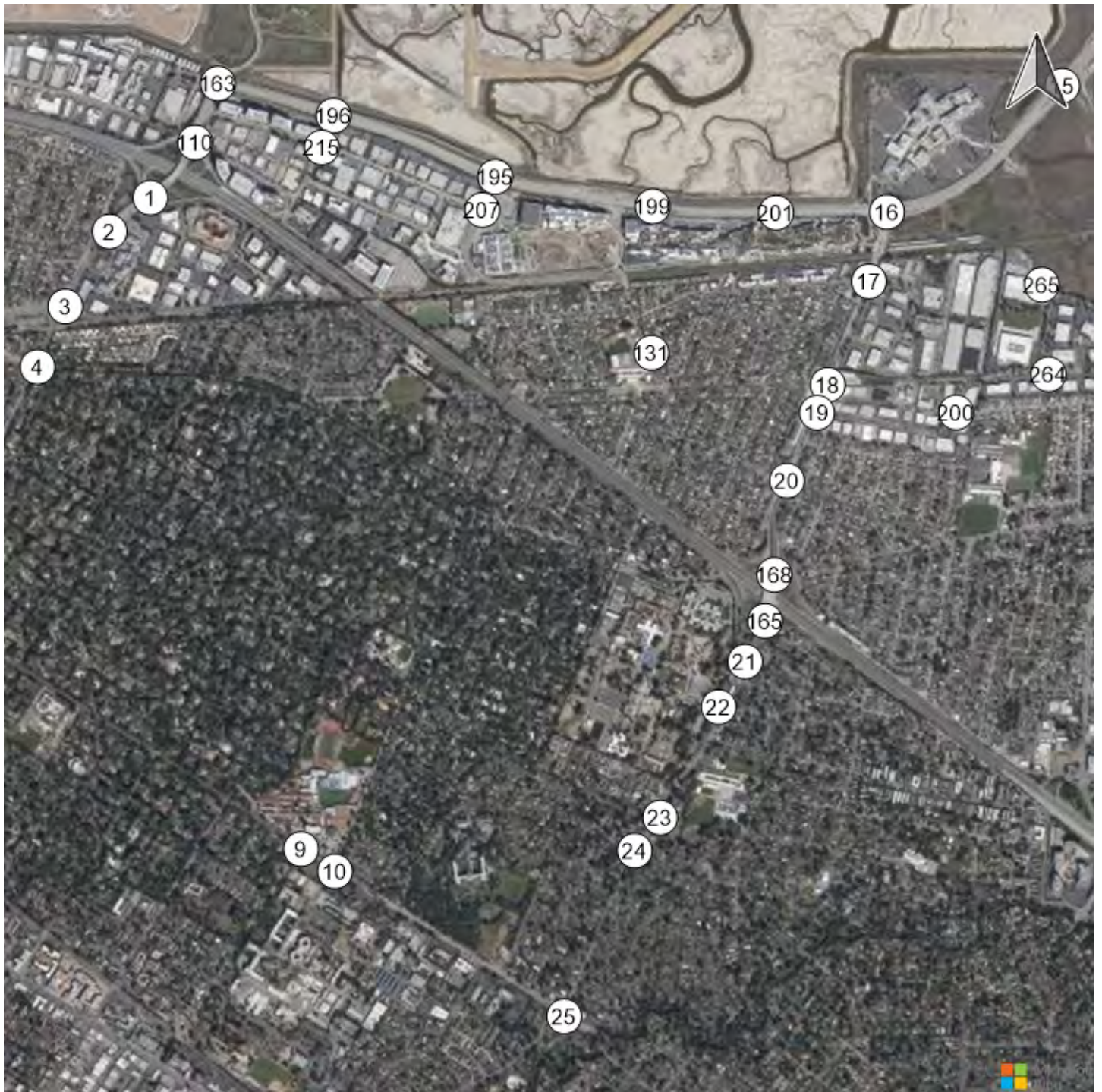
## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	291	1	79	No	No	No	No	No	No	No	No	No	No
2	1	283	1	77	No	No	No	No	No	No	No	No	No	No
3	1	277	1	75	No	No	No	No	No	No	No	No	No	No
4	1	259	1	70	No	No	No	No	No	No	No	No	No	No
5	1	230	1	62	No	No	No	No	No	No	No	No	No	No
6	1	227	1	62	No	No	No	No	No	No	No	No	No	No
7	1	225	1	61	No	No	No	No	No	No	No	No	No	No
8	1	204	1	55	No	No	No	No	No	No	No	No	No	No
9	1	201	1	55	No	No	No	No	No	No	No	No	No	No
10	1	198	1	54	No	No	No	No	No	No	No	No	No	No
11	1	172	1	47	No	No	No	No	No	No	No	No	No	No
12	1	161	1	43	No	No	No	No	No	No	No	No	No	No
13	1	157	1	43	No	No	No	No	No	No	No	No	No	No
14	1	116	1	32	No	No	No	No	No	No	No	No	No	No
15	1	116	1	32	No	No	No	No	No	No	No	No	No	No
16	1	81	1	22	No	No	No	No	No	No	No	No	No	No
17	1	47	1	13	No	No	No	No	No	No	No	No	No	No
18	1	47	1	13	No	No	No	No	No	No	No	No	No	No
19	1	27	1	7	No	No	No	No	No	No	No	No	No	No
20	1	15	1	4	No	No	No	No	No	No	No	No	No	No
21	1	9	1	2	No	No	No	No	No	No	No	No	No	No
22	1	3	1	1	No	No	No	No	No	No	No	No	No	No
23	1	3	1	1	No	No	No	No	No	No	No	No	No	No
24	1	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:13
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	79
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	370
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections

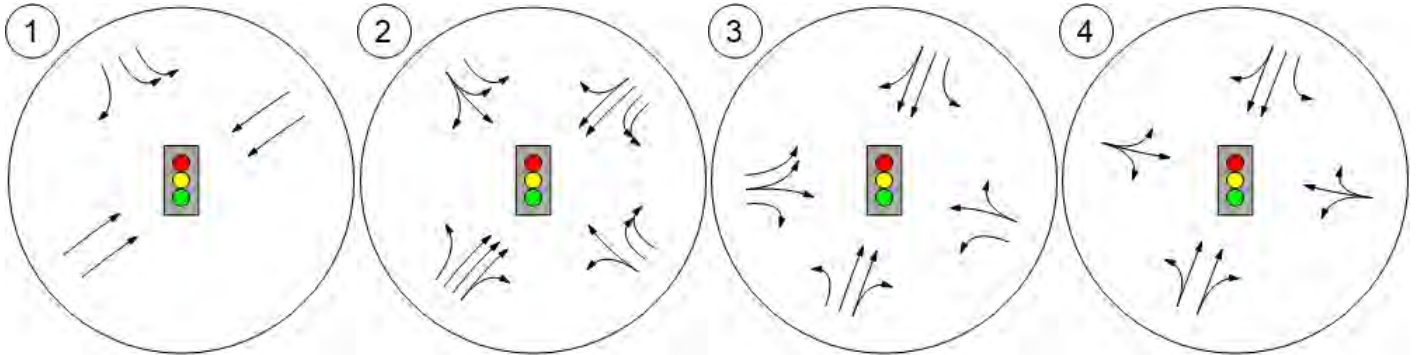


Lane Configuration and Traffic Control

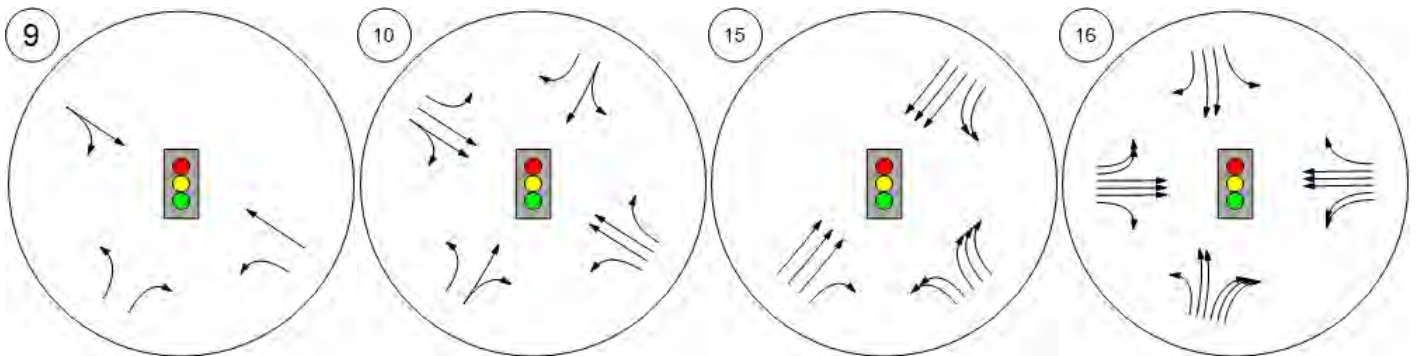


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



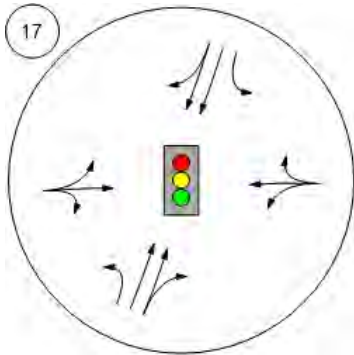
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



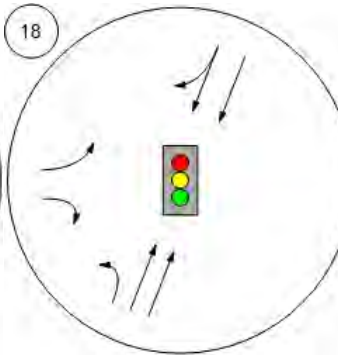
Lane Configuration and Traffic Control



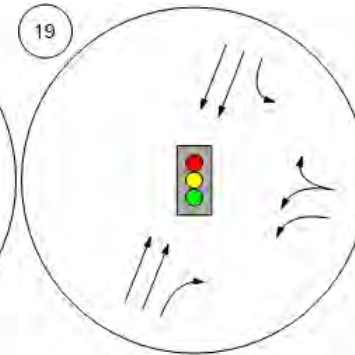
Willow Rd (SR 114)/Hamilton



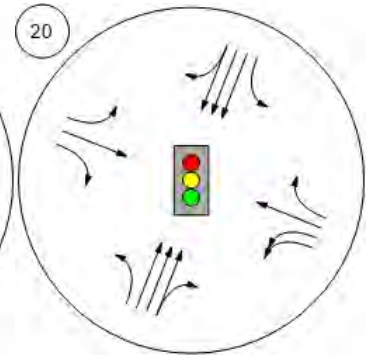
Willow Rd (SR 114)/Ivy Dr



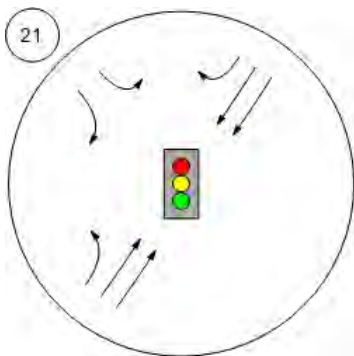
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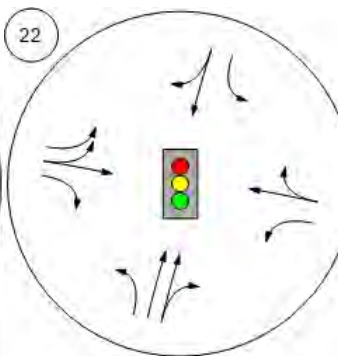
Willow Rd (SR 114)/Newbrid



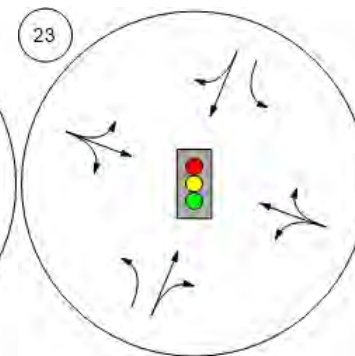
Willow Rd/Bay Rd



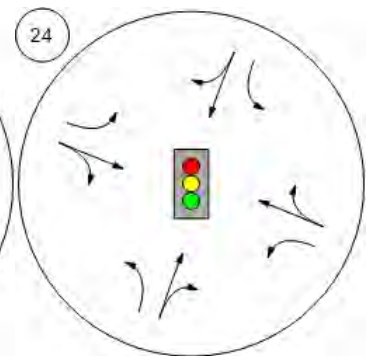
Willow Rd/Durham St-VA Me



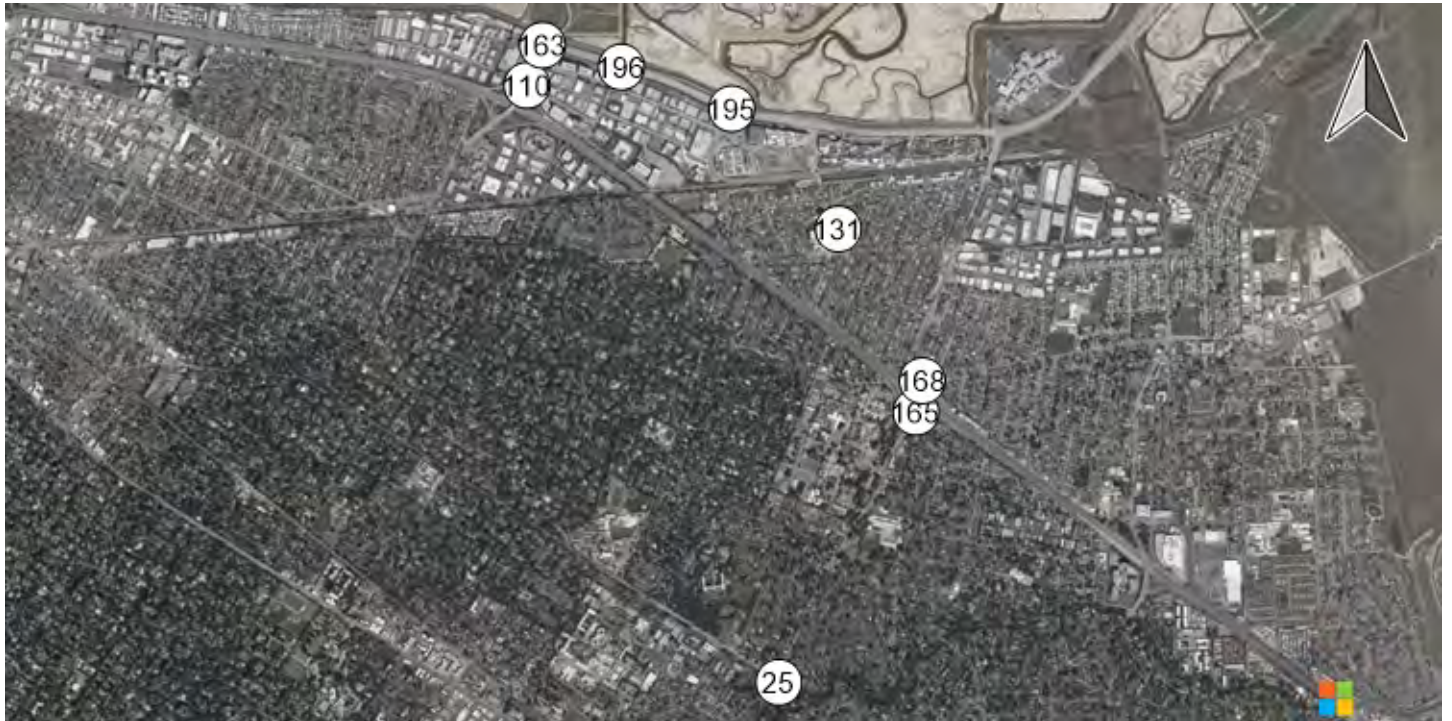
Willow Rd/Coleman Ave



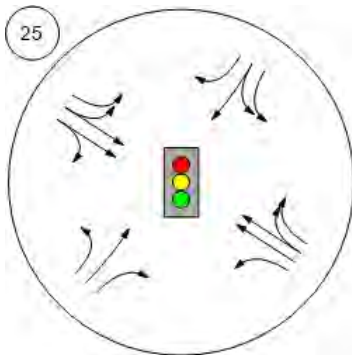
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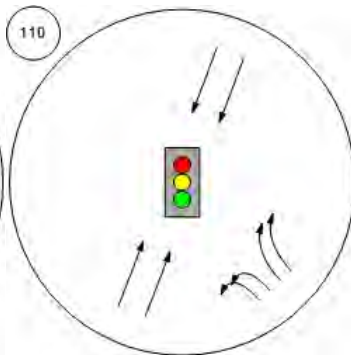
Lane Configuration and Traffic Control



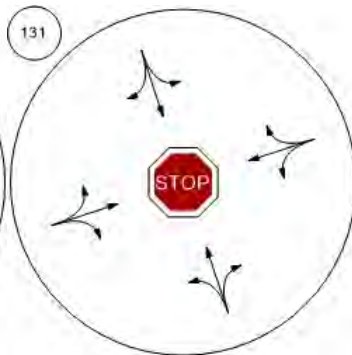
Middlefield Rd-Willow Rd



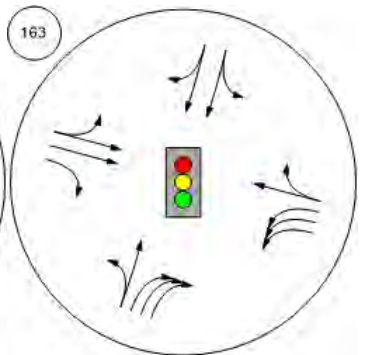
Marsh Road/101 NB Ramps



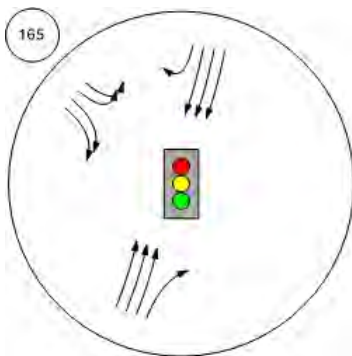
Chilco Street/Hamilton Avenue



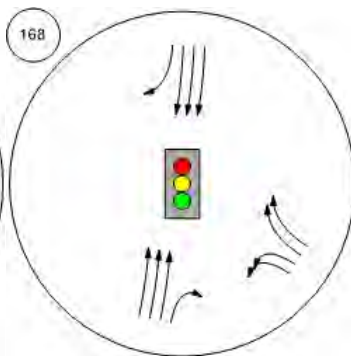
Bayfront Expy/Marsh Rd



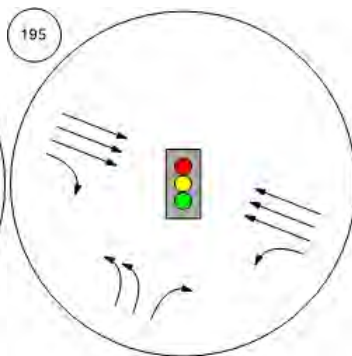
Willow Rd/US-101 SB Ramps



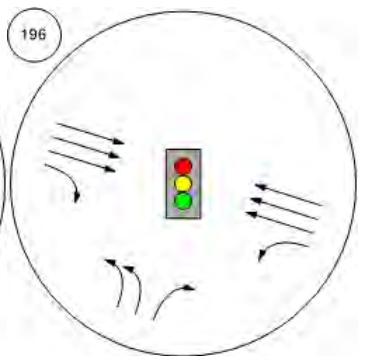
Willow Rd/US-101 NB Ramp



Bayfront Expy/Chilco St

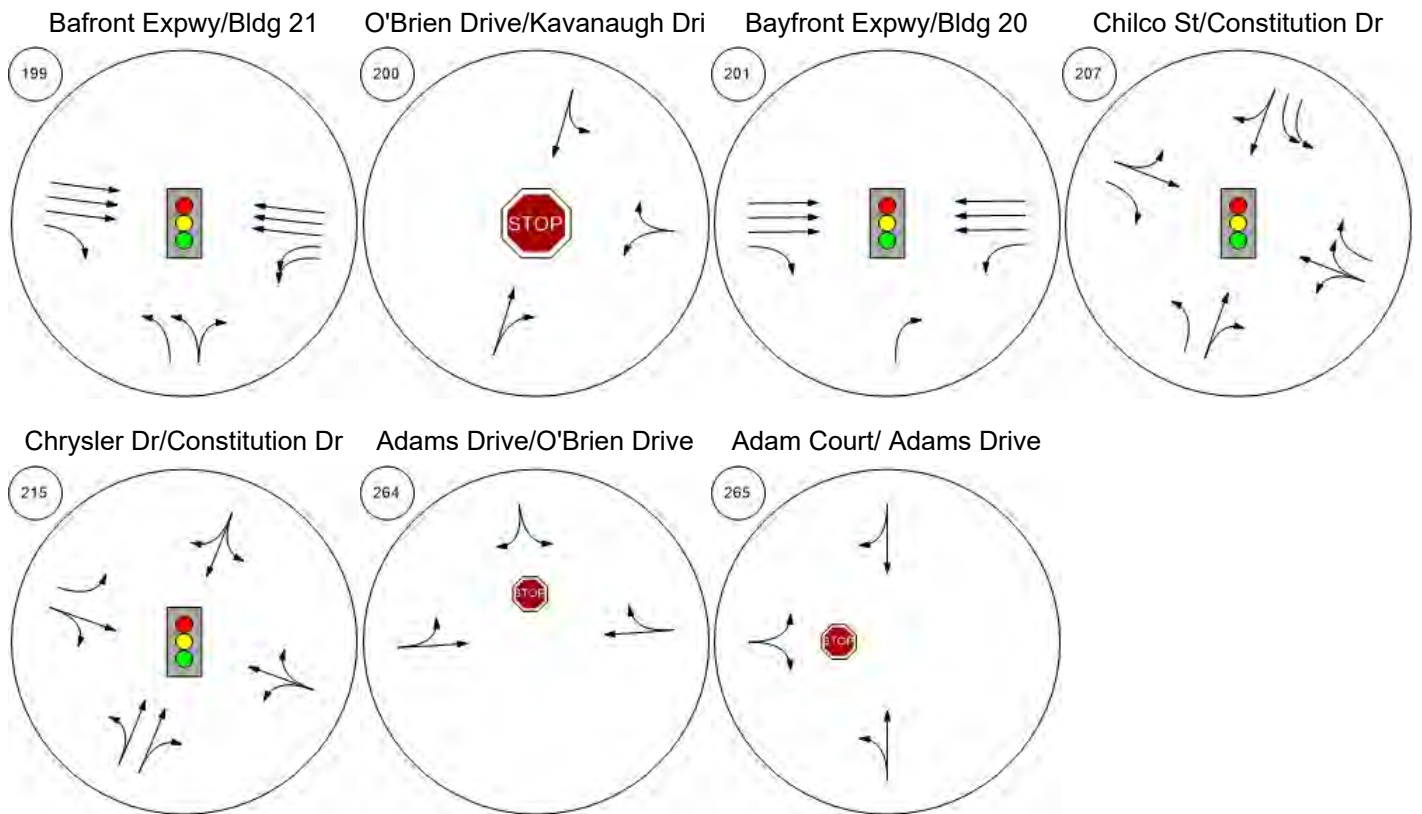


Bayfront Expy/Chrysler Drive





Lane Configuration and Traffic Control

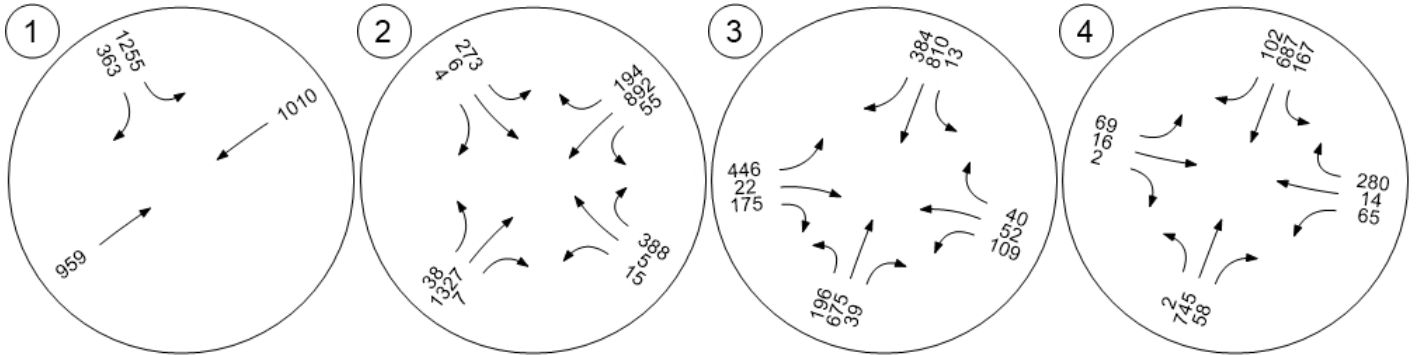


Traffic Volume - Base Volume

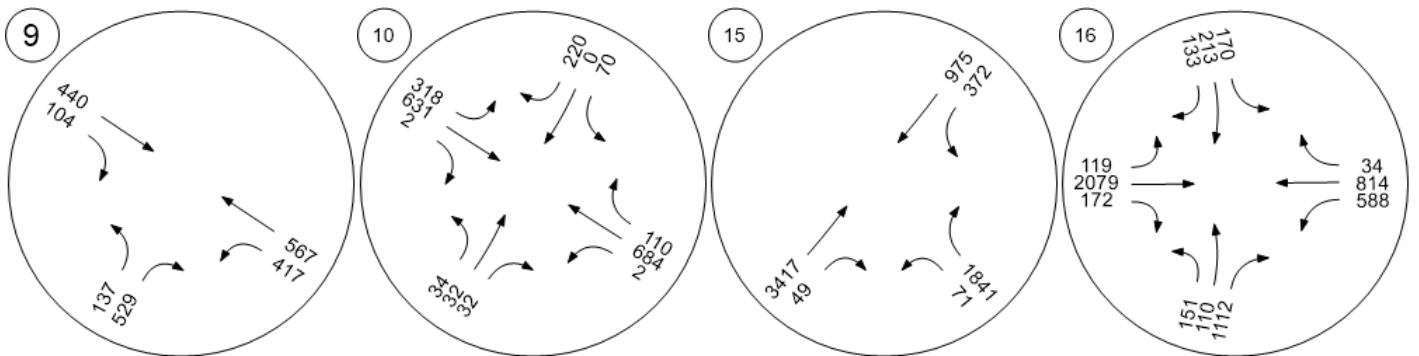


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



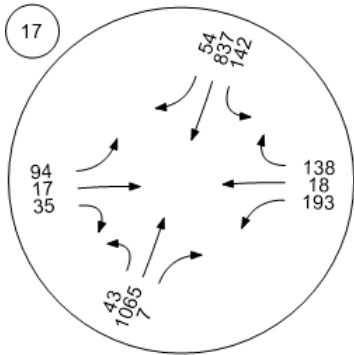
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



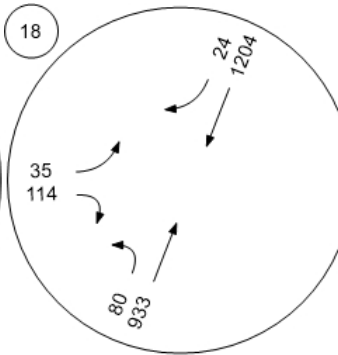
Traffic Volume - Base Volume



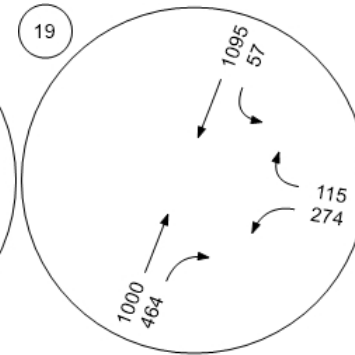
Willow Rd (SR 114)/Hamilton



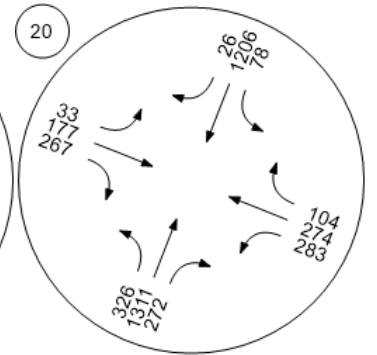
Willow Rd (SR 114)/Ivy Dr



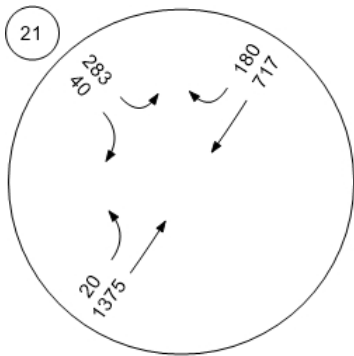
Willow Rd (SR 114)/O'Brien



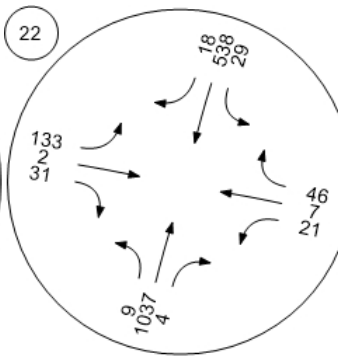
Willow Rd (SR 114)/Newbrid



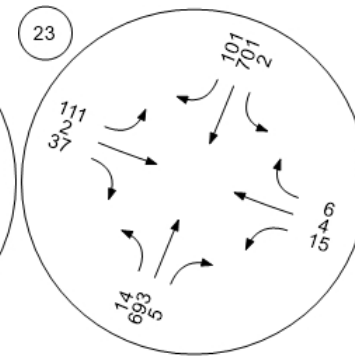
Willow Rd/Bay Rd



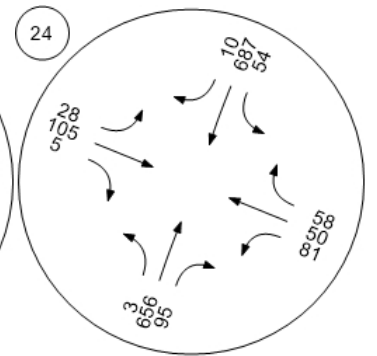
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



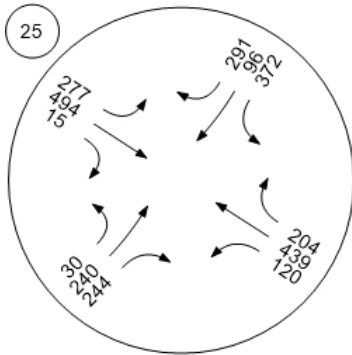
Willow Rd/Gilbert Ave



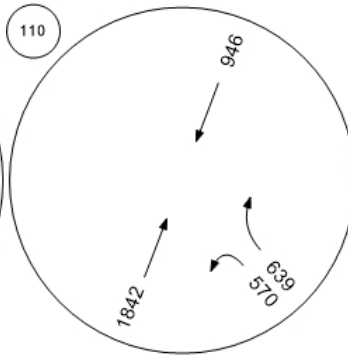
Traffic Volume - Base Volume



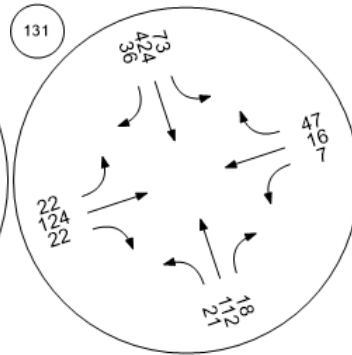
Middlefield Rd-Willow Rd



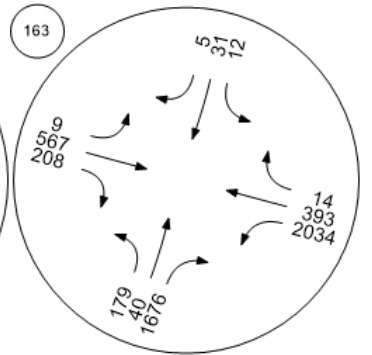
Marsh Road/101 NB Ramps



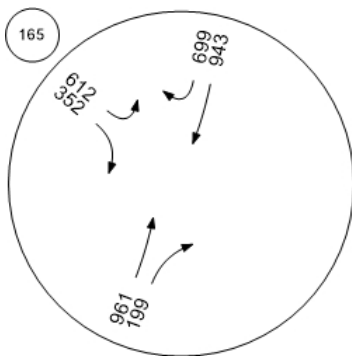
Chilco Street/Hamilton Avenue



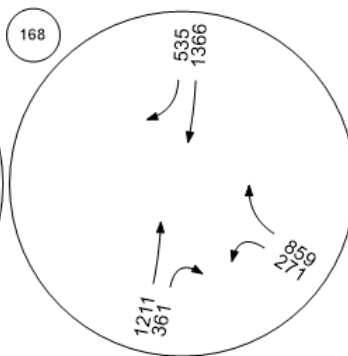
Bayfront Expy/Marsh Rd



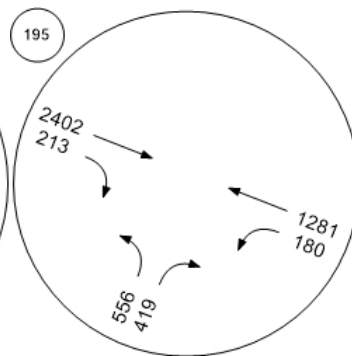
Willow Rd/US-101 SB Ramps



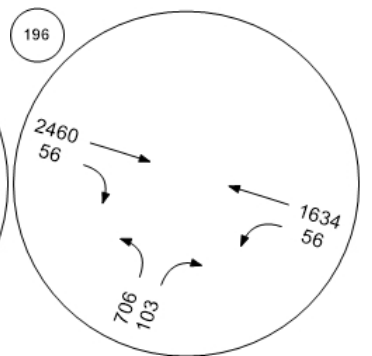
Willow Rd/US-101 NB Ramp



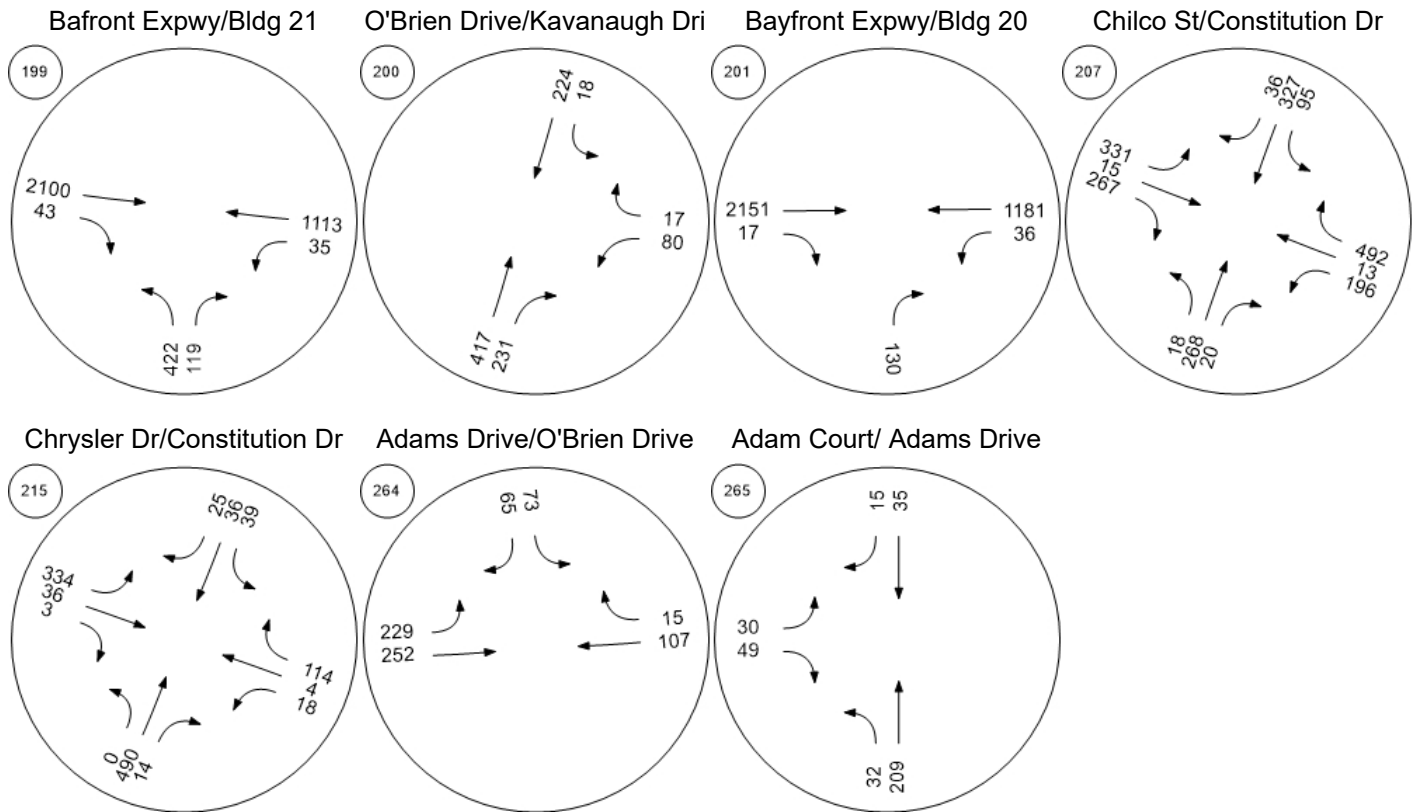
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



Traffic Volume - Base Volume

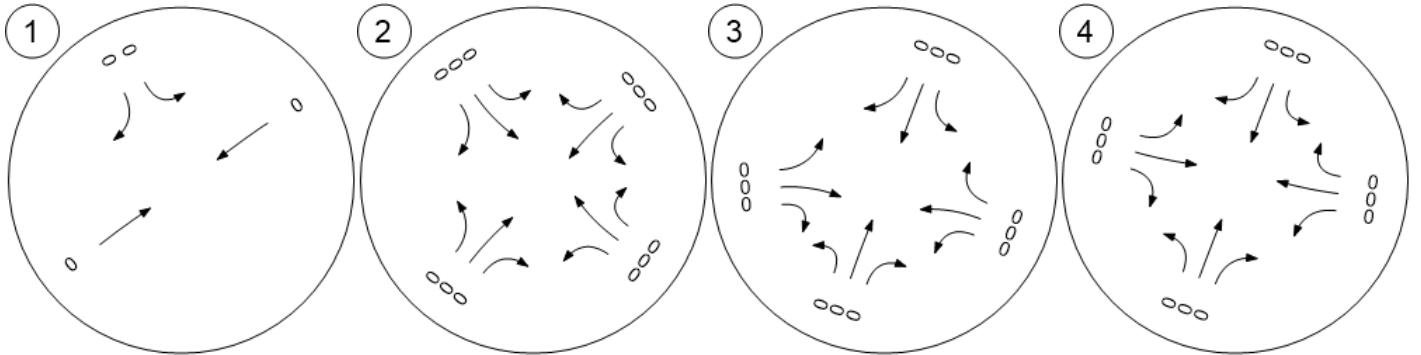


Traffic Volume - In-Process Volume

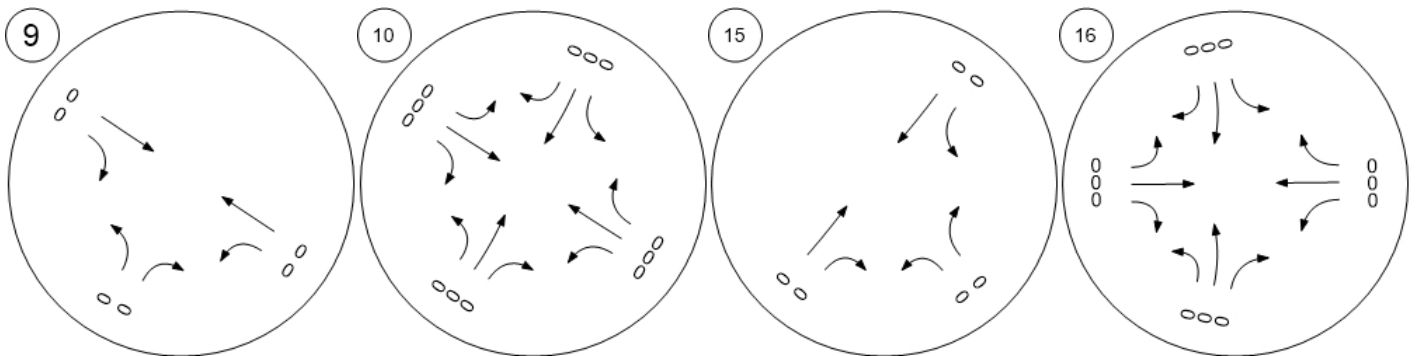


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



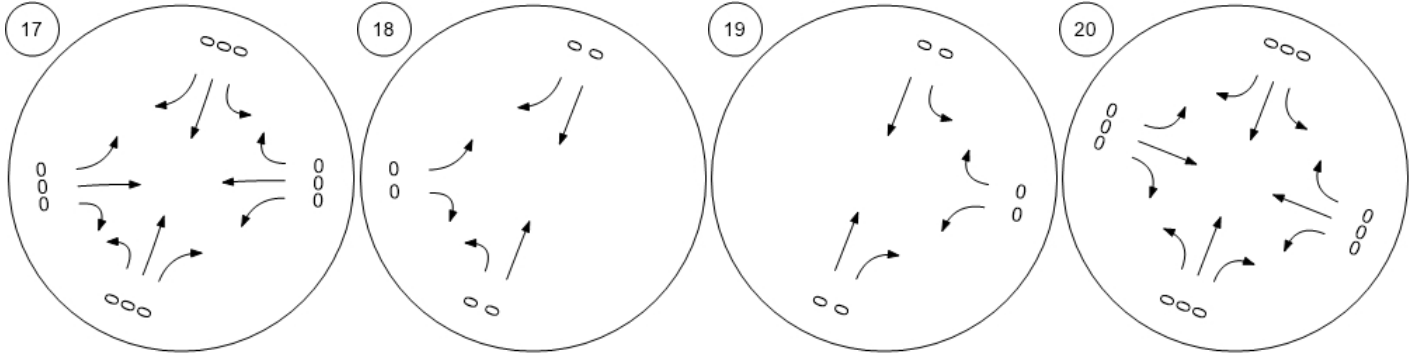
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



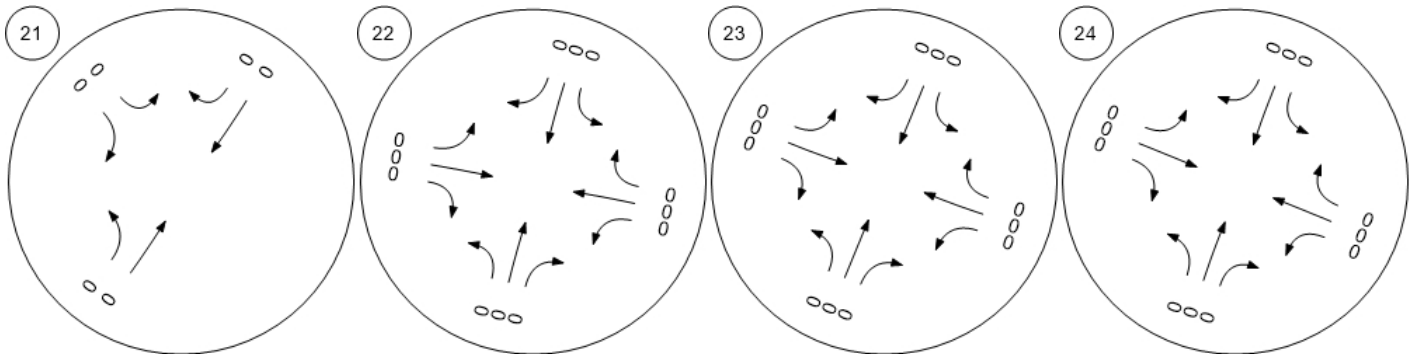
Traffic Volume - In-Process Volume



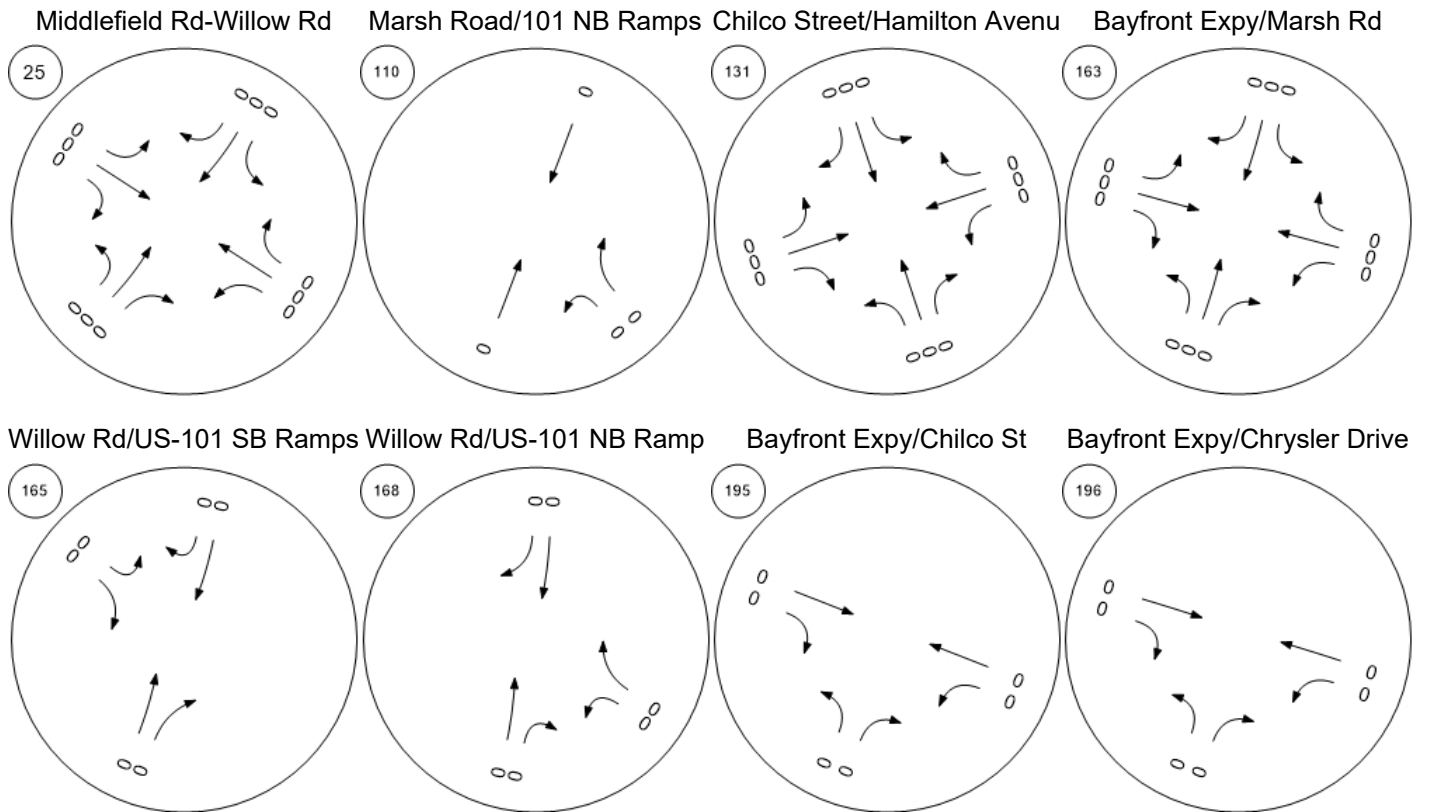
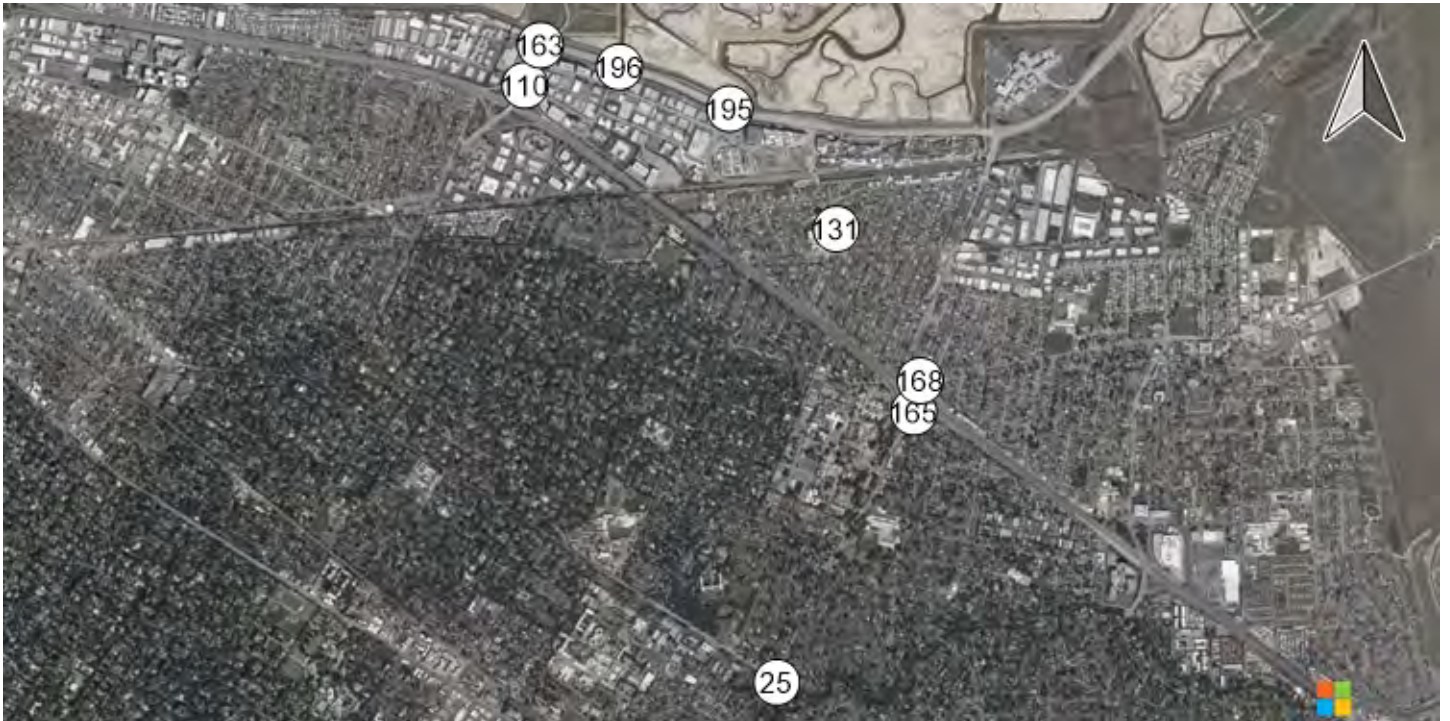
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave

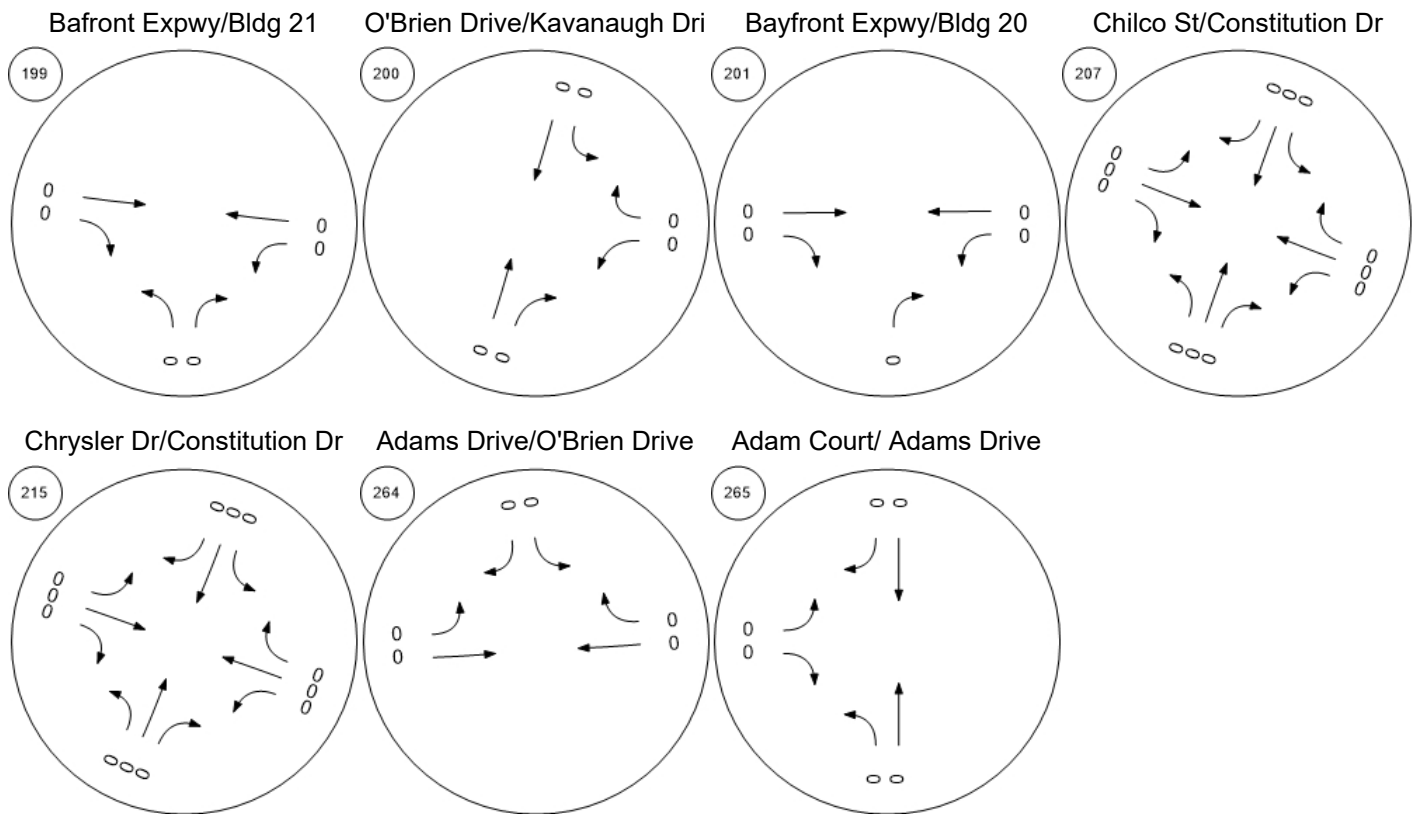


Traffic Volume - In-Process Volume





Traffic Volume - In-Process Volume

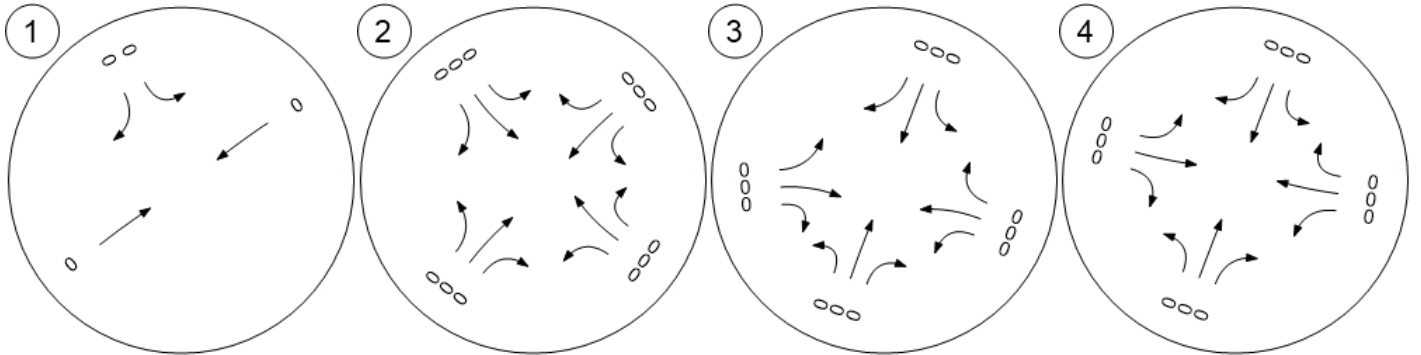


Traffic Volume - Net New Site Trips

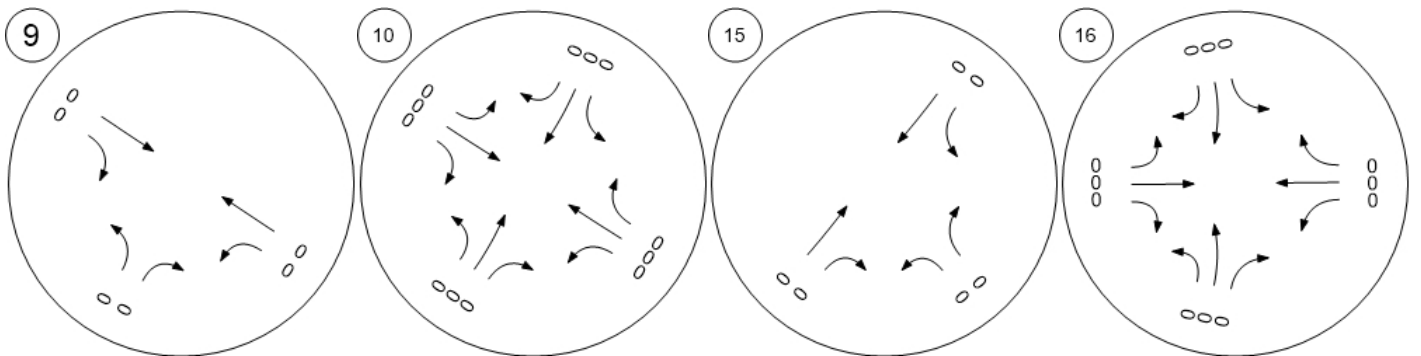


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



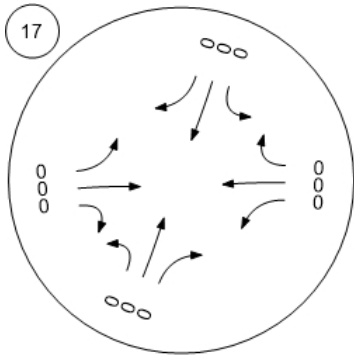
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



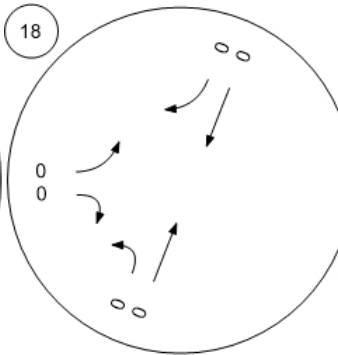
Traffic Volume - Net New Site Trips



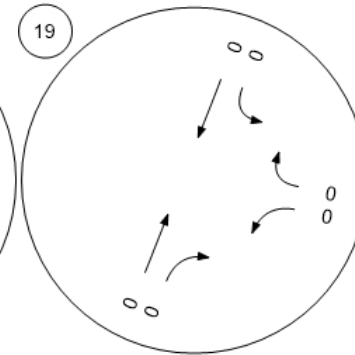
Willow Rd (SR 114)/Hamilton



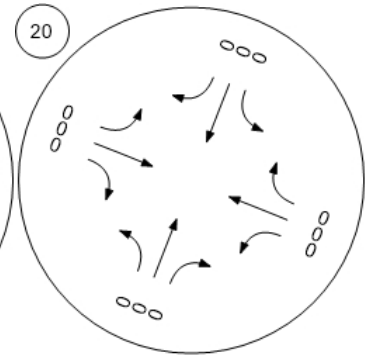
Willow Rd (SR 114)/Ivy Dr



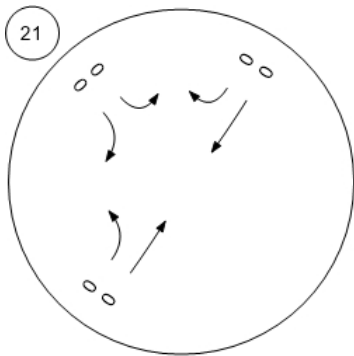
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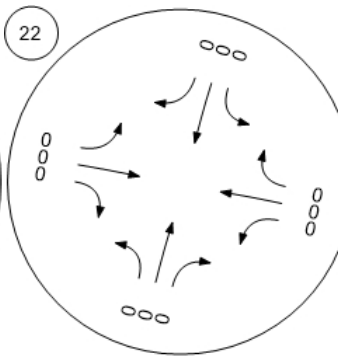
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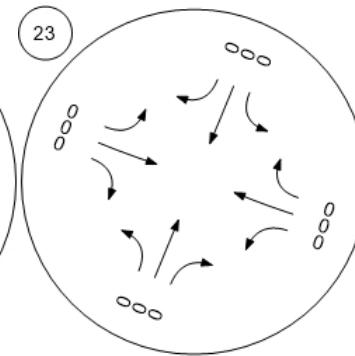
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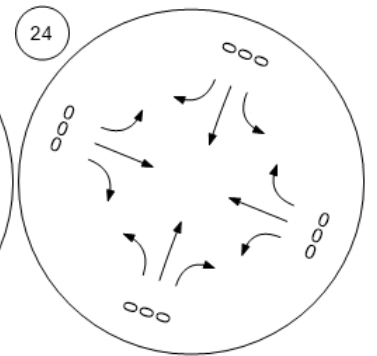
Willow Rd/Durham St-VA Me



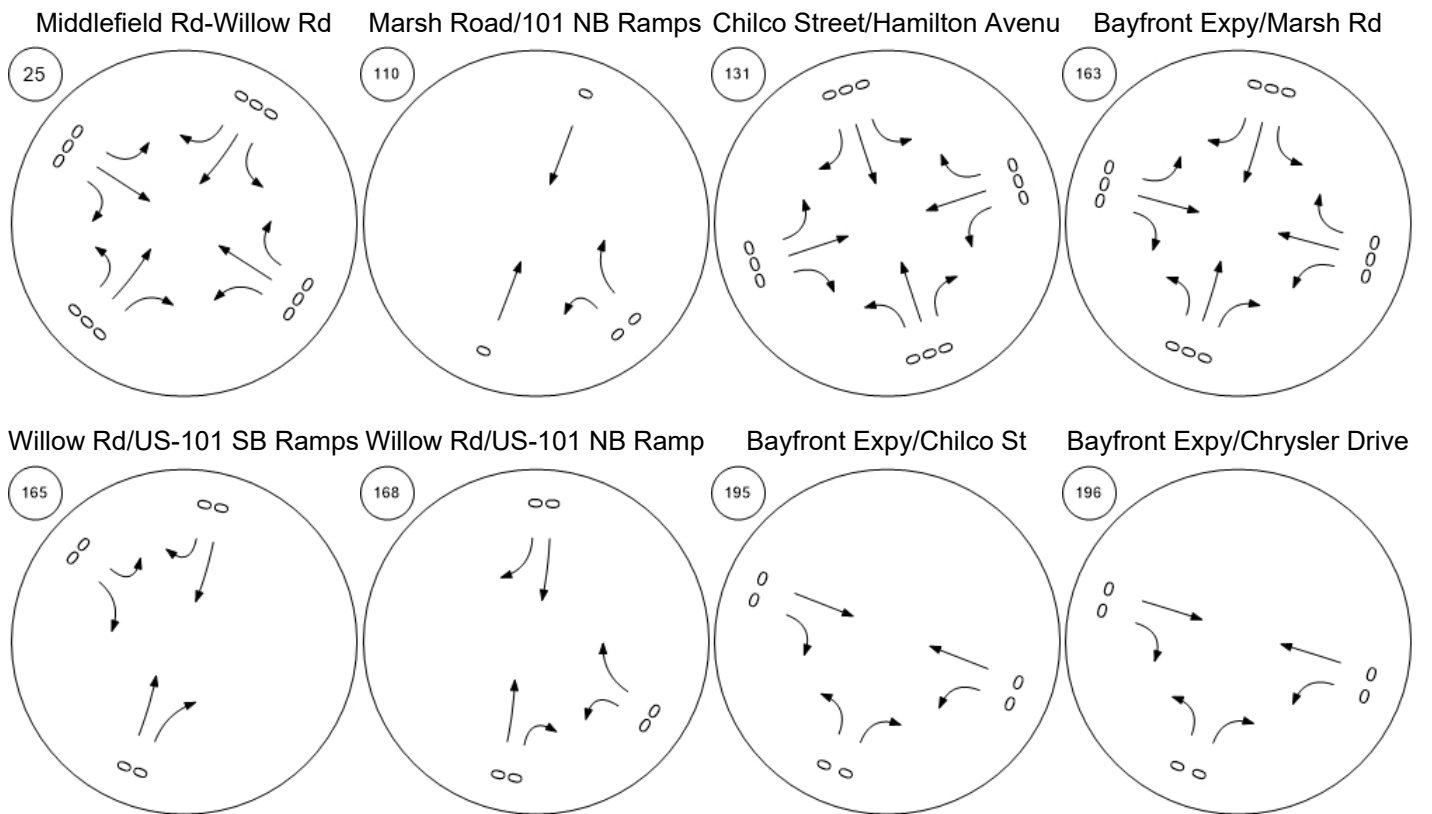
Willow Rd/Coleman Ave



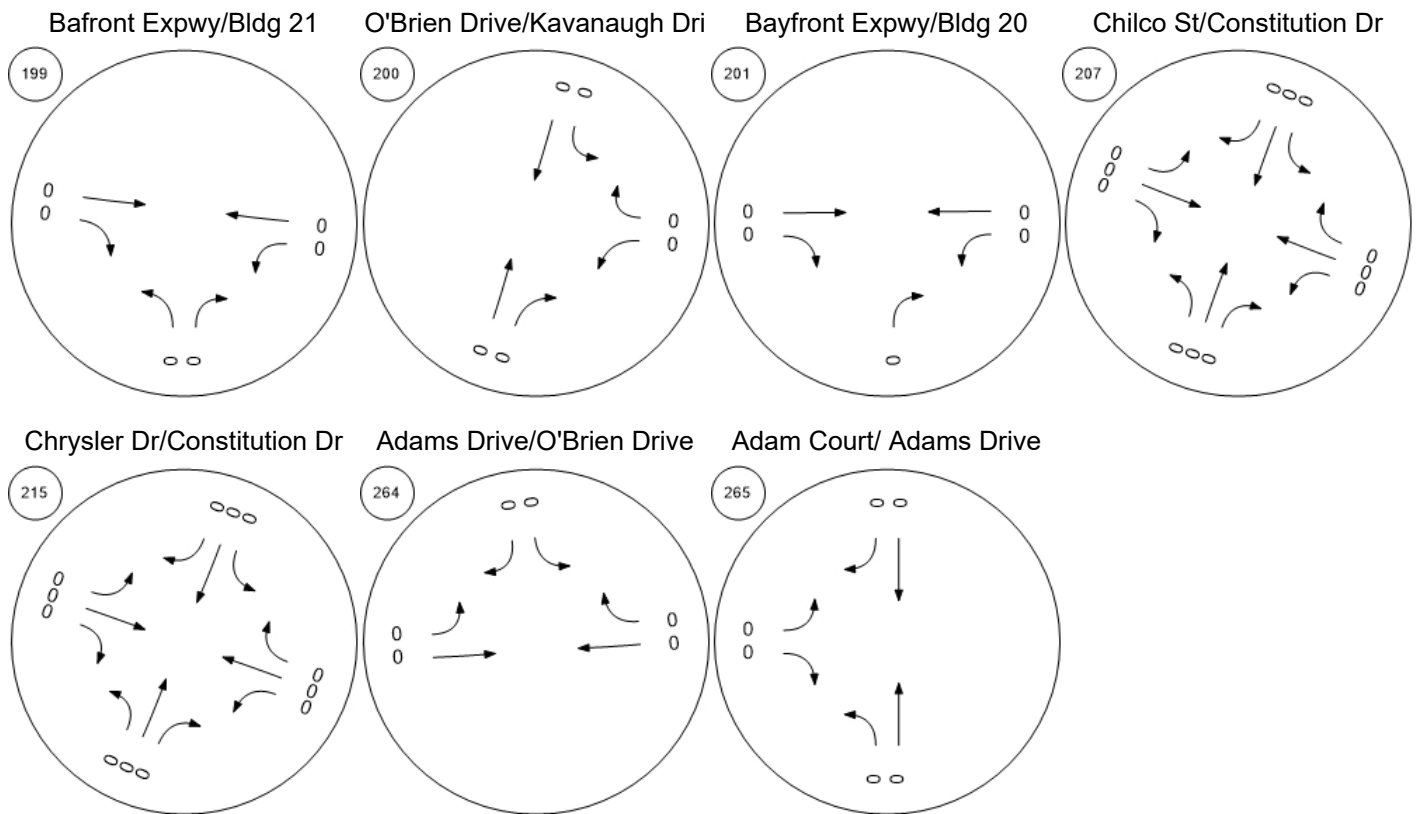
Willow Rd/Gilbert Ave



Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips

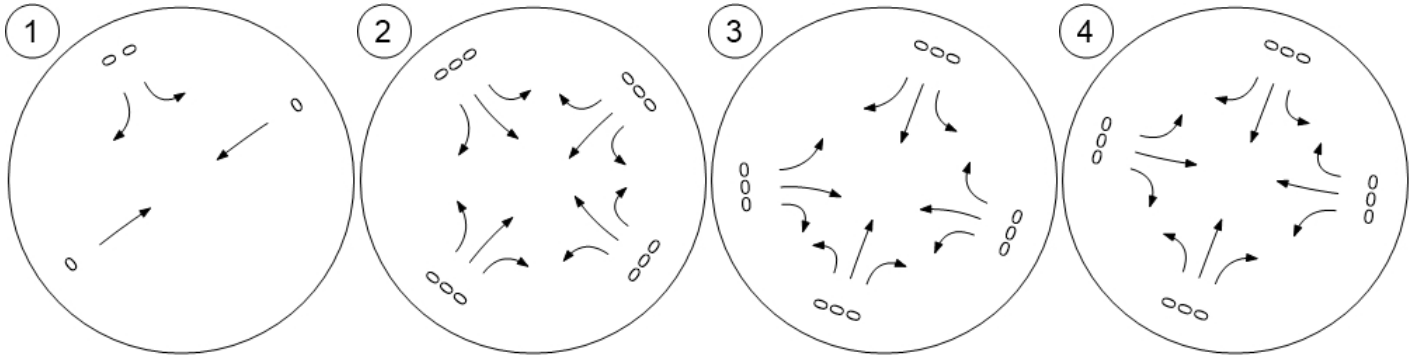


Traffic Volume - Other Volume

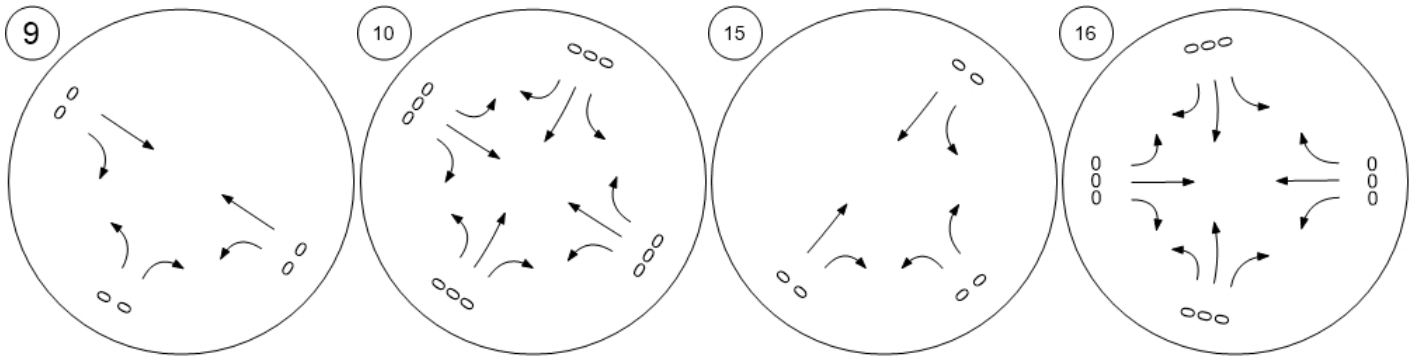


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



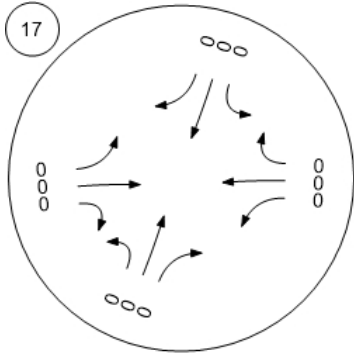
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



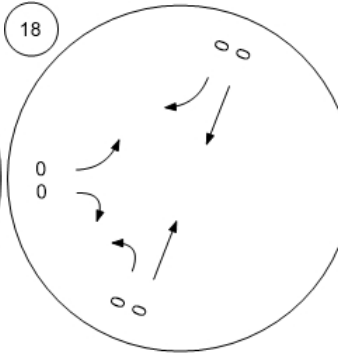
Traffic Volume - Other Volume



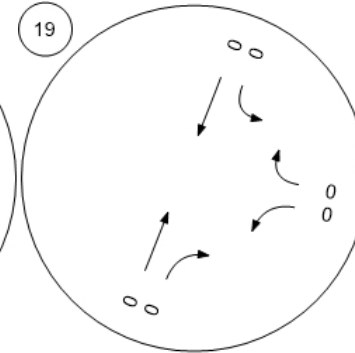
Willow Rd (SR 114)/Hamilton



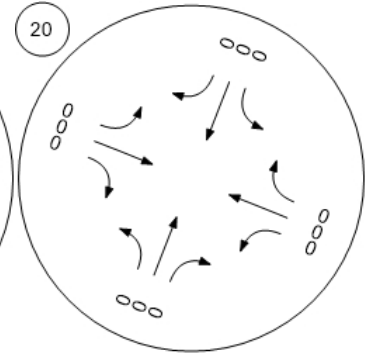
Willow Rd (SR 114)/Ivy Dr



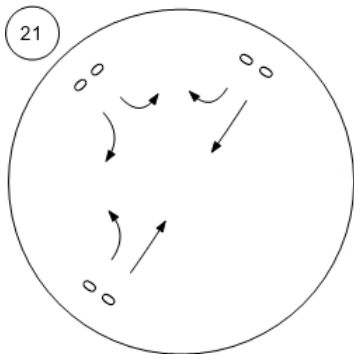
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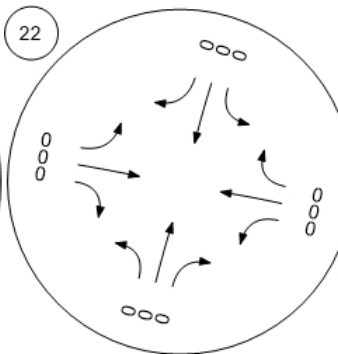
Willow Rd (SR 114)/Newbrid



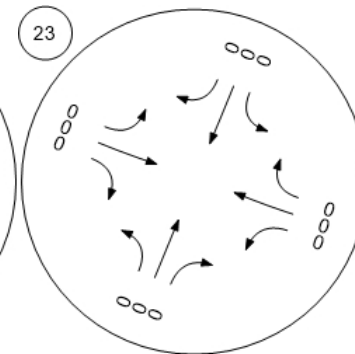
Willow Rd/Bay Rd



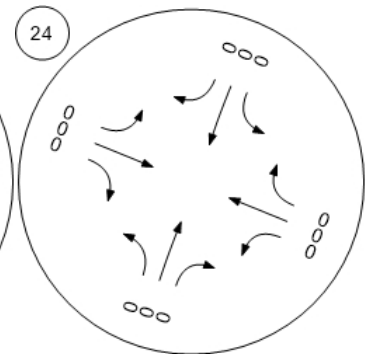
Willow Rd/Durham St-VA Me



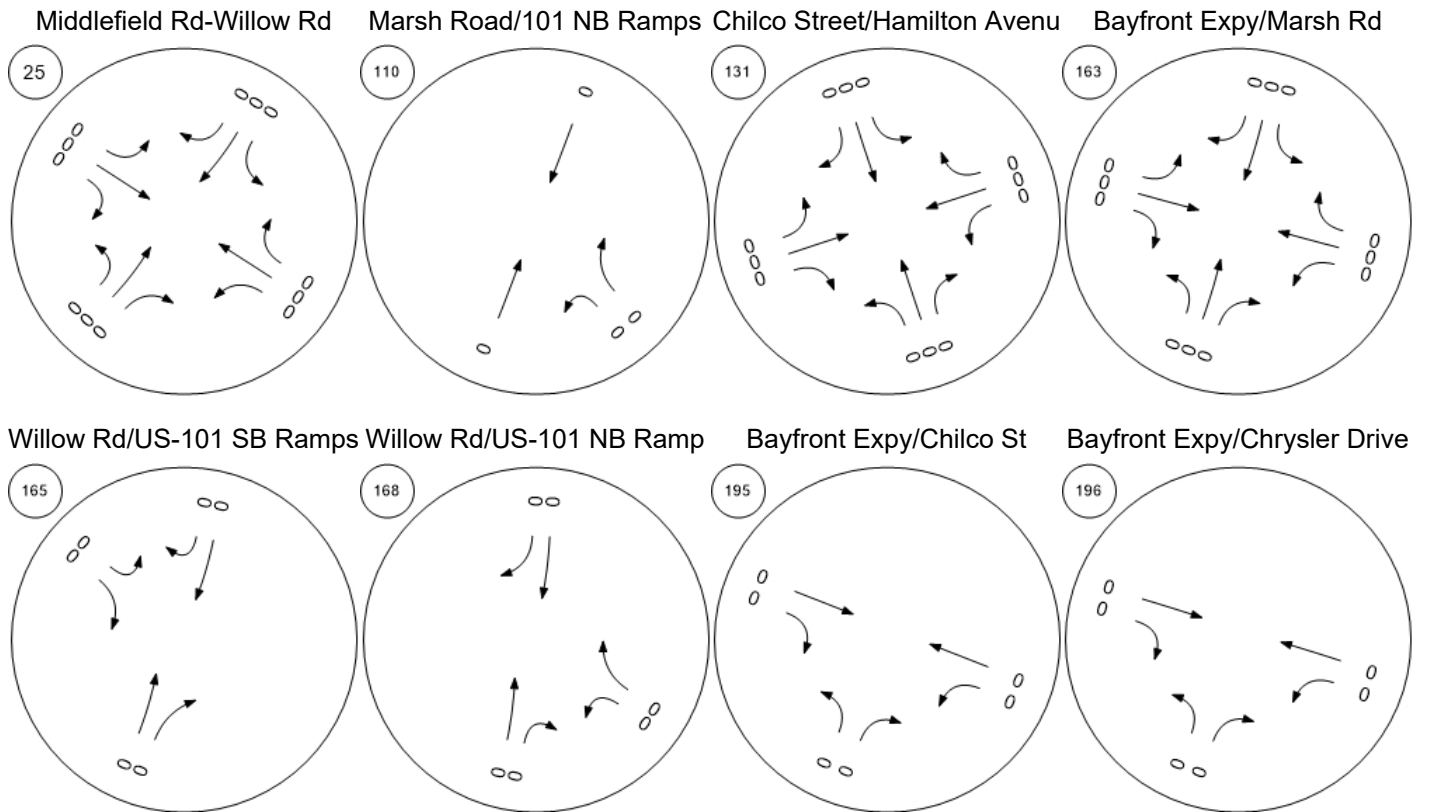
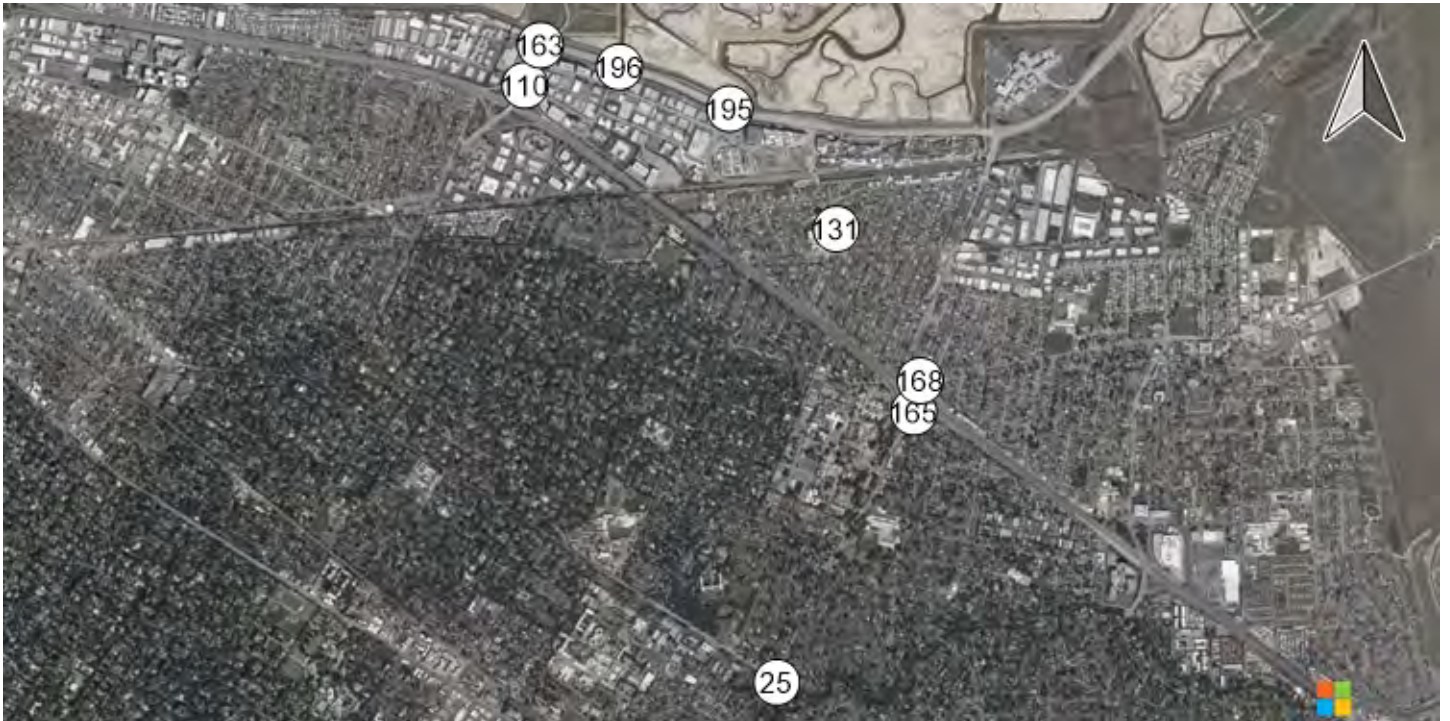
Willow Rd/Coleman Ave



Willow Rd/Gilbert Ave

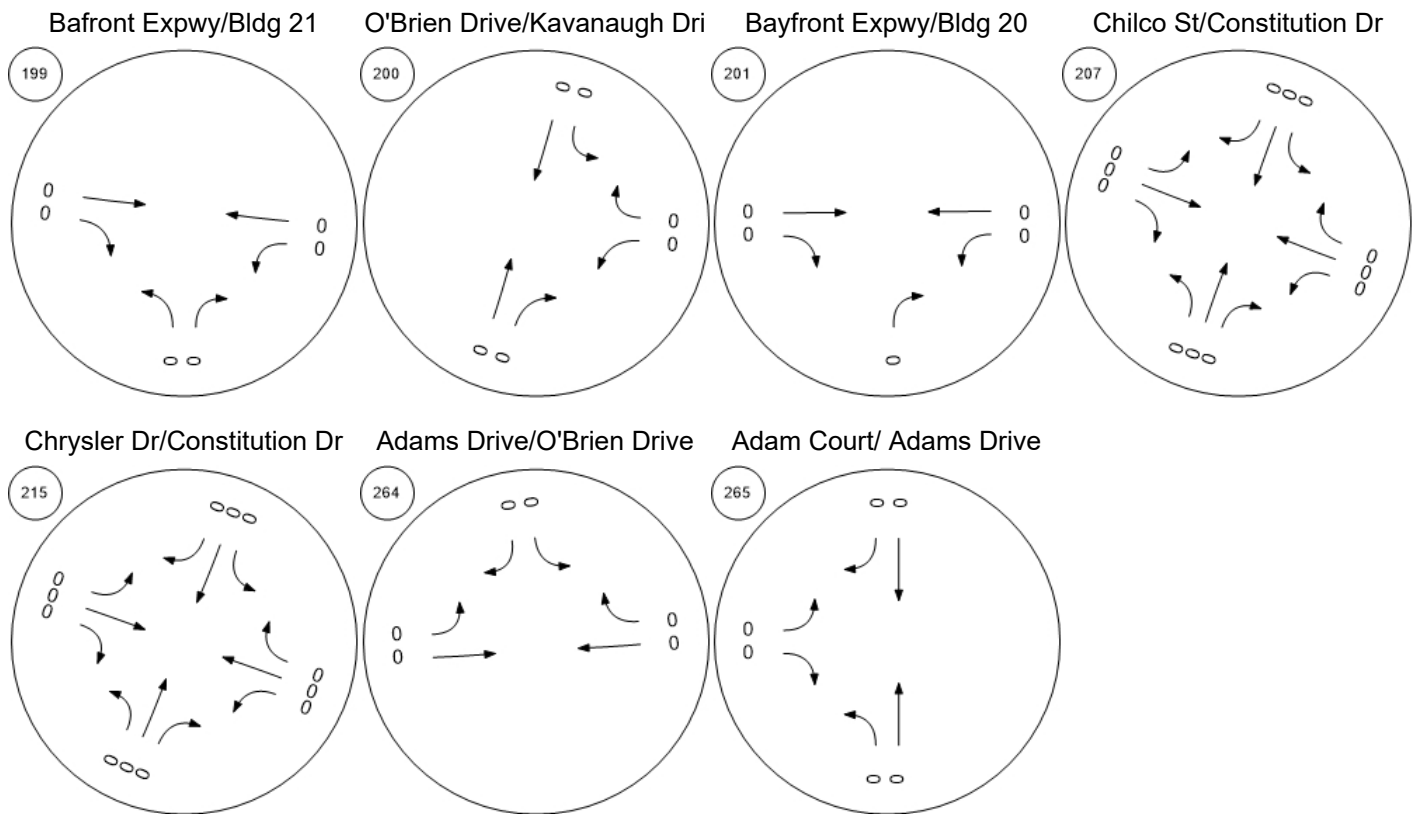


Traffic Volume - Other Volume





Traffic Volume - Other Volume

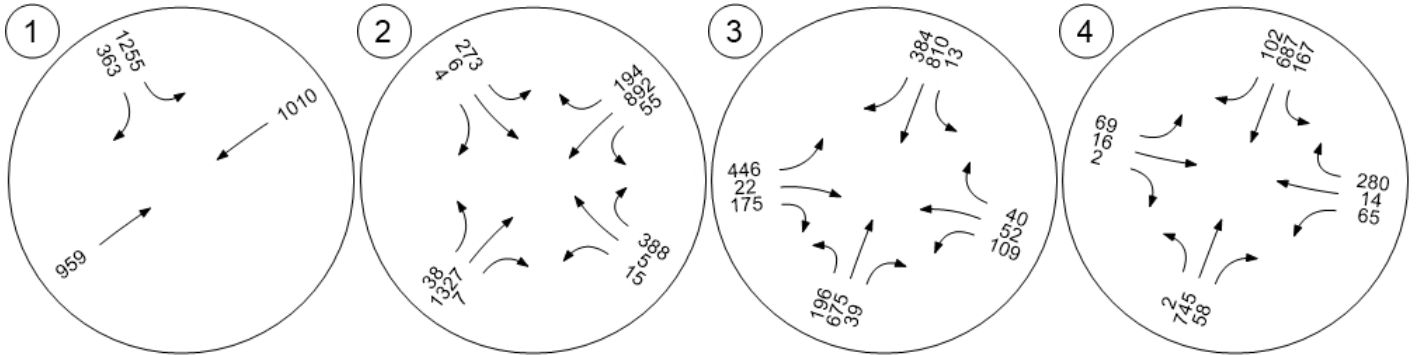


Traffic Volume - Future Total Volume

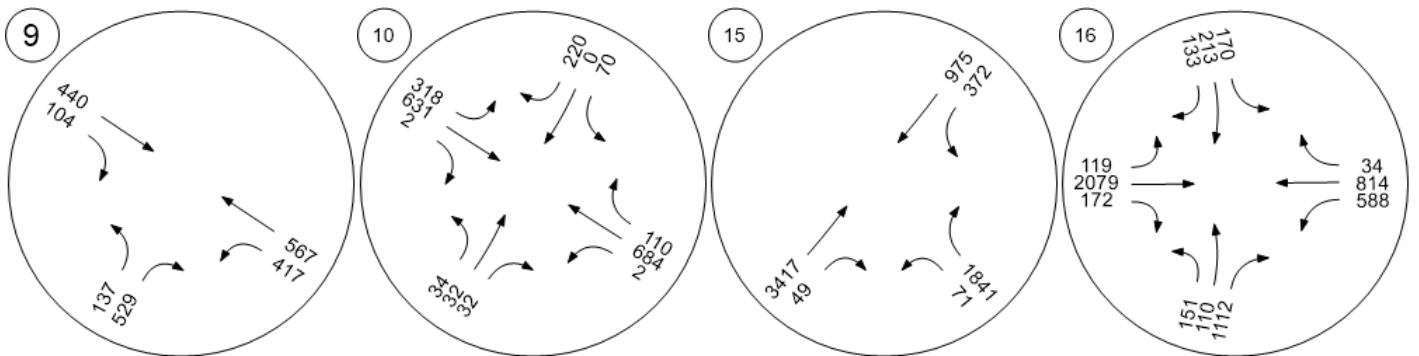


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



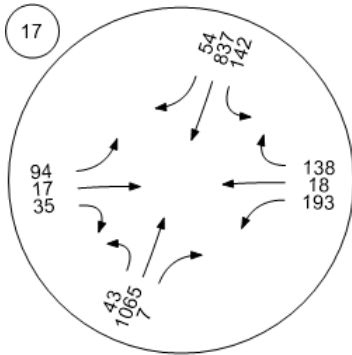
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



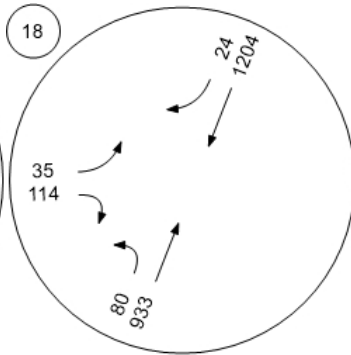
Traffic Volume - Future Total Volume



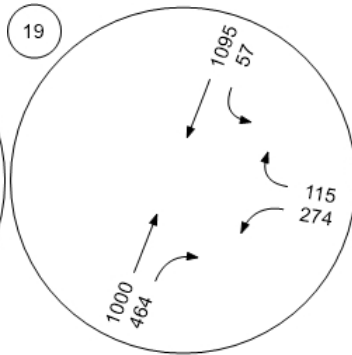
Willow Rd (SR 114)/Hamilton



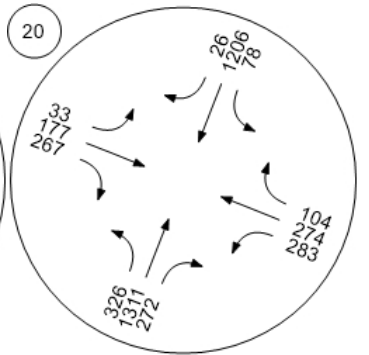
Willow Rd (SR 114)/Ivy Dr



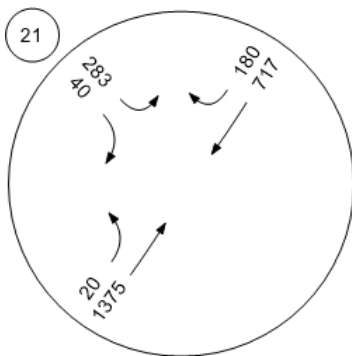
Willow Rd (SR 114)/O'Brien



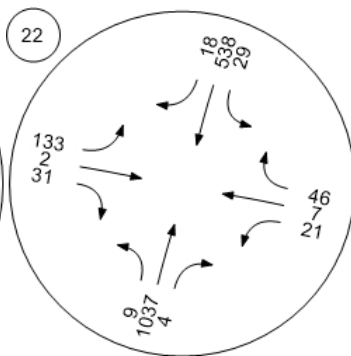
Willow Rd (SR 114)/Newbrid



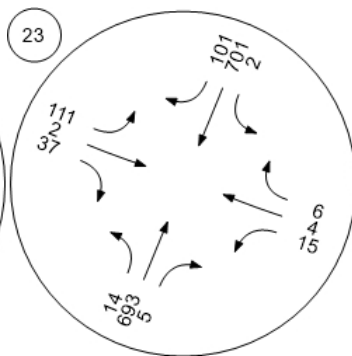
Willow Rd/Bay Rd



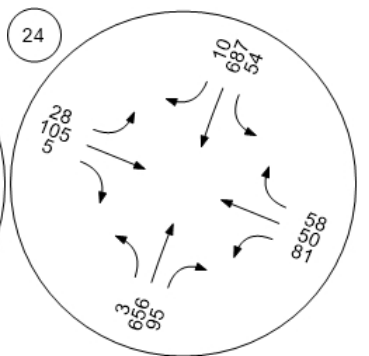
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



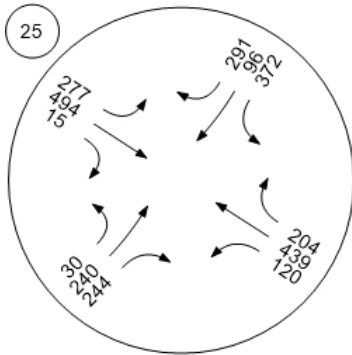
Willow Rd/Gilbert Ave



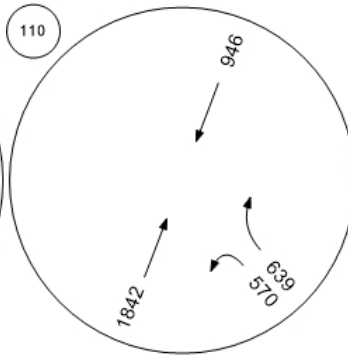
Traffic Volume - Future Total Volume



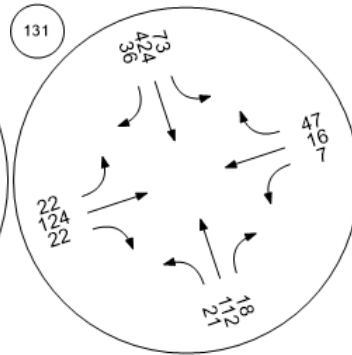
Middlefield Rd-Willow Rd



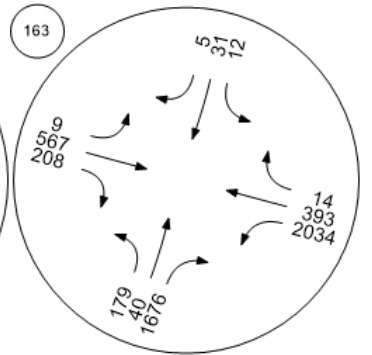
Marsh Road/101 NB Ramps



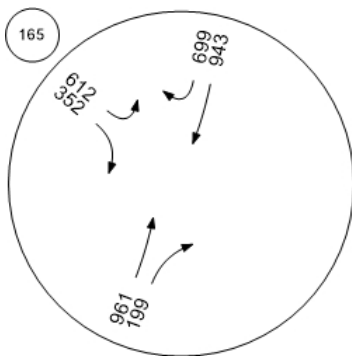
Chilco Street/Hamilton Avenue



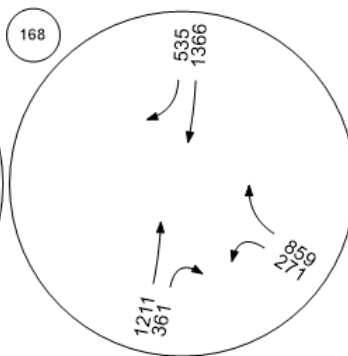
Bayfront Expy/Marsh Rd



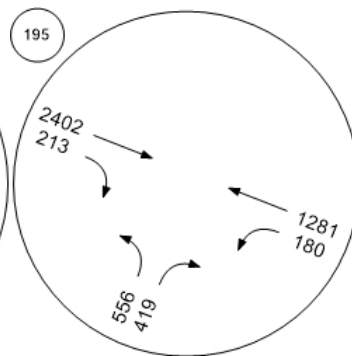
Willow Rd/US-101 SB Ramps



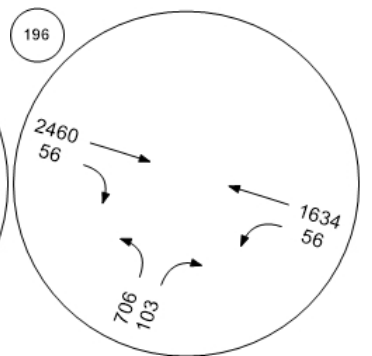
Willow Rd/US-101 NB Ramp



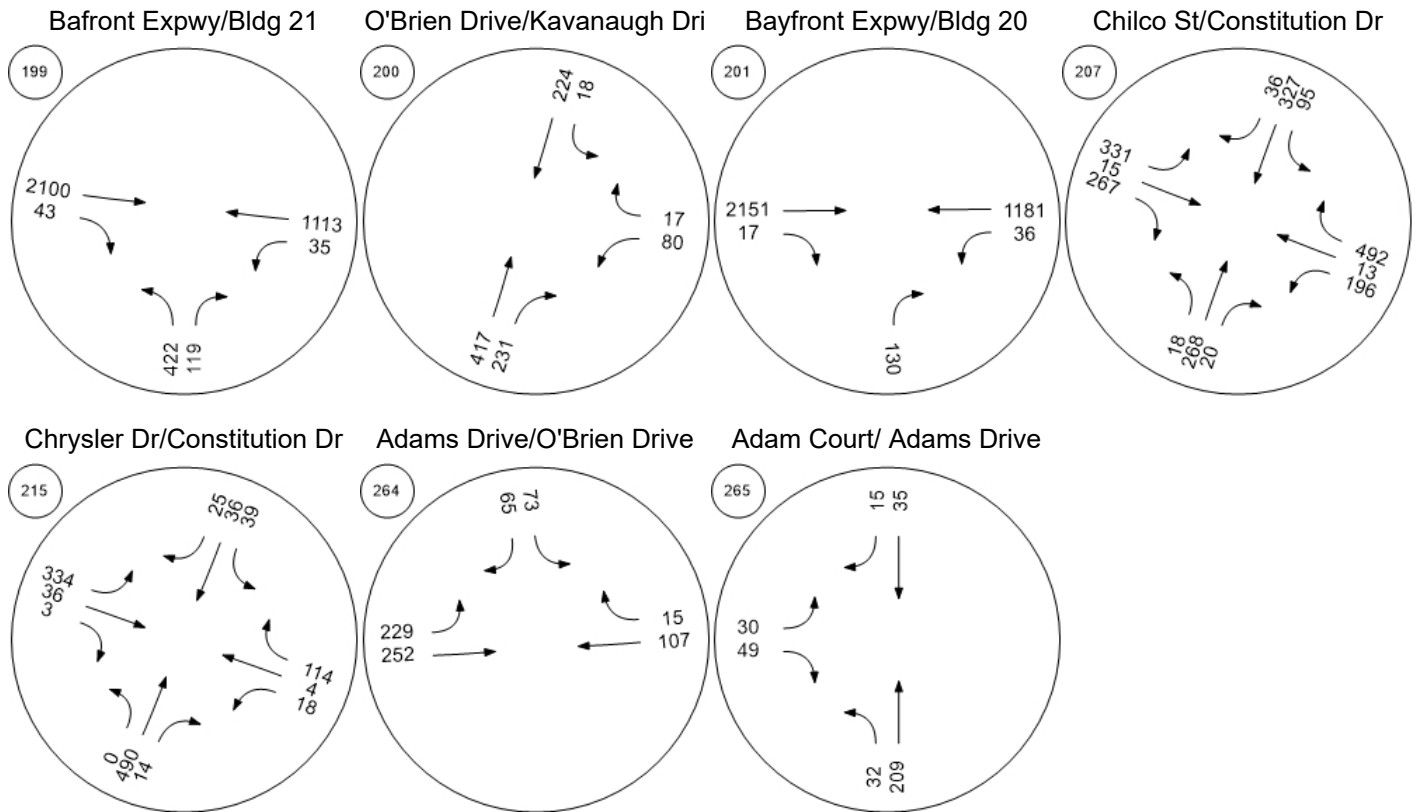
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



Traffic Volume - Future Total Volume

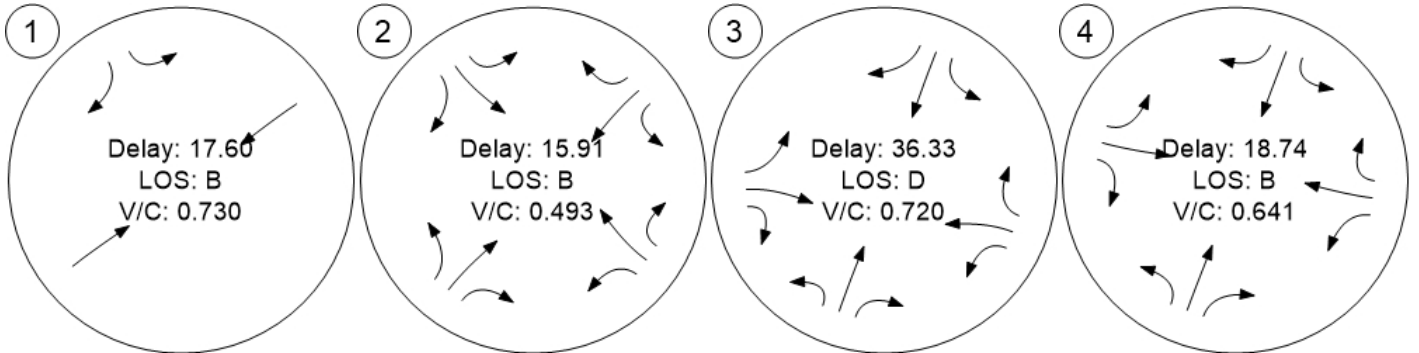


Traffic Conditions

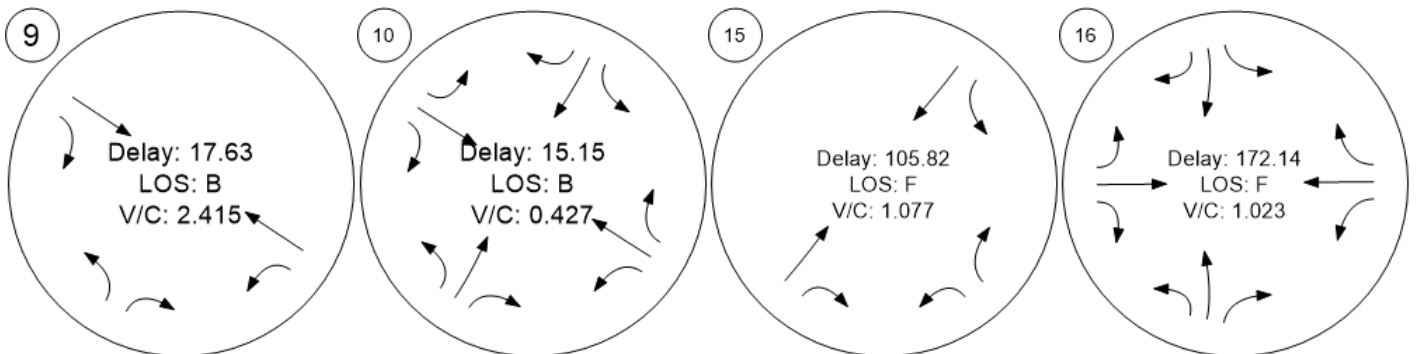


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



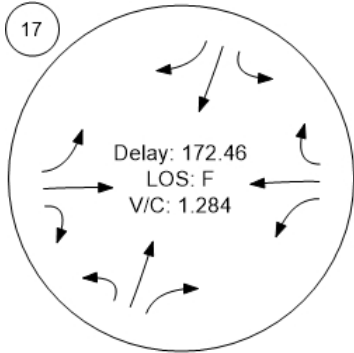
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



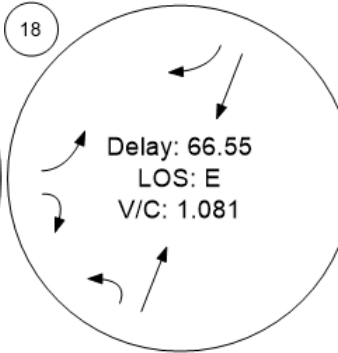
Traffic Conditions



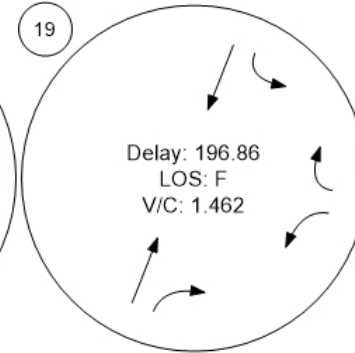
Willow Rd (SR 114)/Hamilton



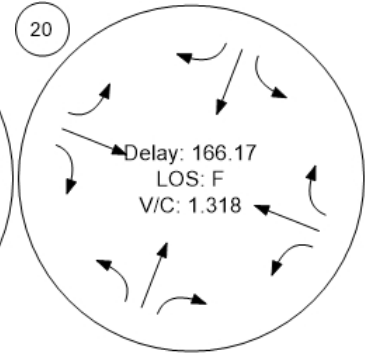
Willow Rd (SR 114)/Ivy Dr



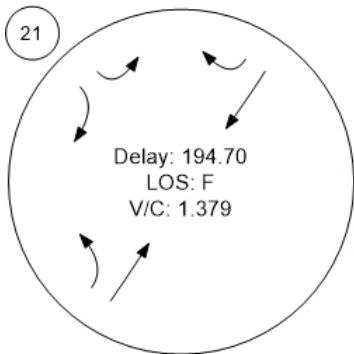
Willow Rd (SR 114)/O'Brien



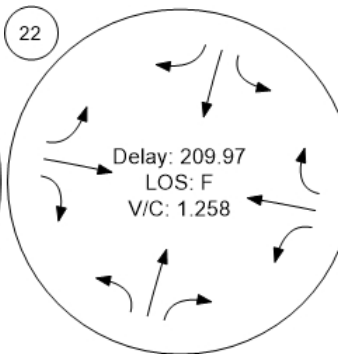
Willow Rd (SR 114)/Newbrid



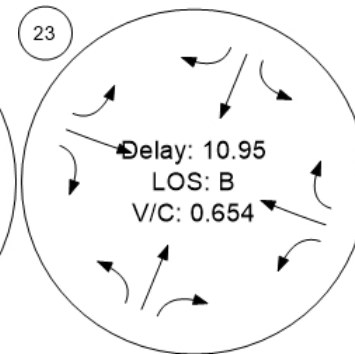
Willow Rd/Bay Rd



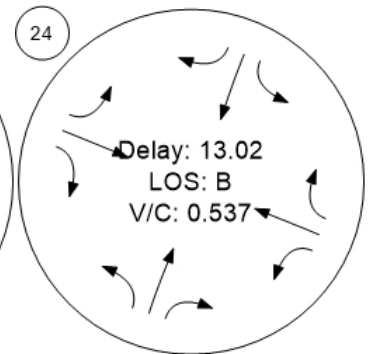
Willow Rd/Durham St-VA Me



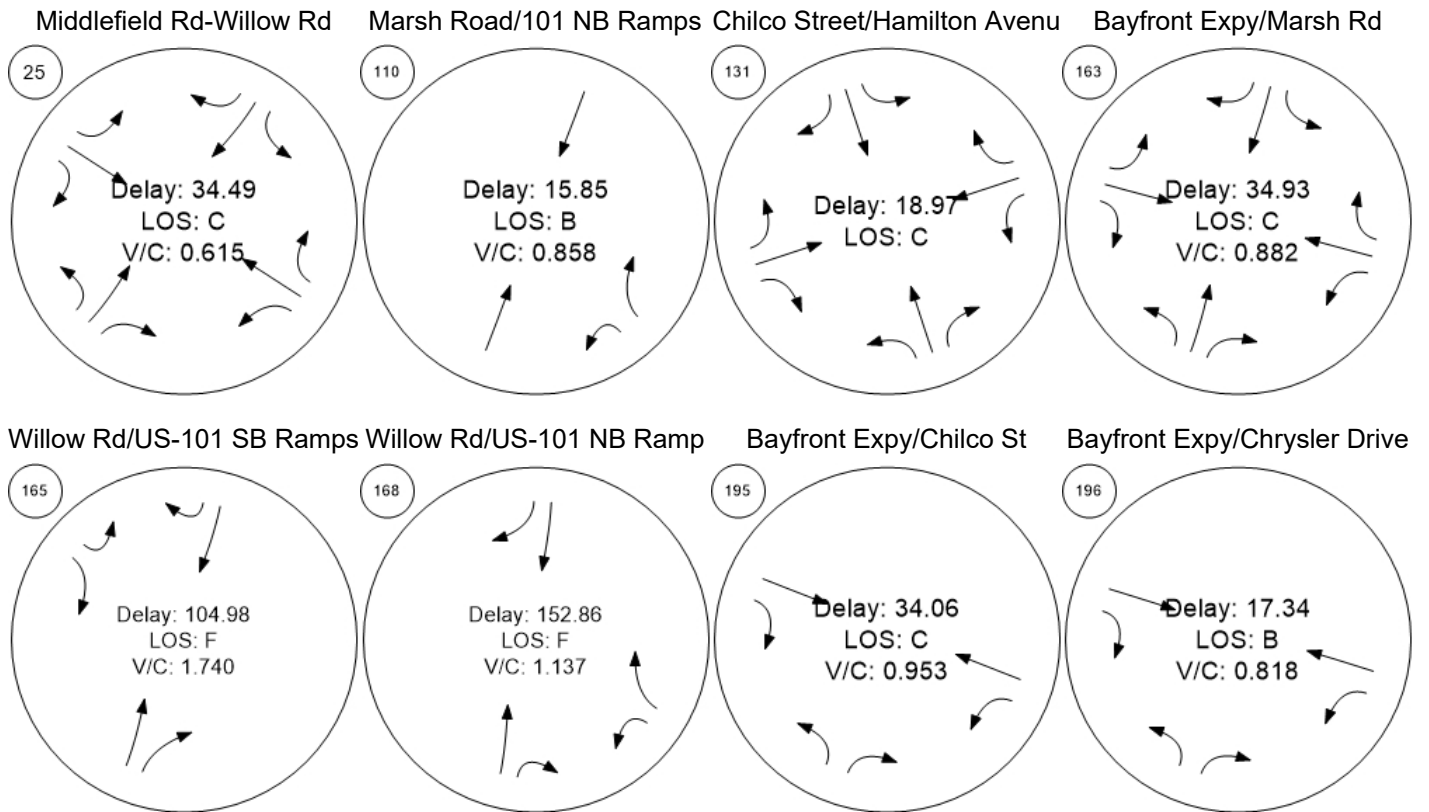
Willow Rd/Coleman Ave



Willow Rd/Gilbert Ave

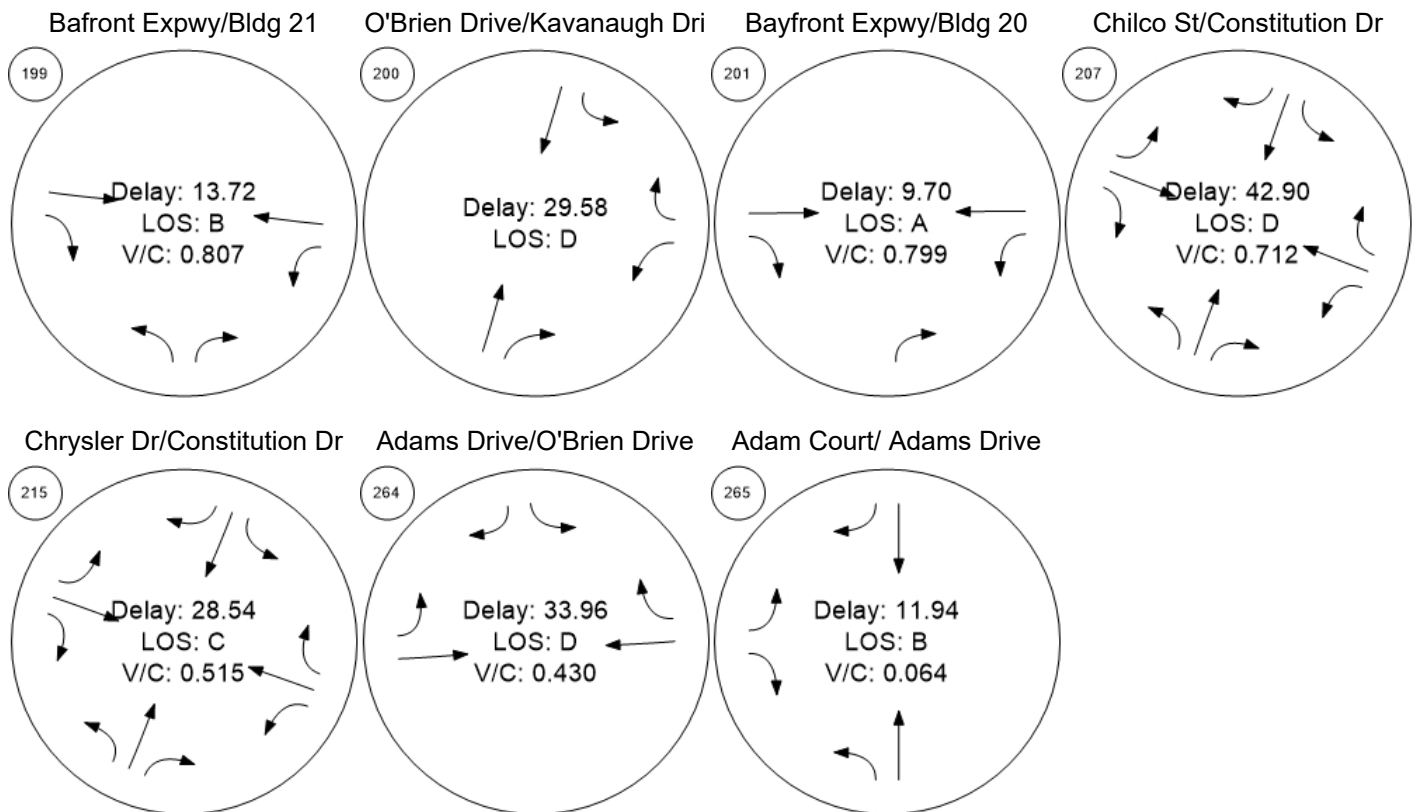


Traffic Conditions



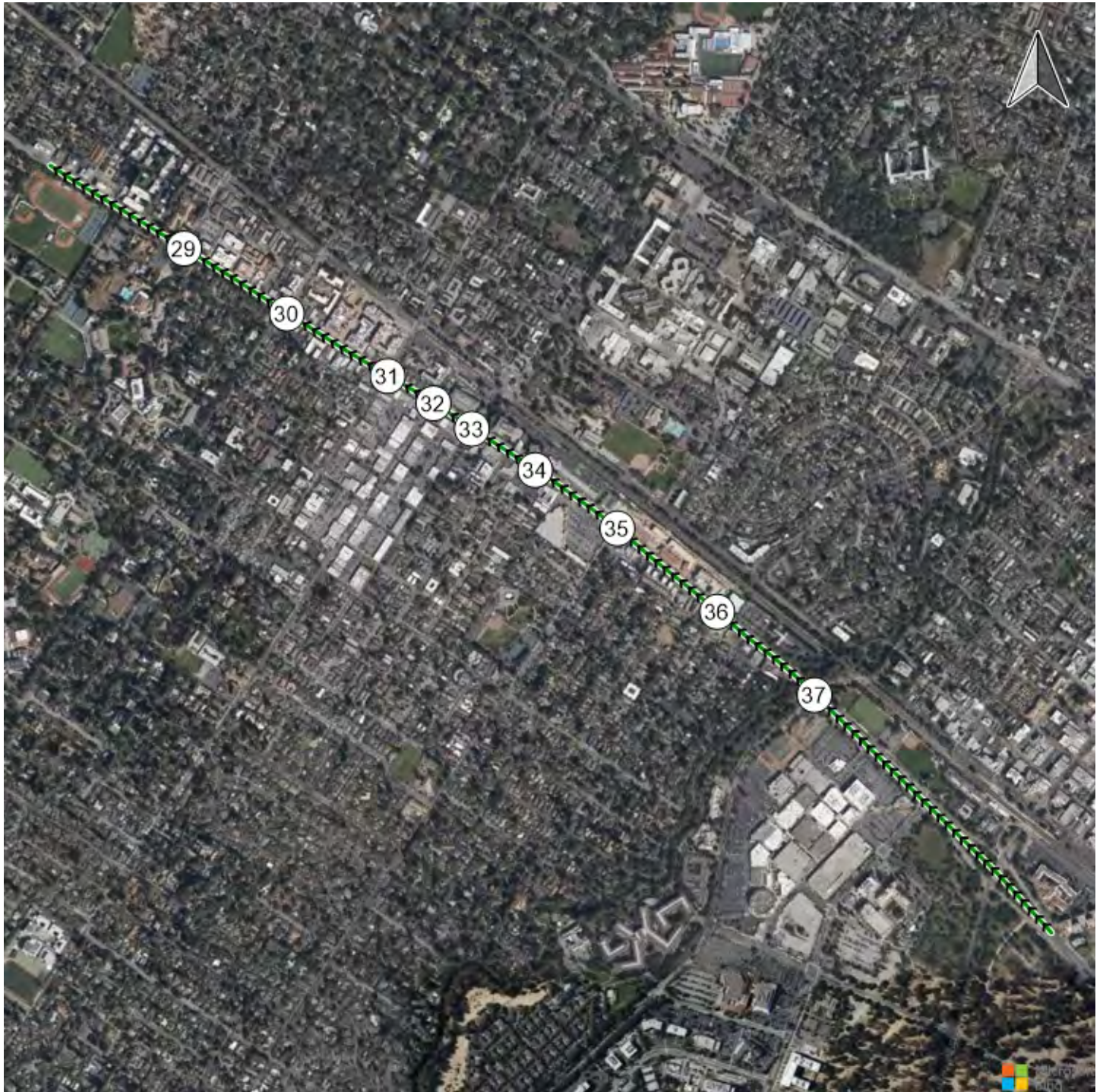


Traffic Conditions



Time Space Diagram - Flowing Off

Route 1: ECR NB



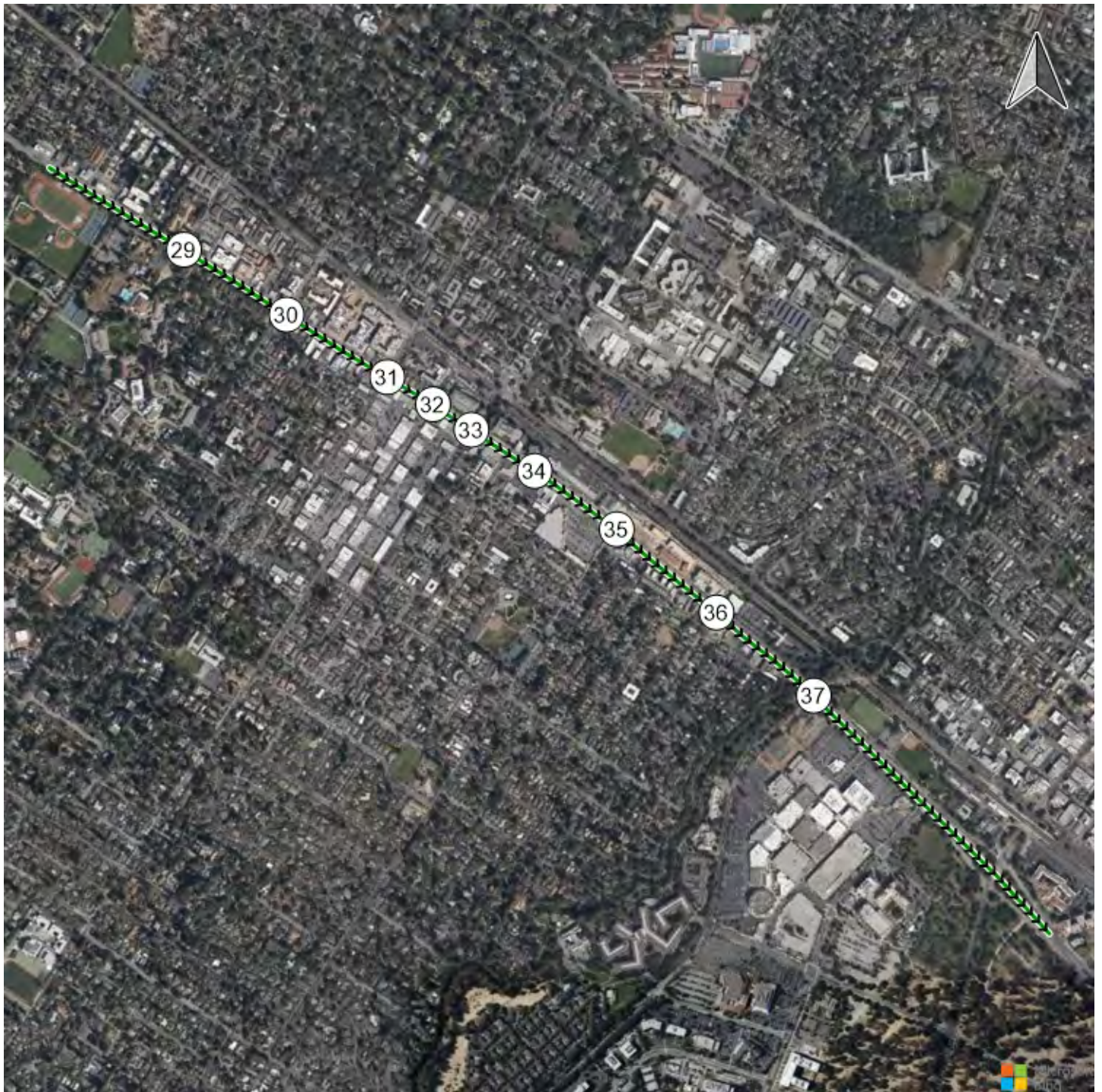
Generated with  PTV VISTRO

Version 2021 (SP 0-6)

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Route 1: ECR NB

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Version 2021 (SP 0-6)

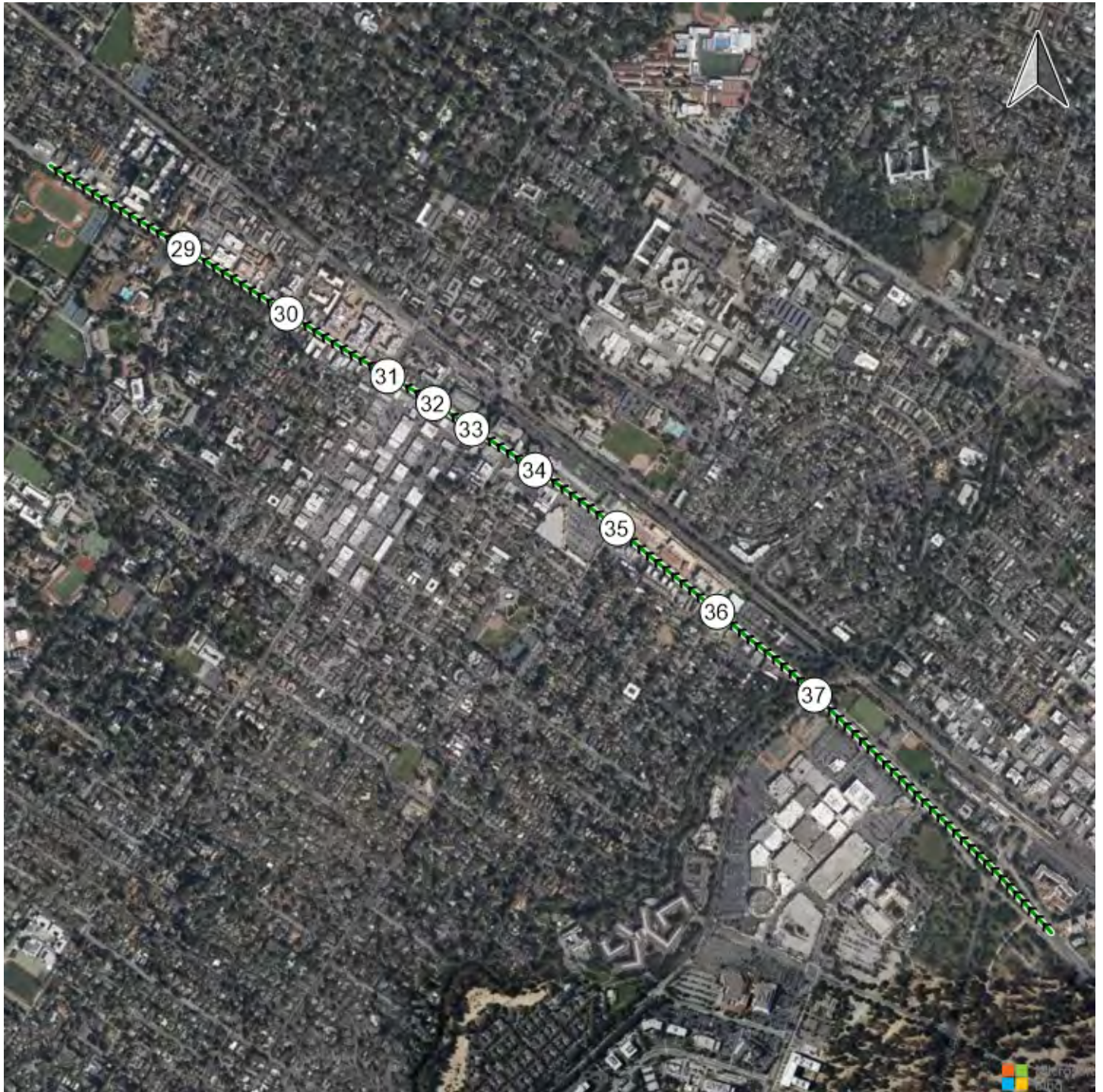
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



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Version 2021 (SP 0-6)

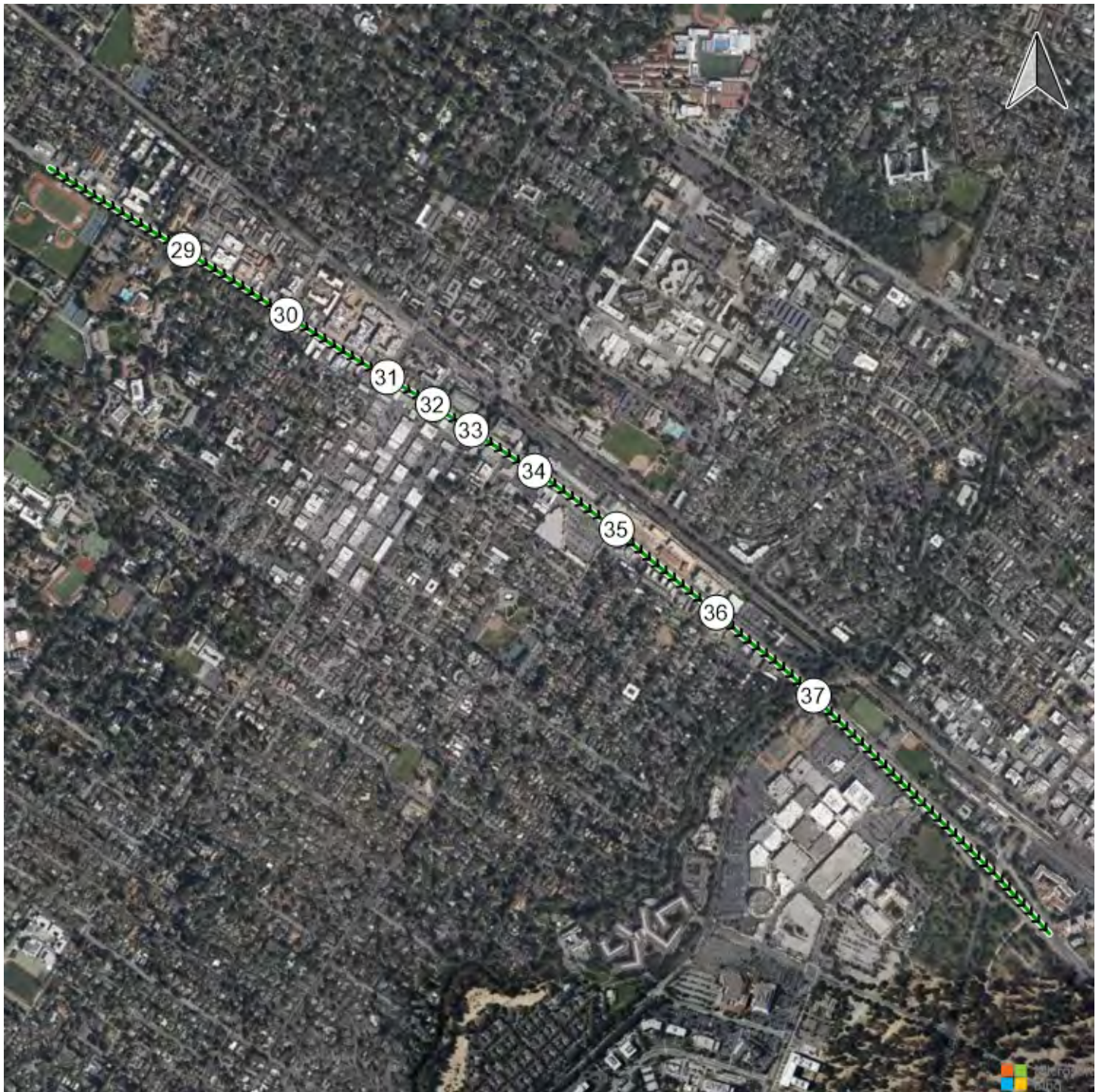
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB





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Version 2021 (SP 0-6)

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Route 2: ECR SB

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Vistro File: P:\...\Vistro\_AllScenarios\_AM - 12.9.2021.vistro  
 Report File: P:\...\Near-Term + P AM.pdf

Scenario 18 Near-Term AM (2025 vols)+Project  
 12/30/2021

### Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Right	0.872	20.7	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.743	20.5	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.775	41.6	D
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.775	25.2	C
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NWB Left	0.730	44.9	D
10	Middlefield Rd/Ringswood Ave	Signalized	HCM 6th Edition	NEB Left	0.390	13.7	B
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Left	0.736	12.1	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	WB Left	1.201	226.5	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	SB Right	1.150	150.5	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	SB Right	1.324	151.4	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	NB Thru	1.109	57.2	E
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	SB Right	1.351	174.8	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	SEB Left	1.088	60.0	E
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	NB Left	0.917	57.2	E
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.832	23.9	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	EB Left	0.699	19.9	B
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.585	62.5	E
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	0.963	39.0	D

131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	NB Thru	0.380	10.8	B
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.835	56.2	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.618	82.1	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.556	122.8	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.832	25.6	C
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.672	9.4	A
199	Bayfront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.795	7.4	A
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	1.358	107.7	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.827	7.5	A
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.540	24.6	C
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	EB Right	0.825	55.1	E
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	0.322	62.5	F
265	Adam Court/Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.025	11.6	B
267	Willow Road(SR114)/Park Street	Signalized	HCM 6th Edition	SB Left	0.581	36.8	D
269	O'Brien Drive/Loop Road	Roundabout	HCM 6th Edition	WB Right		7.4	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↵↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	942	1462	217	1226	512
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	942	1462	217	1226	512
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	240	373	54	313	131
Total Analysis Volume [veh/h]	0	961	1492	217	1251	522
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	43	41	32	32
g / C, Green / Cycle	0.54	0.51	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.24	0.42	0.37	0.33
s, saturation flow rate [veh/h]	4000	3515	3373	1572
c, Capacity [veh/h]	2165	1810	1357	632
d1, Uniform Delay [s]	11.06	16.33	22.68	21.36
k, delay calibration	0.50	0.50	0.04	0.34
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.66	4.42	1.21	8.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.44	0.82	0.92	0.83
d, Delay for Lane Group [s/veh]	11.72	20.74	23.89	29.70
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.68	11.05	10.55	9.58
50th-Percentile Queue Length [ft/ln]	116.98	276.24	263.67	239.41
95th-Percentile Queue Length [veh/ln]	8.23	16.50	15.87	14.65
95th-Percentile Queue Length [ft/ln]	205.67	412.52	396.83	366.29

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	11.72	20.74	0.00	23.89	29.70
Movement LOS		B	C		C	C
d_A, Approach Delay [s/veh]	11.72		20.74		25.60	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	20.73					
Intersection LOS	C					
Intersection V/C	0.872					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	2.973	0.000	2.553
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.352	2.791	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	31	1196	7	448	1239	310	13	4	58	238	19	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	0.00	0.00	12.70	1.70	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	59	0	0	0
Total Hourly Volume [veh/h]	31	1196	7	448	1239	310	13	4	0	238	19	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	332	2	124	344	86	4	1	0	66	5	0
Total Analysis Volume [veh/h]	34	1329	8	498	1377	344	14	4	0	264	21	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			1			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			1			1	
v_co, Outbound Pedestrian Volume crossing		1			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		1			0			1			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	40	40	15	40	40	0	20	0	20	20	20
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	51	51	31	70	70	0	41	0	37	37	37
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	106	106	120	112	112	6	6	28	28
g / C, Green / Cycle	0.04	0.66	0.66	0.75	0.70	0.70	0.04	0.04	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.25	0.47	0.47	0.50	0.01	0.00	0.15	0.01
s, saturation flow rate [veh/h]	1758	3532	1849	1051	1840	1719	1829	2572	1785	1900
c, Capacity [veh/h]	65	2333	1221	783	1288	1203	72	101	309	329
d1, Uniform Delay [s]	75.54	12.25	12.26	9.88	13.49	14.38	74.49	0.00	64.09	55.22
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.27	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	0.46	0.89	3.92	2.76	3.65	1.34	0.00	14.70	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.38	0.38	0.64	0.67	0.72	0.25	0.00	0.85	0.06
d, Delay for Lane Group [s/veh]	80.23	12.72	13.14	13.81	16.25	18.03	75.83	0.00	78.79	55.28
Lane Group LOS	F	B	B	B	B	B	E	A	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.46	7.14	7.62	3.00	17.49	18.81	0.75	0.00	11.81	0.73
50th-Percentile Queue Length [ft/ln]	36.50	178.46	190.48	75.11	437.21	470.28	18.86	0.00	295.30	18.21
95th-Percentile Queue Length [veh/ln]	2.63	11.52	12.15	5.41	24.35	25.92	1.36	0.00	17.45	1.31
95th-Percentile Queue Length [ft/ln]	65.71	288.00	303.65	135.19	608.67	648.10	33.94	0.00	436.21	32.78

**Movement, Approach, & Intersection Results**

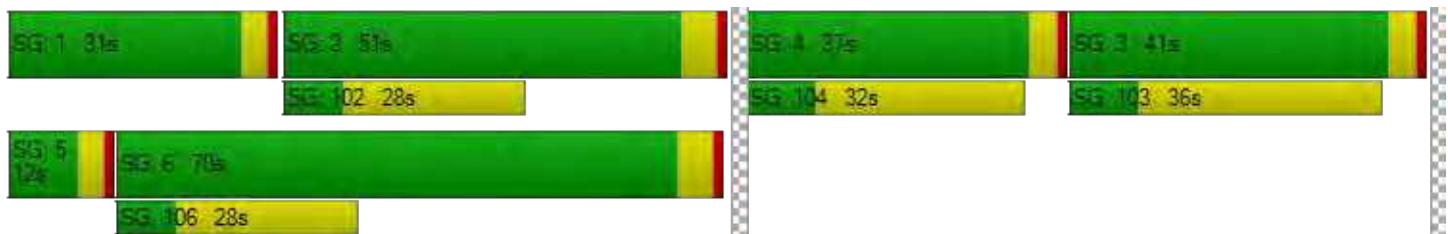
d_M, Delay for Movement [s/veh]	80.23	12.86	13.14	13.81	16.92	18.03	75.83	75.83	0.00	78.79	55.28	55.28
Movement LOS	F	B	B	B	B	B	E	E	A	E	E	E
d_A, Approach Delay [s/veh]	14.54			16.39			75.83			77.06		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	20.45											
Intersection LOS	C											
Intersection V/C	0.743											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.40	68.40	69.33	69.33
I_p,int, Pedestrian LOS Score for Intersection	3.069	3.250	2.986	2.148
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	575	813	460	410
d_b, Bicycle Delay [s]	40.59	28.16	47.39	50.52
I_b,int, Bicycle LOS Score for Intersection	2.314	3.390	1.687	2.030
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	41.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	138	857	84	29	1030	422	607	56	165	35	16	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	138	857	84	29	1030	422	607	56	150	35	16	25
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	221	22	7	265	109	156	14	39	9	4	6
Total Analysis Volume [veh/h]	142	884	87	30	1062	435	626	58	155	36	16	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			2			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			1			2	
v_co, Outbound Pedestrian Volume crossing		0			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			0			6			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	98	98	5	91	91	37	37	37	12	12
g / C, Green / Cycle	0.08	0.61	0.61	0.03	0.57	0.57	0.23	0.23	0.23	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.26	0.02	0.42	0.44	0.20	0.20	0.10	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1809	1704	1823	1647	1717	1702	1526	1439	1196
c, Capacity [veh/h]	142	1151	1110	58	1033	934	395	391	351	104	86
d1, Uniform Delay [s]	73.42	16.18	16.21	75.88	26.08	26.72	59.29	59.22	52.64	70.60	71.34
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.15	0.14	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	74.81	1.17	1.22	2.58	4.99	6.22	7.93	7.69	0.65	1.47	3.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.00	0.43	0.43	0.51	0.75	0.77	0.87	0.87	0.44	0.35	0.49
d, Delay for Lane Group [s/veh]	148.23	17.35	17.43	78.45	31.07	32.94	67.21	66.91	53.29	72.07	74.48
Lane Group LOS	F	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.78	9.78	9.52	1.26	23.18	22.41	14.45	14.22	5.49	1.47	1.75
50th-Percentile Queue Length [ft/ln]	219.61	244.61	237.94	31.42	579.48	560.14	361.14	355.62	137.28	36.66	43.85
95th-Percentile Queue Length [veh/ln]	13.64	14.91	14.58	2.26	31.07	30.17	20.68	20.41	9.33	2.64	3.16
95th-Percentile Queue Length [ft/ln]	341.12	372.86	364.42	56.56	776.87	754.22	516.97	510.26	233.36	65.99	78.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	148.23	17.38	17.43	78.45	31.57	32.94	67.08	66.91	53.29	72.07	74.48	74.48
Movement LOS	F	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	34.08			32.88			64.52			73.37		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	41.61											
Intersection LOS	D											
Intersection V/C	0.775											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.932			3.061			2.474			2.036		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.478			2.819			2.969			1.688		
Bicycle LOS	B			C			C			A		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	810	84	326	755	61	226	66	2	40	22	208
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	810	84	326	755	61	226	66	2	40	22	208
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	207	21	83	193	16	58	17	1	10	6	53
Total Analysis Volume [veh/h]	0	827	86	333	770	62	231	67	2	41	22	212
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			5			0			5	
v_di, Inbound Pedestrian Volume crossing in		0			5			0			5	
v_co, Outbound Pedestrian Volume crossing		1			1			1			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			1			1			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			12			9			2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	28	28	16	47	47	29	29
g / C, Green / Cycle	0.35	0.35	0.20	0.59	0.59	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.19	0.23	0.23	0.28	0.17
s, saturation flow rate [veh/h]	1882	1653	1708	1807	1751	1060	1643
c, Capacity [veh/h]	699	574	342	1058	1025	458	639
d1, Uniform Delay [s]	23.00	23.01	31.82	8.98	9.00	24.48	20.05
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.37	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.65	8.47	17.29	1.12	1.17	5.29	0.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.70	0.74	0.97	0.40	0.40	0.65	0.43
d, Delay for Lane Group [s/veh]	28.65	31.48	49.10	10.11	10.17	29.77	21.03
Lane Group LOS	C	C	D	B	B	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.55	7.91	7.72	3.68	3.60	5.75	3.98
50th-Percentile Queue Length [ft/ln]	213.78	197.64	192.88	91.93	90.08	143.69	99.56
95th-Percentile Queue Length [veh/ln]	13.35	12.52	12.27	6.62	6.49	9.68	7.17
95th-Percentile Queue Length [ft/ln]	333.67	312.92	306.76	165.47	162.14	241.99	179.21

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.65	29.82	31.48	49.10	10.14	10.17	29.77	29.77	29.77	21.03	21.03	21.03
Movement LOS	C	C	C	D	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	29.97			21.28			29.77			21.03		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	25.21											
Intersection LOS	C											
Intersection V/C	0.775											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	23.9
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.79	29.79	29.79	19.70
I_p,int, Pedestrian LOS Score for Intersection	2.674	3.176	1.864	2.063
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	597	1072	682	682
d_b, Bicycle Delay [s]	19.70	8.68	17.47	17.41
I_b,int, Bicycle LOS Score for Intersection	2.313	2.521	2.055	2.013
Bicycle LOS	B	B	B	B

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	44.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	



**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	87	503	495	433	480	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	11.80	4.20	3.10	2.50	3.30	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	87	0	495	433	480	104
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	132	115	128	28
Total Analysis Volume [veh/h]	93	0	527	461	511	111
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing in	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	10	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.6	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	13	13	33	100	68
g / C, Green / Cycle	0.11	0.11	0.28	0.84	0.57
(v / s)_i Volume / Saturation Flow Rate	0.06	0.00	0.30	0.25	0.35
s, saturation flow rate [veh/h]	1641	1561	1765	1862	1777
c, Capacity [veh/h]	180	172	485	1555	1004
d1, Uniform Delay [s]	50.42	0.00	43.52	2.17	17.47
k, delay calibration	0.08	0.08	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.69	0.00	65.96	0.49	2.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	1.09	0.30	0.62
d, Delay for Lane Group [s/veh]	52.11	0.00	109.48	2.65	20.34
Lane Group LOS	D	A	F	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	0.00	23.00	1.66	11.68
50th-Percentile Queue Length [ft/ln]	68.20	0.00	574.95	41.52	292.06
95th-Percentile Queue Length [veh/ln]	4.91	0.00	32.46	2.99	17.29
95th-Percentile Queue Length [ft/ln]	122.76	0.00	811.47	74.73	432.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.11	0.00	109.48	2.65	20.34	20.34
Movement LOS	D	A	F	A	C	C
d_A, Approach Delay [s/veh]	52.11		59.64		20.34	
Approach LOS	D		E		C	
d_I, Intersection Delay [s/veh]	44.87					
Intersection LOS	D					
Intersection V/C	0.730					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.52	49.52	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.939	2.856	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	763	1090	507
d_b, Bicycle Delay [s]	23.21	12.68	34.09
I_b,int, Bicycle LOS Score for Intersection	1.560	3.190	2.586
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringswood Ave**

Control Type:	Signalized	Delay (sec / veh):	13.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.390

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↑			↑↵			↵↵↵			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	6	11	9	135	28	318	21	606	114	267	683	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	8.30	4.40	0.00	4.00	0.00	3.20	0.00	4.60	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	222	0	0	96	0	0	0
Total Hourly Volume [veh/h]	6	11	9	135	28	96	21	606	18	267	683	56
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	2	36	7	26	6	161	5	71	182	15
Total Analysis Volume [veh/h]	6	12	10	144	30	102	22	645	19	284	727	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing in	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	25	25	25	25	91	78	78	89	83	83
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.76	0.65	0.65	0.74	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.00	0.01	0.14	0.07	0.03	0.18	0.01	0.32	0.22	0.22
s, saturation flow rate [veh/h]	1401	1737	1282	1483	749	3526	1471	894	1840	1774
c, Capacity [veh/h]	123	359	320	306	602	2288	954	694	1265	1220
d1, Uniform Delay [s]	54.94	38.25	45.64	40.40	4.58	9.05	7.49	5.39	7.48	7.50
k, delay calibration	0.10	0.10	0.10	0.10	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.07	1.38	0.60	0.02	0.31	0.04	1.79	0.65	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.06	0.54	0.33	0.04	0.28	0.02	0.41	0.32	0.32
d, Delay for Lane Group [s/veh]	55.09	38.32	47.02	41.00	4.60	9.36	7.52	7.18	8.13	8.19
Lane Group LOS	E	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.18	0.54	4.95	2.62	0.13	3.50	0.18	2.24	3.94	3.86
50th-Percentile Queue Length [ft/ln]	4.56	13.55	123.75	65.59	3.22	87.39	4.39	56.08	98.51	96.41
95th-Percentile Queue Length [veh/ln]	0.33	0.98	8.60	4.72	0.23	6.29	0.32	4.04	7.09	6.94
95th-Percentile Queue Length [ft/ln]	8.21	24.39	214.97	118.06	5.79	157.29	7.90	100.94	177.32	173.53



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	55.09	38.32	38.32	47.02	47.02	41.00	4.60	9.36	7.52	7.18	8.16	8.19
Movement LOS	E	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	41.91			44.80			9.16			7.90		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	13.72											
Intersection LOS	B											
Intersection V/C	0.390											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.007			2.825			3.123			2.788		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	513			513			757			507		
d_b, Bicycle Delay [s]	33.29			33.54			23.36			34.10		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.381			2.205			2.443		
Bicycle LOS	A			B			B			B		

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

**Intersection Setup**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	864	67	1234	2778	205	416
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	3.50	1.60	3.10	2.20	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	864	67	1234	2778	205	416
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	223	17	318	716	53	107
Total Analysis Volume [veh/h]	891	69	1272	2864	211	429
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	69	69	69	69	69	69
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	20	20	28	52	7	40
g / C, Green / Cycle	0.29	0.29	0.41	0.75	0.10	0.58
(v / s)_i Volume / Saturation Flow Rate	0.18	0.04	0.37	0.57	0.06	0.10
s, saturation flow rate [veh/h]	4955	1549	3470	5049	3453	4166
c, Capacity [veh/h]	1414	442	1439	3800	356	2401
d1, Uniform Delay [s]	21.38	18.34	18.56	4.85	29.42	6.87
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	0.20	0.75	0.38	0.59	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.63	0.16	0.88	0.75	0.59	0.18
d, Delay for Lane Group [s/veh]	21.94	18.54	19.31	5.23	30.00	6.89
Lane Group LOS	C	B	B	A	C	A
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.55	0.72	7.31	1.66	1.60	0.79
50th-Percentile Queue Length [ft/ln]	88.67	17.91	182.71	41.58	39.98	19.85
95th-Percentile Queue Length [veh/ln]	6.38	1.29	11.74	2.99	2.88	1.43
95th-Percentile Queue Length [ft/ln]	159.61	32.23	293.55	74.84	71.96	35.74

**Movement, Approach, & Intersection Results**

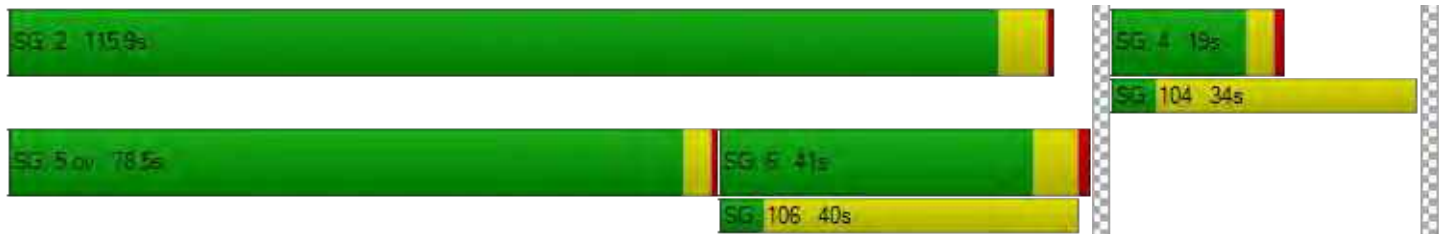
d_M, Delay for Movement [s/veh]	21.94	18.54	19.31	5.23	30.00	6.89
Movement LOS	C	B	B	A	C	A
d_A, Approach Delay [s/veh]	21.70		9.56		14.51	
Approach LOS	C		A		B	
d_I, Intersection Delay [s/veh]	12.14					
Intersection LOS	B					
Intersection V/C	0.736					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.88	0.00	25.88
I_p,int, Pedestrian LOS Score for Intersection	3.612	0.000	2.904
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1021	408	438
d_b, Bicycle Delay [s]	8.22	21.72	20.93
I_b,int, Bicycle LOS Score for Intersection	2.088	3.834	1.670
Bicycle LOS	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	226.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.201

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	225	585	279	36	91	88	375	439	172	1122	2238	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	225	585	279	36	91	72	375	439	66	1122	2238	72
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	149	71	9	23	18	96	112	17	286	571	18
Total Analysis Volume [veh/h]	230	597	285	37	93	73	383	448	67	1145	2284	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			2			3			0	
v_di, Inbound Pedestrian Volume crossing in		0			3			2			0	
v_co, Outbound Pedestrian Volume crossing		4			0			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		3			0			4			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	22	21	51	9	9	9	26	51	51	25	50	50
g / C, Green / Cycle	0.17	0.17	0.40	0.07	0.07	0.07	0.21	0.40	0.40	0.20	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.31	0.27	0.07	0.06	0.03	0.07	0.25	0.09	0.05	0.42	0.45	0.05
s, saturation flow rate [veh/h]	740	2209	3942	670	2746	1075	1515	4922	1458	2715	5020	1615
c, Capacity [veh/h]	128	369	1578	48	196	77	312	1989	589	538	1990	640
d1, Uniform Delay [s]	52.15	52.54	24.46	57.58	56.29	58.26	50.09	24.65	23.48	50.58	38.08	24.08
k, delay calibration	0.50	0.48	0.11	0.17	0.11	0.27	0.15	0.11	0.11	0.47	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	386.34	289.51	0.05	32.64	1.77	63.29	111.33	0.06	0.08	513.59	68.07	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.79	1.62	0.18	0.77	0.47	0.95	1.23	0.23	0.11	2.13	1.15	0.11
d, Delay for Lane Group [s/veh]	438.49	342.05	24.52	90.22	58.07	121.55	161.42	24.70	23.57	564.17	106.15	24.16
Lane Group LOS	F	F	C	F	E	F	F	C	C	F	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	17.74	20.58	1.82	1.61	1.50	3.71	9.73	2.97	1.28	46.84	32.63	1.41
50th-Percentile Queue Length [ft/ln]	443.50	514.40	45.48	40.34	37.46	92.67	243.13	74.26	31.98	1171.08	815.86	35.31
95th-Percentile Queue Length [veh/ln]	30.00	33.48	3.27	2.90	2.70	6.67	16.27	5.35	2.30	74.67	46.16	2.54
95th-Percentile Queue Length [ft/ln]	749.98	836.99	81.86	72.60	67.43	166.81	406.68	133.67	57.56	1866.83	1154.10	63.56

**Movement, Approach, & Intersection Results**

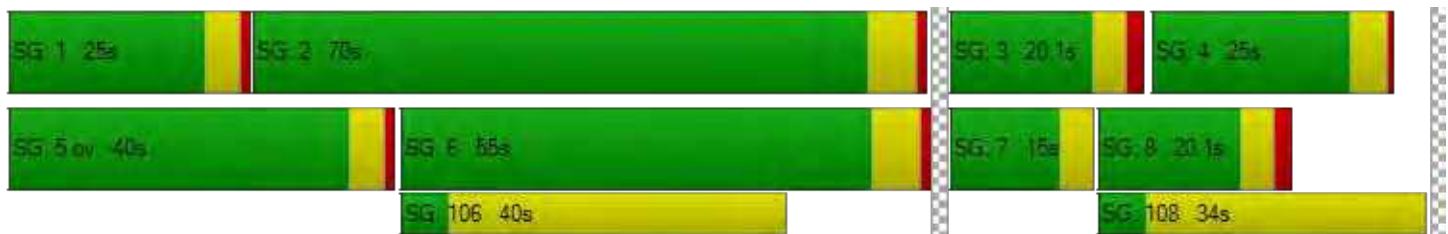
d_M, Delay for Movement [s/veh]	438.49	342.05	24.52	90.22	58.07	121.55	161.42	24.70	23.57	564.17	106.15	24.16
Movement LOS	F	F	C	F	E	F	F	C	C	F	F	C
d_A, Approach Delay [s/veh]	280.61			86.75			82.93			254.19		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	226.48											
Intersection LOS	F											
Intersection V/C	1.201											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.44	0.00	54.44	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.135	0.000	3.332	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	326	238	776	1014
d_b, Bicycle Delay [s]	44.20	49.01	23.63	15.34
I_b,int, Bicycle LOS Score for Intersection	2.477	1.740	2.112	3.486
Bicycle LOS	B	A	B	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	150.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.150

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	111	946	80	337	1394	37	47	16	48	18	6	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	6.30	7.00	9.10	8.40	10.50	1.30	4.50	6.00	23.10	12.50	30.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	946	80	337	1394	37	47	16	48	18	6	128
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	254	22	91	375	10	13	4	13	5	2	34
Total Analysis Volume [veh/h]	119	1017	86	362	1499	40	51	17	52	19	6	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing in	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	50	100	74	24	74	100	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	120	96	96	120	101	101	33	33	33	33
g / C, Green / Cycle	0.75	0.60	0.60	0.75	0.63	0.63	0.21	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.30	0.69	0.70	0.34	0.82	0.84	0.04	0.10	0.02	0.20
s, saturation flow rate [veh/h]	402	808	782	1078	934	921	1251	705	1092	729
c, Capacity [veh/h]	143	485	470	312	591	583	45	144	150	150
d1, Uniform Delay [s]	50.86	31.93	31.93	51.86	29.34	29.34	80.00	56.05	64.84	62.81
k, delay calibration	0.49	0.50	0.50	0.50	0.50	0.50	0.11	0.04	0.11	0.44
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	40.46	89.37	92.55	102.36	147.97	155.27	102.84	0.91	0.38	58.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	1.15	1.16	1.16	1.30	1.32	1.13	0.48	0.13	0.96
d, Delay for Lane Group [s/veh]	91.32	121.30	124.48	154.22	177.30	184.61	182.84	56.96	65.22	121.00
Lane Group LOS	F	F	F	F	F	F	F	E	E	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.69	29.59	29.08	6.00	45.93	46.49	3.17	2.54	0.65	8.28
50th-Percentile Queue Length [ft/ln]	67.22	739.69	726.97	149.88	1148.22	1162.23	79.15	63.40	16.22	207.09
95th-Percentile Queue Length [veh/ln]	4.84	42.91	42.42	10.79	69.14	70.41	5.70	4.56	1.17	13.00
95th-Percentile Queue Length [ft/ln]	121.00	1072.70	1060.39	269.78	1728.60	1760.18	142.47	114.11	29.20	325.09

**Movement, Approach, & Intersection Results**

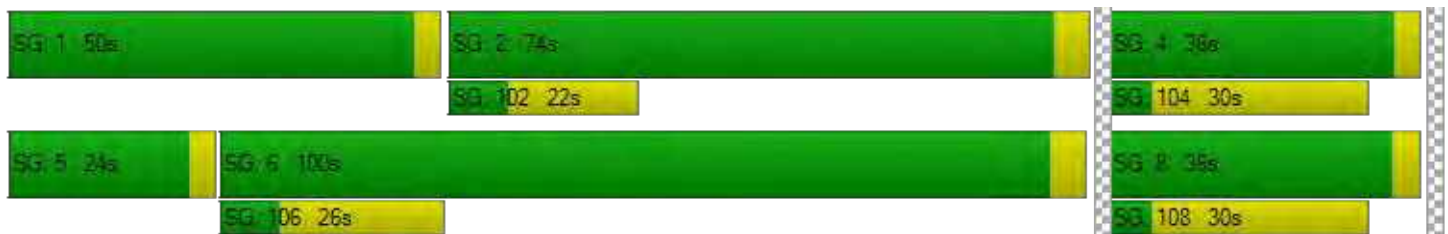
d_M, Delay for Movement [s/veh]	91.32	122.73	124.48	154.22	180.86	184.61	182.84	56.96	56.96	65.22	121.00	121.00
Movement LOS	F	F	F	F	F	F	F	E	E	E	F	F
d_A, Approach Delay [s/veh]	119.79			175.86			110.46			114.50		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	150.51											
Intersection LOS	F											
Intersection V/C	1.150											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.25	71.25	69.38	69.38
I_p,int, Pedestrian LOS Score for Intersection	3.167	3.128	2.154	2.602
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	875	410	413
d_b, Bicycle Delay [s]	12.90	25.80	50.69	50.68
I_b,int, Bicycle LOS Score for Intersection	2.568	3.128	1.758	1.829
Bicycle LOS	B	C	A	A

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	151.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.324

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑ ↑		↑ ↩		↩↪	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	91	1221	1383	14	65	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	5.70	10.30	22.20	0.00	6.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	91	1221	1383	14	65	95
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	332	376	4	18	26
Total Analysis Volume [veh/h]	99	1327	1503	15	71	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing in	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	106	90	90	24	24
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	103	87	87	20	20
g / C, Green / Cycle	0.10	0.80	0.67	0.67	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.12	0.86	0.97	0.98	0.04	0.13
s, saturation flow rate [veh/h]	795	1546	781	778	1744	779
c, Capacity [veh/h]	80	1230	525	523	262	117
d1, Uniform Delay [s]	58.39	13.24	21.26	21.26	48.87	53.80
k, delay calibration	0.26	0.50	0.50	0.50	0.04	0.30
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	151.08	49.72	211.05	213.64	0.20	39.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.24	1.08	1.45	1.45	0.27	0.88
d, Delay for Lane Group [s/veh]	209.47	62.96	232.31	234.90	49.07	92.88
Lane Group LOS	F	F	F	F	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.93	20.66	44.38	44.58	2.07	4.55
50th-Percentile Queue Length [ft/ln]	148.31	516.48	1109.58	1114.51	51.76	113.81
95th-Percentile Queue Length [veh/ln]	10.64	30.00	70.82	71.24	3.73	8.05
95th-Percentile Queue Length [ft/ln]	266.09	749.99	1770.58	1780.99	93.17	201.29

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	209.47	62.96	233.59	234.90	49.07	92.88
Movement LOS	F	F	F	F	D	F
d_A, Approach Delay [s/veh]	73.13		233.60		75.00	
Approach LOS	E		F		E	
d_I, Intersection Delay [s/veh]	151.36					
Intersection LOS	F					
Intersection V/C	1.324					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.107	3.098	2.051
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.01	7.42	45.67
I_b,int, Bicycle LOS Score for Intersection	2.736	2.812	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	57.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.109

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1316	713	42	1143	237	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.30	7.40	9.70	10.30	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1316	713	42	1143	237	45
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	350	190	11	304	63	12
Total Analysis Volume [veh/h]	1400	759	45	1216	252	48
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	100	100	4	107	15	15
g / C, Green / Cycle	0.77	0.77	0.03	0.83	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.90	0.51	0.03	0.81	0.10	0.10
s, saturation flow rate [veh/h]	1549	1480	1704	1494	1312	1630
c, Capacity [veh/h]	1193	1140	57	1236	154	192
d1, Uniform Delay [s]	14.92	6.73	62.26	10.43	56.27	56.30
k, delay calibration	0.50	0.50	0.04	0.50	0.09	0.09
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	87.12	3.09	8.38	22.05	10.91	9.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.17	0.67	0.78	0.98	0.86	0.87
d, Delay for Lane Group [s/veh]	102.04	9.82	70.64	32.48	67.18	65.80
Lane Group LOS	F	A	E	C	E	E
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	27.31	8.37	1.59	13.29	4.77	5.88
50th-Percentile Queue Length [ft/ln]	682.76	209.13	39.79	332.35	119.22	146.92
95th-Percentile Queue Length [veh/ln]	40.84	13.11	2.86	19.27	8.35	9.85
95th-Percentile Queue Length [ft/ln]	1020.98	327.71	71.61	481.84	208.76	246.31

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	102.04	9.82	70.64	32.48	66.55	65.80
Movement LOS	F	A	E	C	E	E
d_A, Approach Delay [s/veh]	69.62		33.84		66.42	
Approach LOS	E		C		E	
d_I, Intersection Delay [s/veh]	57.24					
Intersection LOS	E					
Intersection V/C	1.109					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.42
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.317
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.17	3.45	44.18
I_b,int, Bicycle LOS Score for Intersection	3.341	2.600	2.055
Bicycle LOS	C	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	174.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.351

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑ →			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	143	1771	320	40	1335	7	17	98	418	260	88	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	143	1771	320	40	1335	7	17	98	374	260	88	133
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	471	85	11	355	2	5	26	99	69	23	35
Total Analysis Volume [veh/h]	152	1884	340	43	1420	7	18	104	398	277	94	141
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			3			3	
v_di, Inbound Pedestrian Volume crossing in		3			3			2			2	
v_co, Outbound Pedestrian Volume crossing		8			12			7			11	
v_ci, Inbound Pedestrian Volume crossing mi		7			11			8			12	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			1			5			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	55	55	4	47	47	36	36	36	20	20	20
g / C, Green / Cycle	0.10	0.43	0.43	0.03	0.36	0.36	0.27	0.27	0.27	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.09	0.43	0.45	0.02	0.63	0.63	0.01	0.07	0.30	0.18	0.12	0.21
s, saturation flow rate [veh/h]	1781	3455	1655	1781	1491	781	1420	1577	1322	1536	800	668
c, Capacity [veh/h]	176	1481	710	55	538	281	385	428	359	236	123	103
d1, Uniform Delay [s]	57.69	37.14	37.14	62.54	41.56	41.56	34.96	36.95	46.80	55.02	52.77	54.28
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.46	0.07	0.22	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.17	23.56	46.31	8.43	341.56	348.63	0.02	0.11	78.62	85.01	17.91	217.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	1.00	1.05	0.78	1.74	1.74	0.05	0.24	1.11	1.17	0.77	1.37
d, Delay for Lane Group [s/veh]	62.85	60.69	83.45	70.97	383.12	390.19	34.97	37.06	125.42	140.02	70.68	272.04
Lane Group LOS	E	F	F	E	F	F	C	D	F	F	E	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.11	27.34	30.69	1.55	34.12	36.28	0.43	2.61	19.19	6.64	3.56	9.52
50th-Percentile Queue Length [ft/ln]	127.63	683.62	767.29	38.85	852.96	907.12	10.70	65.35	479.85	166.08	88.99	238.07
95th-Percentile Queue Length [veh/ln]	8.81	35.94	41.14	2.80	56.41	59.69	0.77	4.71	28.04	11.58	6.41	16.41
95th-Percentile Queue Length [ft/ln]	220.27	898.52	1028.58	69.93	1410.18	1492.16	19.25	117.63	701.12	289.54	160.18	410.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	62.85	65.55	83.45	70.97	385.52	390.19	34.97	37.06	125.42	140.02	70.68	272.04
Movement LOS	E	E	F	E	F	F	C	D	F	F	E	F
d_A, Approach Delay [s/veh]	67.94			376.35			104.62			163.65		
Approach LOS	E			F			F			F		
d_I, Intersection Delay [s/veh]	174.83											
Intersection LOS	F											
Intersection V/C	1.351											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.451	3.025	2.410	2.569
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.33	21.07	38.56	50.34
I_b,int, Bicycle LOS Score for Intersection	2.866	2.368	2.490	2.461
Bicycle LOS	C	B	B	B

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	60.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.088

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩		↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	



**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1216	1202	570	438	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1216	1202	271	438	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	304	301	68	110	0
Total Analysis Volume [veh/h]	65	1216	1202	271	438	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	5	45	36	36	36	36
g / C, Green / Cycle	0.06	0.49	0.40	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.46	0.43	0.22	0.47	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1229	928	1597
c, Capacity [veh/h]	78	1296	1101	489	369	635
d1, Uniform Delay [s]	42.15	21.55	27.29	20.97	27.29	0.00
k, delay calibration	0.04	0.18	0.15	0.16	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.15	6.14	46.69	1.44	108.70	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	0.94	1.09	0.55	1.19	0.00
d, Delay for Lane Group [s/veh]	50.30	27.68	73.98	22.40	135.99	0.00
Lane Group LOS	D	C	F	C	F	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.60	12.25	18.12	4.35	18.63	0.00
50th-Percentile Queue Length [ft/ln]	39.96	306.33	453.02	108.74	465.63	0.00
95th-Percentile Queue Length [veh/ln]	2.88	17.99	26.62	7.77	28.61	0.00
95th-Percentile Queue Length [ft/ln]	71.92	449.85	665.50	194.25	715.37	0.00

**Movement, Approach, & Intersection Results**

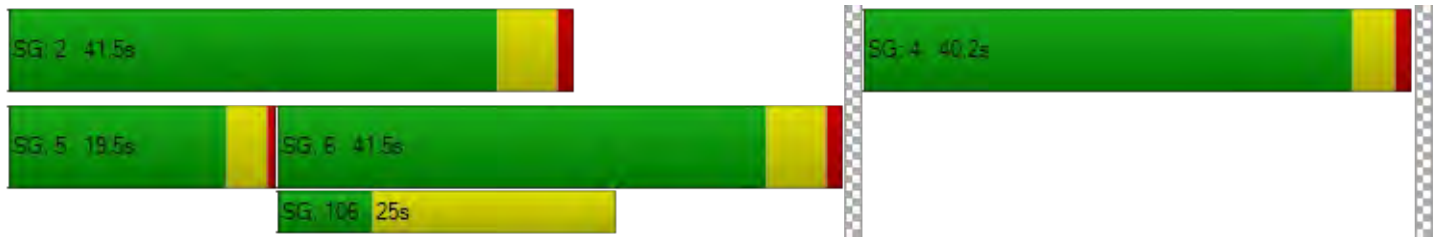
d_M, Delay for Movement [s/veh]	50.30	27.68	73.98	22.40	135.99	0.00
Movement LOS	D	C	F	C	F	A
d_A, Approach Delay [s/veh]	28.83		64.49		135.99	
Approach LOS	C		E		F	
d_I, Intersection Delay [s/veh]	59.99					
Intersection LOS	E					
Intersection V/C	1.088					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.91
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.423
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	796	796	796
d_b, Bicycle Delay [s]	16.41	16.42	16.41
I_b,int, Bicycle LOS Score for Intersection	2.616	3.022	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	57.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	22	897	7	36	924	108	66	7	31	59	12	125
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0
Total Hourly Volume [veh/h]	22	897	7	36	924	108	66	7	25	59	12	125
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	234	2	9	241	28	17	2	7	15	3	33
Total Analysis Volume [veh/h]	23	934	7	38	963	113	69	7	26	61	13	130
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing in	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			6			2		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	155	155	155	155	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	4	97	97	7	100	13	13	13	21	21
g / C, Green / Cycle	0.02	0.62	0.62	0.04	0.64	0.08	0.08	0.08	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.02	0.28	0.28	0.04	0.70	0.03	0.03	0.02	0.06	0.12
s, saturation flow rate [veh/h]	952	1445	1895	952	1537	952	1386	1334	952	1208
c, Capacity [veh/h]	23	902	1182	41	989	79	114	110	128	162
d1, Uniform Delay [s]	75.85	15.29	15.29	74.08	27.71	67.62	67.61	66.49	62.22	66.05
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	89.90	0.76	0.58	47.25	55.72	3.20	2.19	1.09	2.74	19.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.01	0.45	0.45	0.92	1.09	0.40	0.39	0.24	0.48	0.88
d, Delay for Lane Group [s/veh]	165.75	16.05	15.87	121.32	83.43	70.82	69.80	67.58	64.95	85.42
Lane Group LOS	F	B	B	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.49	7.86	10.25	2.07	50.50	1.28	1.82	1.03	2.36	6.50
50th-Percentile Queue Length [ft/ln]	37.28	196.39	256.22	51.74	1262.42	31.89	45.42	25.67	58.95	162.48
95th-Percentile Queue Length [veh/ln]	2.68	12.45	15.50	3.73	66.93	2.30	3.27	1.85	4.24	10.68
95th-Percentile Queue Length [ft/ln]	67.11	311.30	387.47	93.13	1673.16	57.41	81.76	46.21	106.11	267.00



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	165.75	15.95	15.87	121.32	83.43	83.43	70.27	69.80	67.58	64.95	85.42	85.42
Movement LOS	F	B	B	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	19.52			84.72			69.55			79.30		
Approach LOS	B			F			E			E		
d_I, Intersection Delay [s/veh]	57.25											
Intersection LOS	E											
Intersection V/C	0.917											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	67.02			67.02			67.02			67.02		
I_p,int, Pedestrian LOS Score for Intersection	2.567			2.783			2.186			2.035		
Crosswalk LOS	B			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	258			258			386			386		
d_b, Bicycle Delay [s]	58.98			58.95			50.68			50.58		
I_b,int, Bicycle LOS Score for Intersection	2.355			3.398			1.738			1.896		
Bicycle LOS	B			C			A			A		

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.832

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	29	783	7	4	878	121	210	6	59	1	2	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.70	0.00	0.00	3.90	3.30	1.00	0.00	0.00	0.00	0.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	783	7	4	878	121	210	6	59	1	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	206	2	1	231	32	55	2	16	0	1	2
Total Analysis Volume [veh/h]	31	824	7	4	924	127	221	6	62	1	2	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing in	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			2			13			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	109	109	109	109	109	109	41	41	41	0	41	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	109	109	109	109	33	33
g / C, Green / Cycle	0.73	0.73	0.73	0.73	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.06	0.46	0.01	0.58	0.21	0.01
s, saturation flow rate [veh/h]	526	1826	671	1797	1389	1721
c, Capacity [veh/h]	222	1326	374	1305	347	404
d1, Uniform Delay [s]	35.73	10.33	19.93	13.56	57.34	45.96
k, delay calibration	0.50	0.50	0.50	0.50	0.34	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.31	2.25	0.05	5.39	14.80	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.14	0.63	0.01	0.81	0.83	0.02
d, Delay for Lane Group [s/veh]	37.04	12.58	19.98	18.94	72.14	45.98
Lane Group LOS	D	B	B	B	E	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.91	14.20	0.08	23.59	12.22	0.27
50th-Percentile Queue Length [ft/ln]	22.82	355.11	2.00	589.69	305.61	6.82
95th-Percentile Queue Length [veh/ln]	1.64	20.39	0.14	31.55	17.96	0.49
95th-Percentile Queue Length [ft/ln]	41.08	509.63	3.60	788.82	448.95	12.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.04	12.58	12.58	19.98	18.94	18.94	72.14	72.14	72.14	45.98	45.98	45.98
Movement LOS	D	B	B	B	B	B	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	13.46			18.95			72.14			45.98		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	23.86											
Intersection LOS	C											
Intersection V/C	0.832											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.39			64.39			64.39			64.39		
I_p,int, Pedestrian LOS Score for Intersection	2.467			2.963			2.002			1.755		
Crosswalk LOS	B			C			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1399			1399			492			492		
d_b, Bicycle Delay [s]	6.79			6.78			42.90			42.65		
I_b,int, Bicycle LOS Score for Intersection	2.982			3.300			2.036			1.574		
Bicycle LOS	C			C			B			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	19.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇐			⇑⇐⇑			⇑⇐⇑			⇑⇐⇑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
	7	706	81	52	930	0	20	82	11	90	94	93
Base Volume Input [veh/h]	7	706	81	52	930	0	20	82	11	90	94	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.20	10.00	7.40	3.60	0.00	2.70	0.00	0.00	2.60	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	706	81	52	930	0	20	82	11	90	94	93
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	192	22	14	253	0	5	22	3	24	26	25
Total Analysis Volume [veh/h]	8	767	88	57	1011	0	22	89	12	98	102	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			4			6			3		
v_di, Inbound Pedestrian Volume crossing in	6			3			6			4		
v_co, Outbound Pedestrian Volume crossing	0			2			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			2			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	9			12			11			11		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	116	116	116	116	116	116	34	34	34	0	34	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	117	117	117	117	25	25	25	25
g / C, Green / Cycle	0.78	0.78	0.78	0.78	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.48	0.09	0.55	0.02	0.05	0.08	0.12
s, saturation flow rate [veh/h]	566	1784	617	1846	1169	1839	1258	1710
c, Capacity [veh/h]	336	1390	400	1438	91	306	175	284
d1, Uniform Delay [s]	18.38	7.03	15.24	8.09	70.90	55.12	65.74	59.11
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	2.05	0.75	2.90	1.37	0.63	2.81	4.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.02	0.62	0.14	0.70	0.24	0.33	0.56	0.71
d, Delay for Lane Group [s/veh]	18.51	9.08	15.99	10.99	72.27	55.74	68.55	63.75
Lane Group LOS	B	A	B	B	E	E	E	E
Critical Lane Group	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	11.54	1.04	15.79	0.87	3.48	3.83	7.75
50th-Percentile Queue Length [ft/ln]	3.92	288.53	25.99	394.87	21.86	86.99	95.86	193.82
95th-Percentile Queue Length [veh/ln]	0.28	17.11	1.87	22.31	1.57	6.26	6.90	12.32
95th-Percentile Queue Length [ft/ln]	7.06	427.82	46.78	557.81	39.35	156.59	172.56	307.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	18.51	9.08	9.08	15.99	10.99	10.99	72.27	55.74	55.74	68.55	63.75	63.75
Movement LOS	B	A	A	B	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	9.16			11.26			58.70			65.31		
Approach LOS	A			B			E			E		
d_I, Intersection Delay [s/veh]	19.88											
Intersection LOS	B											
Intersection V/C	0.699											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.38			64.38			64.38			64.38		
I_p,int, Pedestrian LOS Score for Intersection	2.641			2.584			2.039			2.190		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1493			1493			399			399		
d_b, Bicycle Delay [s]	4.85			4.86			48.32			48.32		
I_b,int, Bicycle LOS Score for Intersection	2.984			3.322			1.763			2.056		
Bicycle LOS	C			C			A			B		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	62.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	27	271	135	374	124	446	125	346	170	350	359	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	3.60	2.60	2.70	3.80	2.50	0.50	5.50	5.30	3.70	13.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	119	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	27	271	16	374	124	0	125	346	170	350	359	21
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	71	4	97	32	0	33	90	44	91	93	5
Total Analysis Volume [veh/h]	28	282	17	390	129	0	130	360	177	365	374	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		10			2			10			2	
v_di, Inbound Pedestrian Volume crossing in		10			2			10			2	
v_co, Outbound Pedestrian Volume crossing		5			3			2			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			2			3			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		29			22			6			20	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			Yes	
Maximum Recall		No			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	26	26	26	61	61	61	19	19	19	19	26	26	26
g / C, Green / Cycle	0.17	0.17	0.17	0.41	0.41	0.41	0.13	0.13	0.13	0.13	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.15	0.01	0.14	0.14	0.00	0.07	0.10	0.10	0.11	0.15	0.15	0.15
s, saturation flow rate [veh/h]	1810	1825	1442	1772	1813	1567	1774	1892	1851	1487	1734	1807	1635
c, Capacity [veh/h]	313	316	250	722	739	638	223	238	233	187	296	309	279
d1, Uniform Delay [s]	52.04	60.60	51.80	30.77	30.77	0.00	61.80	63.69	63.74	63.80	60.37	60.35	60.46
k, delay calibration	0.11	0.30	0.11	0.50	0.50	0.50	0.11	0.11	0.11	0.13	0.15	0.15	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.12	20.16	0.11	1.37	1.34	0.00	2.40	6.35	6.80	11.96	9.51	9.07	10.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.09	0.89	0.07	0.36	0.36	0.00	0.58	0.80	0.81	0.85	0.86	0.86	0.87
d, Delay for Lane Group [s/veh]	52.16	80.76	51.91	32.14	32.10	0.00	64.20	70.04	70.54	75.76	69.88	69.43	71.23
Lane Group LOS	D	F	D	C	C	A	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.91	12.29	0.55	6.89	7.04	0.00	4.85	7.54	7.45	6.53	10.21	10.59	9.82
50th-Percentile Queue Length [ft/ln]	22.69	307.25	13.75	172.24	176.05	0.00	121.2	188.4	186.2	163.1	255.31	264.74	245.51
95th-Percentile Queue Length [veh/ln]	1.63	18.04	0.99	11.19	11.39	0.00	8.46	12.04	11.93	10.72	15.45	15.93	14.96
95th-Percentile Queue Length [ft/ln]	40.84	450.98	24.75	279.86	284.85	0.00	211.5	300.9	298.1	267.9	386.33	398.16	374.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.16	80.76	51.91	32.12	32.10	0.00	64.20	70.28	75.76	69.74	70.49	71.23
Movement LOS	D	F	D	C	C	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	76.81			32.12			70.40			70.15		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	62.50											
Intersection LOS	E											
Intersection V/C	0.585											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			12.0			12.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	63.45			63.45			63.45			63.45		
l_p,int, Pedestrian LOS Score for Intersection	2.501			4.289			4.316			2.743		
Crosswalk LOS	B			E			E			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	383			551			364			458		
d_b, Bicycle Delay [s]	49.74			39.79			50.30			45.04		
l_b,int, Bicycle LOS Score for Intersection	2.296			4.066			2.935			2.187		
Bicycle LOS	B			D			C			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road and US 101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	39.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.963

**Intersection Setup**

Name	Marsh Road		Marsh Road			
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road			
Base Volume Input [veh/h]	1582	0	0	858	771	1101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1582	0	0	858	771	1101
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	408	0	0	221	199	284
Total Analysis Volume [veh/h]	1631	0	0	885	795	1135
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.47	0.26	0.23	0.41
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	12.41	8.87	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.13	0.66	0.23	81.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.43	0.66	1.17
d, Delay for Lane Group [s/veh]	15.54	9.53	22.10	107.56
Lane Group LOS	B	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.31	3.84	6.00	19.57
50th-Percentile Queue Length [ft/ln]	257.71	95.95	149.89	489.29
95th-Percentile Queue Length [veh/ln]	15.57	6.91	10.01	29.56
95th-Percentile Queue Length [ft/ln]	389.35	172.71	250.29	738.99

**Movement, Approach, & Intersection Results**

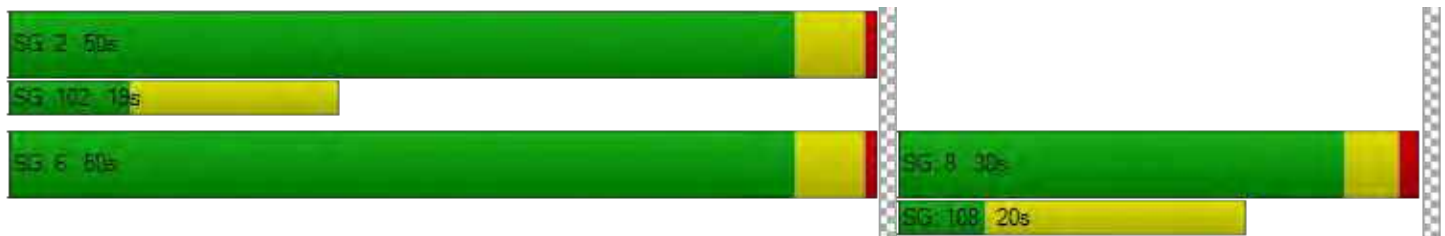
d_M, Delay for Movement [s/veh]	15.54	0.00	0.00	9.53	22.10	107.56
Movement LOS	B			A	C	F
d_A, Approach Delay [s/veh]	15.54		9.53		72.36	
Approach LOS	B		A		E	
d_I, Intersection Delay [s/veh]	39.01					
Intersection LOS	D					
Intersection V/C	0.963					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.017	2.595
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	2.905	2.290	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.380

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	226	10	51	98	35	37	41	24	22	51	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	226	10	51	98	35	37	41	24	22	51	133
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	59	3	16	31	11	12	13	8	6	14	36
Total Analysis Volume [veh/h]	14	236	10	64	123	44	47	52	31	24	56	146
Pedestrian Volume [ped/h]	3			3			9			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	685	684	647	704
Degree of Utilization, x	0.38	0.34	0.20	0.32

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	1.78	1.49	0.75	1.39
95th-Percentile Queue Length [ft]	44.46	37.23	18.65	34.66
Approach Delay [s/veh]	11.45	10.92	9.96	10.51
Approach LOS	B	B	A	B
Intersection Delay [s/veh]	10.82			
Intersection LOS	B			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	56.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.835

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		



**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	1109	10	30	7	8	340	296	2028	512	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1109	10	30	7	8	340	296	2028	512	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	289	3	8	2	2	89	77	528	133	9
Total Analysis Volume [veh/h]	169	28	1155	10	31	7	8	354	308	2113	533	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			1			1			0	
v_di, Inbound Pedestrian Volume crossing in		0			1			1			0	
v_co, Outbound Pedestrian Volume crossing		0			22			0			22	
v_ci, Inbound Pedestrian Volume crossing mi		0			22			0			22	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			13			25			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	69	11	11	0	32	25	32	48	32	48	69	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	18	87	29	29	36	36	36	67	67
g / C, Green / Cycle	0.12	0.55	0.18	0.18	0.22	0.22	0.22	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.28	0.01	0.01	0.12	0.12	0.21	0.42	0.32
s, saturation flow rate [veh/h]	1822	4114	1863	1610	1623	1480	1444	5075	1797
c, Capacity [veh/h]	211	2152	339	293	364	332	324	2122	751
d1, Uniform Delay [s]	70.11	25.23	54.28	54.32	54.51	54.51	60.61	46.42	39.62
k, delay calibration	0.50	0.50	0.04	0.04	0.11	0.11	0.30	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	46.58	0.97	0.03	0.04	1.15	1.26	28.34	18.59	6.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.54	0.07	0.08	0.52	0.52	0.95	1.00	0.76
d, Delay for Lane Group [s/veh]	116.68	26.19	54.31	54.36	55.67	55.78	88.95	65.00	46.60
Lane Group LOS	F	C	D	D	E	E	F	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.78	9.97	0.86	0.78	6.89	6.29	14.80	31.36	20.53
50th-Percentile Queue Length [ft/ln]	269.44	249.29	21.43	19.47	172.25	157.29	369.92	784.10	513.30
95th-Percentile Queue Length [veh/ln]	16.16	15.15	1.54	1.40	11.19	10.41	21.11	40.55	27.96
95th-Percentile Queue Length [ft/ln]	404.04	378.76	38.58	35.04	279.86	260.13	527.63	1013.71	699.08

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	116.68	116.68	26.19	54.31	54.34	54.36	55.67	55.72	88.95	65.00	46.60	46.60
Movement LOS	F	F	C	D	D	D	E	E	F	E	D	D
d_A, Approach Delay [s/veh]	39.38			54.33			71.00			61.11		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	56.25											
Intersection LOS	E											
Intersection V/C	0.835											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.496			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			555			791		
d_b, Bicycle Delay [s]	73.76			54.89			42.29			29.24		
I_b,int, Bicycle LOS Score for Intersection	3.790			1.599			2.112			5.983		
Bicycle LOS	D			A			B			F		

**Sequence**

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	82.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.618

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1115	623	0	1345	874	0	0	0	937	0	391
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	3.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1115	623	0	1345	874	0	0	0	937	0	391
Peak Hour Factor	1.0000	0.9700	1.0000	1.0000	0.9700	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	287	156	0	347	225	0	0	0	234	0	109
Total Analysis Volume [veh/h]	0	1149	623	0	1387	901	0	0	0	937	0	434
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing in		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		6			1			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	46	46	46		26	26
g / C, Green / Cycle	0.58	0.58	0.58		0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.23	0.27	1.03		0.27	0.15
s, saturation flow rate [veh/h]	5053	5053	877		3514	2859
c, Capacity [veh/h]	2929	2929	508		1125	915
d1, Uniform Delay [s]	9.13	9.72	16.31		25.14	21.74
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.40	0.55	355.32		1.68	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.39	0.47	1.77		0.83	0.47
d, Delay for Lane Group [s/veh]	9.52	10.27	371.63		26.83	22.12
Lane Group LOS	A	B	F		C	C
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	3.31	4.27	57.78		8.05	3.17
50th-Percentile Queue Length [ft/ln]	82.74	106.65	1444.57		201.24	79.17
95th-Percentile Queue Length [veh/ln]	5.96	7.65	95.89		12.70	5.70
95th-Percentile Queue Length [ft/ln]	148.93	191.33	2397.16		317.57	142.51



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	9.52	0.00	0.00	10.27	371.63	0.00	0.00	0.00	26.83	0.00	22.12
Movement LOS		A			B	F				C		C
d_A, Approach Delay [s/veh]	9.52		152.57				0.00		25.34			
Approach LOS	A		F				A		C			
d_I, Intersection Delay [s/veh]	82.11											
Intersection LOS	F											
Intersection V/C	1.618											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.003	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.10	12.07	39.95	12.06
I_b,int, Bicycle LOS Score for Intersection	2.192	2.818	4.132	1.560
Bicycle LOS	B	C	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	122.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.556

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1548	508	0	1803	424	0	0	0	493	0	789
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	2.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1548	508	0	1803	424	0	0	0	493	0	789
Peak Hour Factor	1.0000	0.9700	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	399	131	0	465	106	0	0	0	123	0	219
Total Analysis Volume [veh/h]	0	1596	524	0	1859	424	0	0	0	493	0	877
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			3			0			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	L	R
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	36	36	36
g / C, Green / Cycle	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.32	0.34	0.68	0.14	0.56
s, saturation flow rate [veh/h]	5012	1551	2715	3514	1567
c, Capacity [veh/h]	2253	697	1220	1582	706
d1, Uniform Delay [s]	17.75	18.04	21.97	14.02	21.71
k, delay calibration	0.50	0.50	0.50	0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.91	7.33	239.84	0.11	113.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.71	0.75	1.52	0.31	1.24
d, Delay for Lane Group [s/veh]	19.66	25.38	261.81	14.13	135.26
Lane Group LOS	B	C	F	B	F
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.68	8.71	33.99	2.70	17.05
50th-Percentile Queue Length [ft/ln]	192.03	217.82	849.68	67.41	426.36
95th-Percentile Queue Length [veh/ln]	12.23	13.55	55.00	4.85	27.23
95th-Percentile Queue Length [ft/ln]	305.66	338.84	1374.96	121.34	680.74

**Movement, Approach, & Intersection Results**

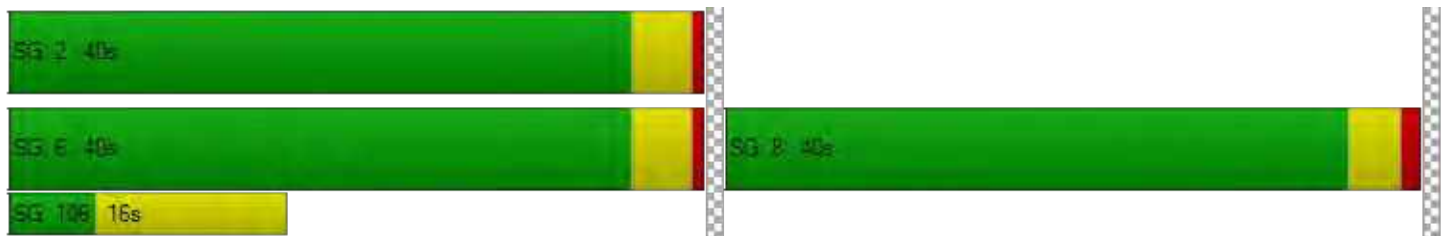
d_M, Delay for Movement [s/veh]	0.00	19.66	25.38	0.00	261.81	0.00	0.00	0.00	0.00	14.13	0.00	135.26
Movement LOS		B	C		F					B		F
d_A, Approach Delay [s/veh]	21.07			261.81			0.00			91.67		
Approach LOS	C			F			A			F		
d_I, Intersection Delay [s/veh]	122.82											
Intersection LOS	F											
Intersection V/C	1.556											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.09	12.08	39.95	12.07
I_b,int, Bicycle LOS Score for Intersection	2.726	2.582	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	25.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.832

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	200	258	1731	547	480	2135
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	258	1731	547	480	2135
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	68	456	144	126	562
Total Analysis Volume [veh/h]	211	272	1822	576	505	2247
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	36	36	64	64
g / C, Green / Cycle	0.21	0.21	0.39	0.39	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.06	0.21	0.37	0.37	0.60	0.45
s, saturation flow rate [veh/h]	3420	1320	4967	1547	838	5020
c, Capacity [veh/h]	731	282	1919	598	596	3416
d1, Uniform Delay [s]	30.83	36.44	27.83	28.07	25.22	8.65
k, delay calibration	0.04	0.40	0.04	0.17	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	39.49	1.33	14.49	13.96	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.29	0.96	0.95	0.96	0.85	0.66
d, Delay for Lane Group [s/veh]	30.91	75.93	29.16	42.56	39.19	8.73
Lane Group LOS	C	E	C	D	D	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.98	9.10	11.89	13.56	5.70	6.45
50th-Percentile Queue Length [ft/ln]	49.49	227.55	297.31	338.88	142.51	161.33
95th-Percentile Queue Length [veh/ln]	3.56	14.05	17.55	19.59	9.62	10.62
95th-Percentile Queue Length [ft/ln]	89.08	351.24	438.70	489.83	240.40	265.48

**Movement, Approach, & Intersection Results**

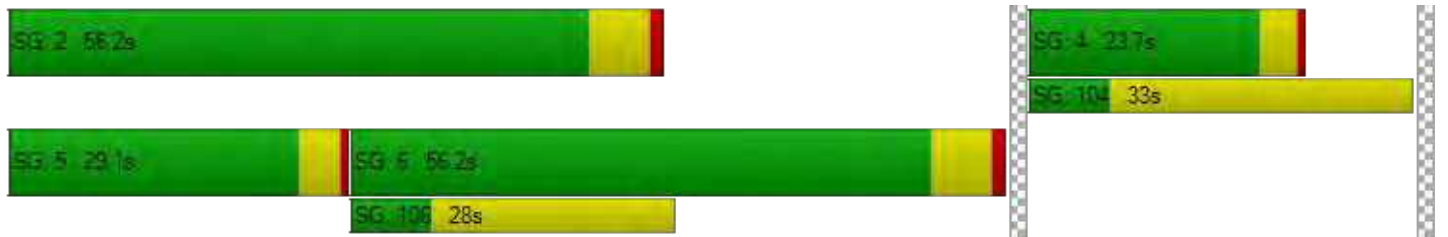
d_M, Delay for Movement [s/veh]	30.91	75.93	29.16	42.56	39.19	8.73
Movement LOS	C	E	C	D	D	A
d_A, Approach Delay [s/veh]	56.26		32.38		14.32	
Approach LOS	E		C		B	
d_I, Intersection Delay [s/veh]	25.60					
Intersection LOS	C					
Intersection V/C	0.832					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.40	36.40	36.40
I_p,int, Pedestrian LOS Score for Intersection	3.001	3.713	3.608
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	428	1069	1069
d_b, Bicycle Delay [s]	28.89	10.12	10.12
I_b,int, Bicycle LOS Score for Intersection	1.560	2.879	3.073
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	9.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	186	71	1741	119	147	2234
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	71	1741	119	147	2234
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	18	449	31	38	576
Total Analysis Volume [veh/h]	192	73	1795	123	152	2303
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	40	40	40	40	40	40
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	5	5	16	16	4	24
g / C, Green / Cycle	0.12	0.12	0.40	0.40	0.11	0.61
(v / s)_i Volume / Saturation Flow Rate	0.06	0.05	0.36	0.08	0.08	0.46
s, saturation flow rate [veh/h]	3173	1509	4959	1493	1810	5024
c, Capacity [veh/h]	379	180	1963	591	197	3055
d1, Uniform Delay [s]	16.36	16.15	11.34	7.87	17.19	5.62
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.39	0.54	0.77	0.06	2.44	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.51	0.40	0.91	0.21	0.77	0.75
d, Delay for Lane Group [s/veh]	16.74	16.69	12.10	7.93	19.63	5.77
Lane Group LOS	B	B	B	A	B	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.74	0.57	3.03	0.42	1.17	1.10
50th-Percentile Queue Length [ft/ln]	18.43	14.13	75.67	10.56	29.19	27.61
95th-Percentile Queue Length [veh/ln]	1.33	1.02	5.45	0.76	2.10	1.99
95th-Percentile Queue Length [ft/ln]	33.18	25.44	136.21	19.01	52.54	49.69

**Movement, Approach, & Intersection Results**

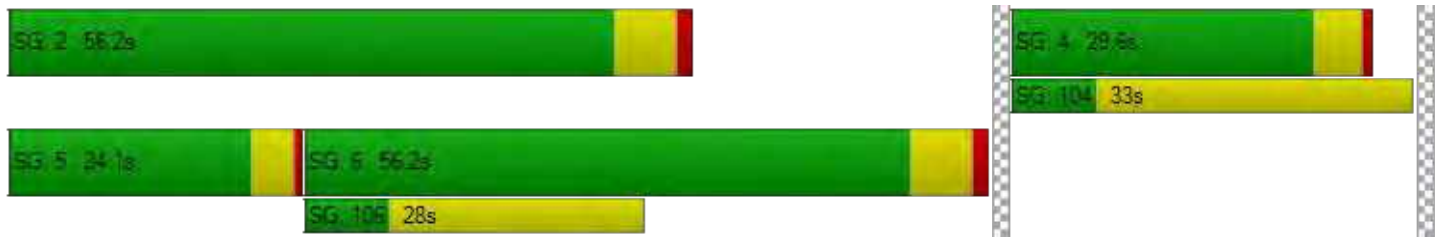
d_M, Delay for Movement [s/veh]	16.74	16.69	12.10	7.93	19.63	5.77
Movement LOS	B	B	B	A	B	A
d_A, Approach Delay [s/veh]	16.73		11.84		6.63	
Approach LOS	B		B		A	
d_I, Intersection Delay [s/veh]	9.36					
Intersection LOS	A					
Intersection V/C	0.672					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	10.31	10.31	10.31
I_p,int, Pedestrian LOS Score for Intersection	2.192	3.483	3.448
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1264	2528	2528
d_b, Bicycle Delay [s]	2.68	1.38	1.38
I_b,int, Bicycle LOS Score for Intersection	1.560	2.615	2.910
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 199: Bayfront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	7.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.795

**Intersection Setup**

Name	Bldg 21		Bayfront Expwy		Bayfront Expwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑⇐		⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	48	37	1081	288	179	2250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	35.50	35.50	11.60	11.60	4.40	4.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	37	1081	288	179	2250
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	10	282	75	47	586
Total Analysis Volume [veh/h]	50	39	1126	300	186	2344
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	25	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	31	31	31	31	31	31
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	3	3	10	10	18	18
g / C, Green / Cycle	0.09	0.09	0.33	0.33	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.04	0.04	0.27	0.23	0.12	0.52
s, saturation flow rate [veh/h]	1172	1058	4231	1320	1597	4496
c, Capacity [veh/h]	104	94	1382	431	1168	2655
d1, Uniform Delay [s]	13.33	13.37	9.53	9.05	3.89	5.40
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.07	1.34	0.46	0.76	0.02	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.44	0.47	0.81	0.70	0.16	0.88
d, Delay for Lane Group [s/veh]	14.40	14.70	9.98	9.81	3.92	5.81
Lane Group LOS	B	B	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.26	0.26	1.18	0.94	0.00	0.10
50th-Percentile Queue Length [ft/ln]	6.55	6.46	29.43	23.50	0.09	2.49
95th-Percentile Queue Length [veh/ln]	0.47	0.47	2.12	1.69	0.01	0.18
95th-Percentile Queue Length [ft/ln]	11.80	11.63	52.97	42.31	0.17	4.48

**Movement, Approach, & Intersection Results**

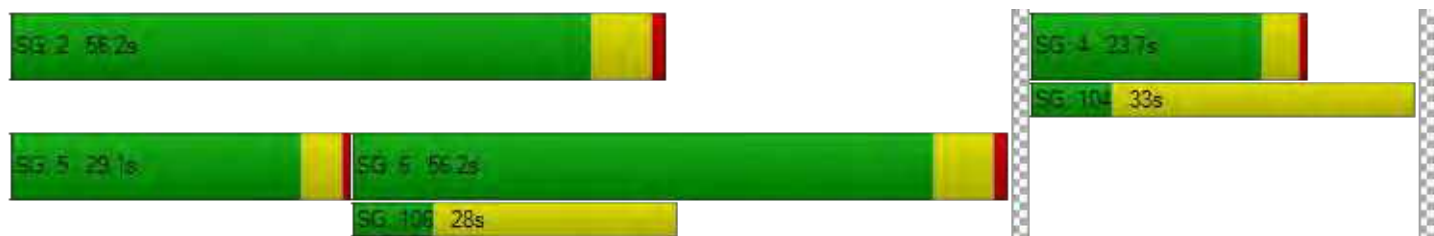
d_M, Delay for Movement [s/veh]	14.43	14.70	9.98	9.81	3.92	5.81
Movement LOS	B	B	A	A	A	A
d_A, Approach Delay [s/veh]	14.55		9.95		5.67	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	7.37					
Intersection LOS	A					
Intersection V/C	0.795					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	6.34	6.34	6.34
I_p,int, Pedestrian LOS Score for Intersection	2.306	3.323	3.332
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1301	3252	3252
d_b, Bicycle Delay [s]	1.88	6.03	6.03
I_b,int, Bicycle LOS Score for Intersection	1.706	2.344	2.951
Bicycle LOS	A	B	C

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	107.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.358

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	617	96	70	325	128	194
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	617	96	70	325	128	194
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	175	27	20	92	36	55
Total Analysis Volume [veh/h]	701	109	80	369	145	220
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	810	571	554
Degree of Utilization, x	1.36	0.79	0.66

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	35.30	7.41	4.81
95th-Percentile Queue Length [ft]	882.55	185.36	120.28
Approach Delay [s/veh]	190.51	28.57	21.15
Approach LOS	F	D	C
Intersection Delay [s/veh]	107.67		
Intersection LOS	F		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	7.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.827

**Intersection Setup**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	980.00	760.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	



**Volumes**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Base Volume Input [veh/h]	0	35	936	170	63	2538
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	88.60	11.70	11.70	6.30	6.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	35	936	170	63	2538
Peak Hour Factor	0.9500	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	9	249	45	17	675
Total Analysis Volume [veh/h]	0	37	996	181	67	2700
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	25	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	56	56	56	56	56
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	3	36	36	44	44
g / C, Green / Cycle	0.05	0.64	0.64	0.78	0.78
(v / s)_i Volume / Saturation Flow Rate	0.08	0.24	0.14	0.11	0.61
s, saturation flow rate [veh/h]	436	4227	1319	633	4426
c, Capacity [veh/h]	21	2687	839	619	3432
d1, Uniform Delay [s]	26.79	4.89	4.34	1.89	3.65
k, delay calibration	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	344.25	0.03	0.05	0.03	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.73	0.37	0.22	0.11	0.79
d, Delay for Lane Group [s/veh]	371.04	4.92	4.38	1.92	3.80
Lane Group LOS	F	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.33	0.93	0.46	0.00	0.05
50th-Percentile Queue Length [ft/ln]	58.21	23.28	11.43	0.12	1.23
95th-Percentile Queue Length [veh/ln]	4.19	1.68	0.82	0.01	0.09
95th-Percentile Queue Length [ft/ln]	104.77	41.91	20.57	0.22	2.21

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	371.04	4.92	4.38	1.92	3.80
Movement LOS		F	A	A	A	A
d_A, Approach Delay [s/veh]	371.04		4.84		3.76	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	7.49					
Intersection LOS	A					
Intersection V/C	0.827					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	18.20	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.378	0.000
Crosswalk LOS	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	711	1778	1778
d_b, Bicycle Delay [s]	11.68	0.35	0.35
I_b,int, Bicycle LOS Score for Intersection	1.560	2.207	3.081
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	24.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

**Intersection Setup**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	109	281	142	556	228	423	70	7	73	30	17	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	109	281	142	556	228	423	70	7	73	30	17	61
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	72	36	142	58	108	18	2	19	8	4	16
Total Analysis Volume [veh/h]	111	287	145	567	233	432	71	7	74	31	17	62
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		76			0			0			76	
v_di, Inbound Pedestrian Volume crossing in		76			0			0			76	
v_co, Outbound Pedestrian Volume crossing		11			0			10			0	
v_ci, Inbound Pedestrian Volume crossing mi		10			0			11			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	9	52	0	16	59	0	0	31	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C	R
C, Cycle Length [s]	68	68	68	68	68	68	68
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	25	14	34	8	4	4
g / C, Green / Cycle	0.08	0.37	0.21	0.50	0.12	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.06	0.26	0.17	0.40	0.04	0.03	0.03
s, saturation flow rate [veh/h]	1767	1664	3431	1664	1774	1761	1577
c, Capacity [veh/h]	147	613	724	825	213	114	102
d1, Uniform Delay [s]	30.43	18.29	25.31	14.36	27.49	30.68	30.74
k, delay calibration	0.11	0.15	0.11	0.38	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.54	2.05	1.90	6.41	1.05	3.28	4.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	0.70	0.78	0.81	0.37	0.49	0.53
d, Delay for Lane Group [s/veh]	37.98	20.34	27.22	20.77	28.54	33.96	34.90
Lane Group LOS	D	C	C	C	C	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.01	5.60	4.26	8.78	1.18	0.96	0.94
50th-Percentile Queue Length [ft/ln]	50.27	139.99	106.41	219.46	29.45	24.00	23.40
95th-Percentile Queue Length [veh/ln]	3.62	9.48	7.64	13.64	2.12	1.73	1.68
95th-Percentile Queue Length [ft/ln]	90.49	237.01	191.00	340.93	53.01	43.19	42.12



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.98	20.34	20.34	27.22	20.77	20.77	28.54	28.54	0.00	33.96	33.96	34.79
Movement LOS	D	C	C	C	C	C	C	C		C	C	C
d_A, Approach Delay [s/veh]	23.95			23.74			28.54			34.42		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.58											
Intersection LOS	C											
Intersection V/C	0.540											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	23.77	23.77	23.77	23.77
I_p,int, Pedestrian LOS Score for Intersection	2.187	2.606	2.132	2.318
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1417	1624	797	797
d_b, Bicycle Delay [s]	2.88	1.20	12.25	12.25
I_b,int, Bicycle LOS Score for Intersection	2.456	3.592	1.688	1.741
Bicycle LOS	B	D	A	A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	55.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
	20	191	59	119	255	349	48	28	101	0	153	19
Base Volume Input [veh/h]	20	191	59	119	255	349	48	28	101	0	153	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80	0.00	17.90	100.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	191	59	119	255	349	48	28	101	0	153	19
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	53	16	33	71	97	13	8	28	0	43	5
Total Analysis Volume [veh/h]	22	212	66	132	283	388	53	31	112	0	170	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		13			14			5			5	
v_di, Inbound Pedestrian Volume crossing in		14			13			5			5	
v_co, Outbound Pedestrian Volume crossing		0			1			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	25	0	0	19	0	0	46	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	30	30	16	17	17
g / C, Green / Cycle	0.23	0.40	0.40	0.21	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.20	0.10	0.44	0.19	0.07	0.07
s, saturation flow rate [veh/h]	1481	1357	1539	1050	1378	1278
c, Capacity [veh/h]	393	541	614	222	365	294
d1, Uniform Delay [s]	27.83	15.06	22.61	28.75	23.85	24.02
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.12	0.23	64.44	10.99	0.39	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.76	0.24	1.09	0.88	0.27	0.32
d, Delay for Lane Group [s/veh]	30.95	15.29	87.05	39.74	24.24	24.63
Lane Group LOS	C	B	F	D	C	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.29	1.45	20.83	3.95	1.42	1.38
50th-Percentile Queue Length [ft/ln]	132.16	36.13	520.67	98.73	35.44	34.43
95th-Percentile Queue Length [veh/ln]	9.06	2.60	30.08	7.11	2.55	2.48
95th-Percentile Queue Length [ft/ln]	226.43	65.03	752.07	177.72	63.80	61.97

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	30.95	30.95	30.95	15.29	87.05	87.05	39.74	39.74	39.74	24.24	24.41	24.63
Movement LOS	C	C	C	B	F	F	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	30.95			75.26			39.74			24.43		
Approach LOS	C			E			D			C		
d_I, Intersection Delay [s/veh]	55.15											
Intersection LOS	E											
Intersection V/C	0.825											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.35	27.35	27.35	27.35
I_p,int, Pedestrian LOS Score for Intersection	2.162	2.223	1.991	2.204
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1119	559	400	1119
d_b, Bicycle Delay [s]	7.29	19.48	24.04	7.29
I_b,int, Bicycle LOS Score for Intersection	2.055	2.885	1.883	1.717
Bicycle LOS	B	C	A	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	62.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.322

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	29	72	86	164	752	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	72	86	164	752	28
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	23	28	53	244	9
Total Analysis Volume [veh/h]	38	94	112	213	977	36
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.32	0.32	0.17	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	62.49	44.28	11.42	0.00	0.00	0.00
Movement LOS	F	E	B	A	A	A
95th-Percentile Queue Length [veh/ln]	3.81	3.81	0.59	0.59	0.00	0.00
95th-Percentile Queue Length [ft/ln]	95.30	95.30	14.86	14.86	0.00	0.00
d_A, Approach Delay [s/veh]	49.52		3.94		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	5.32					
Intersection LOS	F					



**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	11.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	38	42	60	123	13	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.50	12.50	15.60	15.60	46.80	46.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	42	60	123	13	65
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	12	18	36	4	19
Total Analysis Volume [veh/h]	45	49	71	145	15	76
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.03	0.10
d_M, Delay for Movement [s/veh]	7.88	0.00	0.00	0.00	11.65	10.16
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.11	0.11	0.00	0.00	0.41	0.41
95th-Percentile Queue Length [ft/ln]	2.70	2.70	0.00	0.00	10.20	10.20
d_A, Approach Delay [s/veh]	3.77		0.00		10.41	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.25					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 267: Willow Road(SR114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		←↑↑		←↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	1076	368	205	1255	293	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1076	368	205	1255	293	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	269	92	51	314	73	15
Total Analysis Volume [veh/h]	1076	368	205	1255	293	59
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	8	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	90	0	10	100	60	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	81	0	24	105	55	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	11	0	0	11	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	0.0	2.5	2.5	2.5	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	77	77	20	101	51	51
g / C, Green / Cycle	0.48	0.48	0.12	0.63	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.39	0.42	0.06	0.35	0.10	0.10
s, saturation flow rate [veh/h]	1870	1716	3459	3560	1781	1711
c, Capacity [veh/h]	894	820	422	2236	562	540
d1, Uniform Delay [s]	35.49	37.62	65.58	17.09	41.66	41.68
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.75	12.99	3.97	1.02	1.49	1.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.88	0.49	0.56	0.32	0.32
d, Delay for Lane Group [s/veh]	43.24	50.61	69.55	18.11	43.16	43.24
Lane Group LOS	D	D	E	B	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	25.28	27.71	4.12	13.10	5.72	5.52
50th-Percentile Queue Length [ft/ln]	631.97	692.83	103.04	327.51	143.05	138.08
95th-Percentile Queue Length [veh/ln]	33.52	36.35	7.42	19.04	9.65	9.38
95th-Percentile Queue Length [ft/ln]	838.11	908.67	185.46	475.91	241.13	234.43

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	45.67	50.61	69.55	18.11	43.19	43.24
Movement LOS	D	D	E	B	D	D
d_A, Approach Delay [s/veh]	46.93		25.33		43.20	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	36.84					
Intersection LOS	D					
Intersection V/C	0.581					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38
I_p,int, Pedestrian LOS Score for Intersection	3.131	3.042	2.384
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	956	1256	631
d_b, Bicycle Delay [s]	21.79	11.06	37.47
I_b,int, Bicycle LOS Score for Intersection	2.751	2.764	2.140
Bicycle LOS	C	C	B

**Sequence**

Ring 1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 269: O'Brien Drive/Loop Road**

Control Type:	Roundabout	Delay (sec / veh):	7.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	14	325	92	62	71	29	125	69	68	43	27	285
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	325	92	62	71	29	125	69	68	43	27	285
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	81	23	16	18	7	31	17	17	11	7	71
Total Analysis Volume [veh/h]	14	325	92	62	71	29	125	69	68	43	27	285
Pedestrian Volume [ped/h]	0			0			0			0		



**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	261			86			180			473		
Exiting Flow Rate [veh/h]	186			750			71			227		
Demand Flow Rate [veh/h]	14	325	92	62	71	29	125	69	68	43	27	285
Adjusted Demand Flow Rate [veh/h]	14	325	92	62	71	29	125	69	68	43	27	285

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.98			0.98		
Entry Flow Rate [veh/h]	440			166			268			363		
Capacity of Entry and Bypass Lanes [veh/h]	1058			1265			1150			852		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1037			1240			1127			835		
X, volume / capacity	0.42			0.13			0.23			0.43		

**Movement, Approach, & Intersection Results**

Lane LOS	A			A			A			A		
95th-Percentile Queue Length [veh]	2.08			0.45			0.90			2.14		
95th-Percentile Queue Length [ft]	51.95			11.24			22.54			53.57		
Approach Delay [s/veh]	8.00			3.99			5.32			9.59		
Approach LOS	A			A			A			A		
Intersection Delay [s/veh]	7.35											
Intersection LOS	A											

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12/30/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	942		1462		1226	512	4142

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	31	1196	7	448	1239	310	13	4	58	238	19	0	3563

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	138	857	84	29	1030	422	607	56	165	35	16	25	3464

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	0	810	84	326	755	61	226	66	2	40	22	208	2600

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	87	503	495	433	480	104	2102

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	6	11	9	135	28	318	21	606	114	267	683	56	2254

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84)/University Ave (SR 109)	864	67	1234	2778	205	416	5564

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	225	585	279	36	91	88	375	439	172	1122	2238	72	5722

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	111	946	80	337	1394	37	47	16	48	18	6	128	3168

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	91	1221	1383	14	65	95	2869

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1316	713	42	1143	237	45	3496

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	143	1771	320	40	1335	7	17	98	418	260	88	167	4664

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1216	1202	570	438	60	3551

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	22	897	7	36	924	108	66	7	31	59	12	125	2294

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	29	783	7	4	878	121	210	6	59	1	2	6	2106

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	7	706	81	52	930	0	20	82	11	90	94	93	2166

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	27	271	135	374	124	446	125	346	170	350	359	21	2748

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road and US 101 NB Ramps	1582		858		771	1101	4312

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	226	10	51	98	35	37	41	24	22	51	133	741

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	162	27	1109	10	30	7	8	340	296	2028	512	34	4563

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	1115	623	1345	874	937	391	5285

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1548	508	1803	424	493	789	5565

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	200	258	1731	547	480	2135	5351

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	186	71	1741	119	147	2234	4498

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	48	37	1081	288	179	2250	3883

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	617	96	70	325	128	194	1430

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	35		936	170	63	2538	3742

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	109	281	142	556	228	423	70	7	73	30	17	61	1997

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	20	191	59	119	255	349	48	28	101	0	153	19	1342

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	29	72	86	164	752	28	1131

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	38	42	60	123	13	65	341

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ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
267	Willow Road(SR114)/Park Street	1076	368	205	1255	293	59	3256

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	O'Brien Drive/Loop Road	14	325	92	62	71	29	125	69	68	43	27	285	1210

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**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	942		1462		1226	512	4142
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>942</b>		<b>1462</b>		<b>1226</b>	<b>512</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	31	1196	7	448	1239	310	13	4	58	238	19	0	3563	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>31</b>	<b>1196</b>	<b>7</b>	<b>448</b>	<b>1239</b>	<b>310</b>	<b>13</b>	<b>4</b>	<b>58</b>	<b>238</b>	<b>19</b>	<b>0</b>	<b>3563</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	138	857	84	29	1030	422	607	56	165	35	16	25	3464	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>138</b>	<b>857</b>	<b>84</b>	<b>29</b>	<b>1030</b>	<b>422</b>	<b>607</b>	<b>56</b>	<b>165</b>	<b>35</b>	<b>16</b>	<b>25</b>	<b>3464</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	0	810	84	326	755	61	226	66	2	40	22	208	2600	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>0</b>	<b>810</b>	<b>84</b>	<b>326</b>	<b>755</b>	<b>61</b>	<b>226</b>	<b>66</b>	<b>2</b>	<b>40</b>	<b>22</b>	<b>208</b>	<b>2600</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	87	503	495	433	480	104	2102
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>87</b>	<b>503</b>	<b>495</b>	<b>433</b>	<b>480</b>	<b>104</b>	<b>2102</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	Final Base	6	11	9	135	28	318	21	606	114	267	683	56	2254
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>6</b>	<b>11</b>	<b>9</b>	<b>135</b>	<b>28</b>	<b>318</b>	<b>21</b>	<b>606</b>	<b>114</b>	<b>267</b>	<b>683</b>	<b>56</b>	<b>2254</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	864	67	1234	2778	205	416	5564
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>864</b>	<b>67</b>	<b>1234</b>	<b>2778</b>	<b>205</b>	<b>416</b>	<b>5564</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	225	585	279	36	91	88	375	439	172	1122	2238	72	5722
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>225</b>	<b>585</b>	<b>279</b>	<b>36</b>	<b>91</b>	<b>88</b>	<b>375</b>	<b>439</b>	<b>172</b>	<b>1122</b>	<b>2238</b>	<b>72</b>	<b>5722</b>



ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	111	946	80	337	1394	37	47	16	48	18	6	128	3168
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>111</b>	<b>946</b>	<b>80</b>	<b>337</b>	<b>1394</b>	<b>37</b>	<b>47</b>	<b>16</b>	<b>48</b>	<b>18</b>	<b>6</b>	<b>128</b>	<b>3168</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	91	1221	1383	14	65	95	2869
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>91</b>	<b>1221</b>	<b>1383</b>	<b>14</b>	<b>65</b>	<b>95</b>	<b>2869</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1316	713	42	1143	237	45	3496
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1316</b>	<b>713</b>	<b>42</b>	<b>1143</b>	<b>237</b>	<b>45</b>	<b>3496</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	143	1771	320	40	1335	7	17	98	418	260	88	167	4664
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>143</b>	<b>1771</b>	<b>320</b>	<b>40</b>	<b>1335</b>	<b>7</b>	<b>17</b>	<b>98</b>	<b>418</b>	<b>260</b>	<b>88</b>	<b>167</b>	<b>4664</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1216	1202	570	438	60	3551
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1216</b>	<b>1202</b>	<b>570</b>	<b>438</b>	<b>60</b>	<b>3551</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	22	897	7	36	924	108	66	7	31	59	12	125	2294
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>897</b>	<b>7</b>	<b>36</b>	<b>924</b>	<b>108</b>	<b>66</b>	<b>7</b>	<b>31</b>	<b>59</b>	<b>12</b>	<b>125</b>	<b>2294</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	29	783	7	4	878	121	210	6	59	1	2	6	2106
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>29</b>	<b>783</b>	<b>7</b>	<b>4</b>	<b>878</b>	<b>121</b>	<b>210</b>	<b>6</b>	<b>59</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>2106</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	7	706	81	52	930	0	20	82	11	90	94	93	2166
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>7</b>	<b>706</b>	<b>81</b>	<b>52</b>	<b>930</b>	<b>0</b>	<b>20</b>	<b>82</b>	<b>11</b>	<b>90</b>	<b>94</b>	<b>93</b>	<b>2166</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
25	Middlefield Rd- Willow Rd	Final Base	27	271	135	374	124	446	125	346	170	350	359	21	2748	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>27</b>	<b>271</b>	<b>135</b>	<b>374</b>	<b>124</b>	<b>446</b>	<b>125</b>	<b>346</b>	<b>170</b>	<b>350</b>	<b>359</b>	<b>21</b>	<b>2748</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road and US 101 NB Ramps	Final Base	1582		858		771	1101	4312
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1582</b>		<b>858</b>		<b>771</b>	<b>1101</b>	<b>4312</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
131	Chilco Street/Hamilton Avenue	Final Base	13	226	10	51	98	35	37	41	24	22	51	133	741	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>226</b>	<b>10</b>	<b>51</b>	<b>98</b>	<b>35</b>	<b>37</b>	<b>41</b>	<b>24</b>	<b>22</b>	<b>51</b>	<b>133</b>	<b>741</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
163	Bayfront Expy/Marsh Rd	Final Base	162	27	1109	10	30	7	8	340	296	2028	512	34	4563	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>162</b>	<b>27</b>	<b>1109</b>	<b>10</b>	<b>30</b>	<b>7</b>	<b>8</b>	<b>340</b>	<b>296</b>	<b>2028</b>	<b>512</b>	<b>34</b>	<b>4563</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1115	623	1345	874	937	391	5285
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1115</b>	<b>623</b>	<b>1345</b>	<b>874</b>	<b>937</b>	<b>391</b>	<b>5285</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1548	508	1803	424	493	789	5565
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1548</b>	<b>508</b>	<b>1803</b>	<b>424</b>	<b>493</b>	<b>789</b>	<b>5565</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	200	258	1731	547	480	2135	5351
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>200</b>	<b>258</b>	<b>1731</b>	<b>547</b>	<b>480</b>	<b>2135</b>	<b>5351</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	186	71	1741	119	147	2234	4498
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>186</b>	<b>71</b>	<b>1741</b>	<b>119</b>	<b>147</b>	<b>2234</b>	<b>4498</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	Final Base	48	37	1081	288	179	2250	3883
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>48</b>	<b>37</b>	<b>1081</b>	<b>288</b>	<b>179</b>	<b>2250</b>	<b>3883</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	617	96	70	325	128	194	1430
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>617</b>	<b>96</b>	<b>70</b>	<b>325</b>	<b>128</b>	<b>194</b>	<b>1430</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	35	936	170	63	2538	3742	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>35</b>	<b>936</b>	<b>170</b>	<b>63</b>	<b>2538</b>	<b>3742</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	109	281	142	556	228	423	70	7	73	30	17	61	1997
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>109</b>	<b>281</b>	<b>142</b>	<b>556</b>	<b>228</b>	<b>423</b>	<b>70</b>	<b>7</b>	<b>73</b>	<b>30</b>	<b>17</b>	<b>61</b>	<b>1997</b>

ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	20	191	59	119	255	349	48	28	101	0	153	19	1342
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>20</b>	<b>191</b>	<b>59</b>	<b>119</b>	<b>255</b>	<b>349</b>	<b>48</b>	<b>28</b>	<b>101</b>	<b>0</b>	<b>153</b>	<b>19</b>	<b>1342</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	29	72	86	164	752	28	1131
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>29</b>	<b>72</b>	<b>86</b>	<b>164</b>	<b>752</b>	<b>28</b>	<b>1131</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	Final Base	38	42	60	123	13	65	341
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>38</b>	<b>42</b>	<b>60</b>	<b>123</b>	<b>13</b>	<b>65</b>	<b>341</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
267	Willow Road (SR114)/Park Street	Final Base	1076	368	205	1255	293	59	3256
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1076</b>	<b>368</b>	<b>205</b>	<b>1255</b>	<b>293</b>	<b>59</b>	<b>3256</b>

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ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
269	O'Brien Drive/Loop Road	Final Base	14	325	92	62	71	29	125	69	68	43	27	285	1210	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>14</b>	<b>325</b>	<b>92</b>	<b>62</b>	<b>71</b>	<b>29</b>	<b>125</b>	<b>69</b>	<b>68</b>	<b>43</b>	<b>27</b>	<b>285</b>	<b>1210</b>	

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## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	249	184	206	102
2	242	178	200	99
3	237	175	196	97
4	222	164	183	91
5	197	145	163	81
6	194	144	161	80
7	192	142	159	79
8	174	129	144	71
9	172	127	142	70
10	169	125	140	69
11	147	109	122	60
12	137	101	113	56
13	134	99	111	55
14	100	74	82	41
15	100	74	82	41
16	70	52	58	29
17	40	29	33	16
18	40	29	33	16
19	22	17	19	9
20	12	9	10	5
21	7	6	6	3
22	2	2	2	1
23	2	2	2	1
24	2	2	2	1



## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	433	1	206	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	1	420	1	200	No	Yes	Yes	Yes	No	No	No	Yes	No	No
3	1	412	1	196	No	Yes	Yes	Yes	No	No	No	No	No	No
4	1	386	1	183	No	No	Yes	Yes	No	No	No	No	No	No
5	1	342	1	163	No	No	No	Yes	No	No	No	No	No	No
6	1	338	1	161	No	No	No	Yes	No	No	No	No	No	No
7	1	334	1	159	No	No	No	Yes	No	No	No	No	No	No
8	1	303	1	144	No	No	No	Yes	No	No	No	No	No	No
9	1	299	1	142	No	No	No	Yes	No	No	No	No	No	No
10	1	294	1	140	No	No	No	Yes	No	No	No	No	No	No
11	1	256	1	122	No	No	No	No	No	No	No	No	No	No
12	1	238	1	113	No	No	No	No	No	No	No	No	No	No
13	1	233	1	111	No	No	No	No	No	No	No	No	No	No
14	1	174	1	82	No	No	No	No	No	No	No	No	No	No
15	1	174	1	82	No	No	No	No	No	No	No	No	No	No
16	1	122	1	58	No	No	No	No	No	No	No	No	No	No
17	1	69	1	33	No	No	No	No	No	No	No	No	No	No
18	1	69	1	33	No	No	No	No	No	No	No	No	No	No
19	1	39	1	19	No	No	No	No	No	No	No	No	No	No
20	1	21	1	10	No	No	No	No	No	No	No	No	No	No
21	1	13	1	6	No	No	No	No	No	No	No	No	No	No
22	1	4	1	2	No	No	No	No	No	No	No	No	No	No
23	1	4	1	2	No	No	No	No	No	No	No	No	No	No
24	1	4	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	3	4	10	0	0	0	2	0	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.5	10
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:36	0:16
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	206	102
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	741	741
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	395	713	322
2	383	692	312
3	375	677	306
4	352	635	287
5	312	563	254
6	308	556	251
7	304	549	248
8	277	499	225
9	273	492	222
10	269	485	219
11	233	421	190
12	217	392	177
13	213	385	174
14	158	285	129
15	158	285	129
16	111	200	90
17	63	114	52
18	63	114	52
19	36	64	29
20	20	36	16
21	12	21	10
22	4	7	3
23	4	7	3
24	4	7	3

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1108	1	322	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1075	1	312	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1052	1	306	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	987	1	287	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	875	1	254	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	864	1	251	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	853	1	248	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	776	1	225	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	765	1	222	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	754	1	219	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	654	1	190	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
12	1	609	1	177	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
13	1	598	1	174	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
14	1	443	1	129	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	443	1	129	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	311	1	90	No	No	No	Yes	No	No	No	No	No	No
17	1	177	1	52	No	No	No	No	No	No	No	No	No	No
18	1	177	1	52	No	No	No	No	No	No	No	No	No	No
19	1	100	1	29	No	No	No	No	No	No	No	No	No	No
20	1	56	1	16	No	No	No	No	No	No	No	No	No	No
21	1	33	1	10	No	No	No	No	No	No	No	No	No	No
22	1	11	1	3	No	No	No	No	No	No	No	No	No	No
23	1	11	1	3	No	No	No	No	No	No	No	No	No	No
24	1	11	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	12	13	15	10	3

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	21.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	1:53
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	322
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1430
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	780	250	101
2	757	243	98
3	741	238	96
4	694	223	90
5	616	198	80
6	608	195	79
7	601	193	78
8	546	175	71
9	538	173	70
10	530	170	69
11	460	148	60
12	429	138	56
13	421	135	55
14	312	100	40
15	312	100	40
16	218	70	28
17	125	40	16
18	125	40	16
19	70	23	9
20	39	13	5
21	23	8	3
22	8	3	1
23	8	3	1
24	8	3	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1030	1	101	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1000	1	98	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
3	1	979	1	96	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
4	1	917	1	90	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
5	1	814	1	80	No	No	No	No	Yes	Yes	Yes	Yes	No	No
6	1	803	1	79	No	No	No	No	Yes	Yes	Yes	Yes	No	No
7	1	794	1	78	No	No	No	No	Yes	Yes	Yes	Yes	No	No
8	1	721	1	71	No	No	No	No	No	Yes	Yes	Yes	No	No
9	1	711	1	70	No	No	No	No	No	Yes	Yes	Yes	No	No
10	1	700	1	69	No	No	No	No	No	Yes	Yes	Yes	No	No
11	1	608	1	60	No	No	No	No	No	Yes	Yes	Yes	No	No
12	1	567	1	56	No	No	No	No	No	No	Yes	Yes	No	No
13	1	556	1	55	No	No	No	No	No	No	Yes	Yes	No	No
14	1	412	1	40	No	No	No	No	No	No	No	No	No	No
15	1	412	1	40	No	No	No	No	No	No	No	No	No	No
16	1	288	1	28	No	No	No	No	No	No	No	No	No	No
17	1	165	1	16	No	No	No	No	No	No	No	No	No	No
18	1	165	1	16	No	No	No	No	No	No	No	No	No	No
19	1	93	1	9	No	No	No	No	No	No	No	No	No	No
20	1	52	1	5	No	No	No	No	No	No	No	No	No	No
21	1	31	1	3	No	No	No	No	No	No	No	No	No	No
22	1	11	1	1	No	No	No	No	No	No	No	No	No	No
23	1	11	1	1	No	No	No	No	No	No	No	No	No	No
24	1	11	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	7	11	13	13	1	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	49.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	1:23
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	101
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1131
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 265: Adam Court/Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	80	183	78
2	78	178	76
3	76	174	74
4	71	163	69
5	63	145	62
6	62	143	61
7	62	141	60
8	56	128	55
9	55	126	54
10	54	124	53
11	47	108	46
12	44	101	43
13	43	99	42
14	32	73	31
15	32	73	31
16	22	51	22
17	13	29	12
18	13	29	12
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20	4	9	4
21	2	5	2
22	1	2	1
23	1	2	1
24	1	2	1

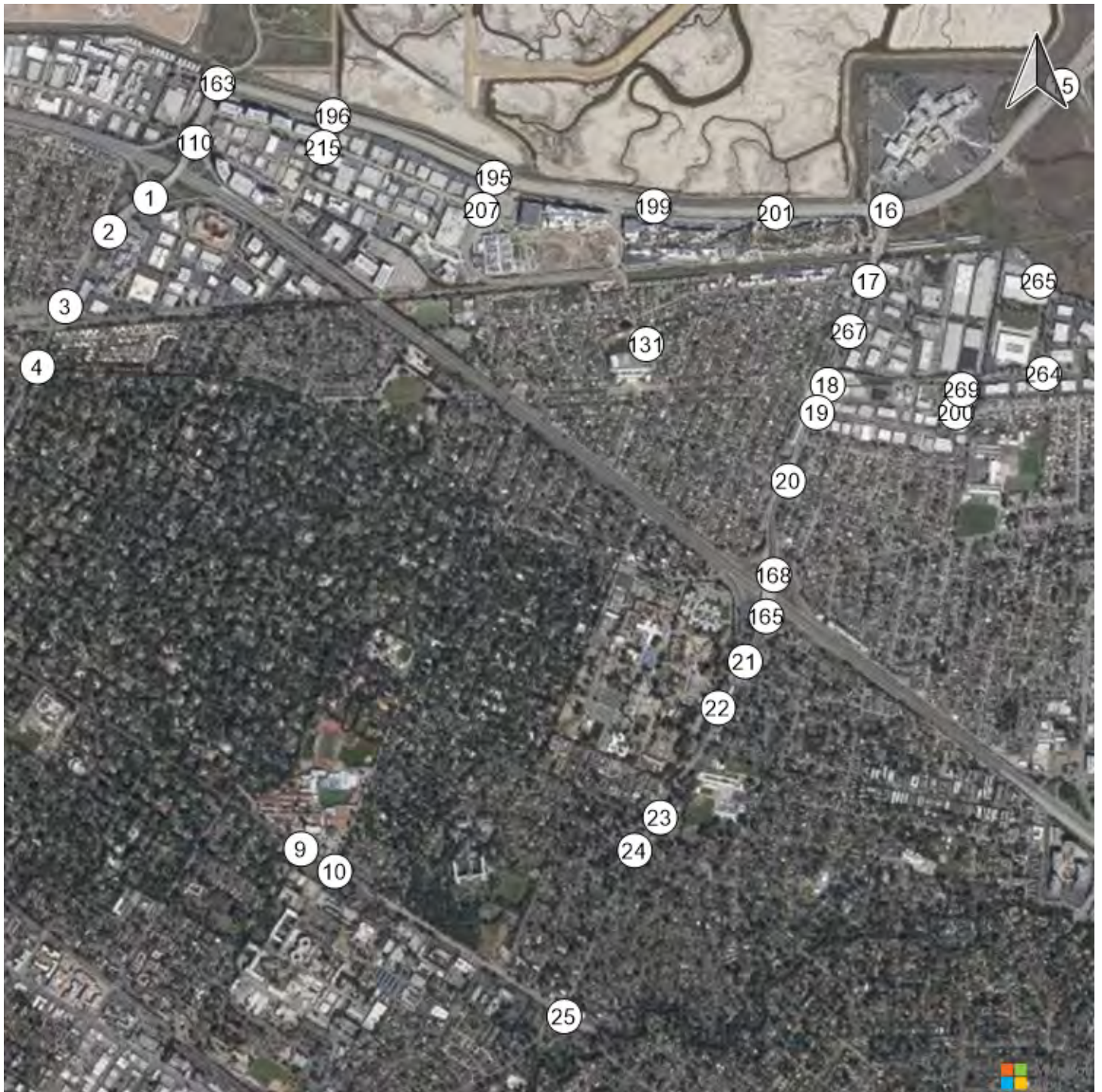
## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	263	1	78	No	No	No	No	No	No	No	No	No	No
2	1	256	1	76	No	No	No	No	No	No	No	No	No	No
3	1	250	1	74	No	No	No	No	No	No	No	No	No	No
4	1	234	1	69	No	No	No	No	No	No	No	No	No	No
5	1	208	1	62	No	No	No	No	No	No	No	No	No	No
6	1	205	1	61	No	No	No	No	No	No	No	No	No	No
7	1	203	1	60	No	No	No	No	No	No	No	No	No	No
8	1	184	1	55	No	No	No	No	No	No	No	No	No	No
9	1	181	1	54	No	No	No	No	No	No	No	No	No	No
10	1	178	1	53	No	No	No	No	No	No	No	No	No	No
11	1	155	1	46	No	No	No	No	No	No	No	No	No	No
12	1	145	1	43	No	No	No	No	No	No	No	No	No	No
13	1	142	1	42	No	No	No	No	No	No	No	No	No	No
14	1	105	1	31	No	No	No	No	No	No	No	No	No	No
15	1	105	1	31	No	No	No	No	No	No	No	No	No	No
16	1	73	1	22	No	No	No	No	No	No	No	No	No	No
17	1	42	1	12	No	No	No	No	No	No	No	No	No	No
18	1	42	1	12	No	No	No	No	No	No	No	No	No	No
19	1	23	1	7	No	No	No	No	No	No	No	No	No	No
20	1	13	1	4	No	No	No	No	No	No	No	No	No	No
21	1	7	1	2	No	No	No	No	No	No	No	No	No	No
22	1	3	1	1	No	No	No	No	No	No	No	No	No	No
23	1	3	1	1	No	No	No	No	No	No	No	No	No	No
24	1	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:13
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	78
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	341
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections



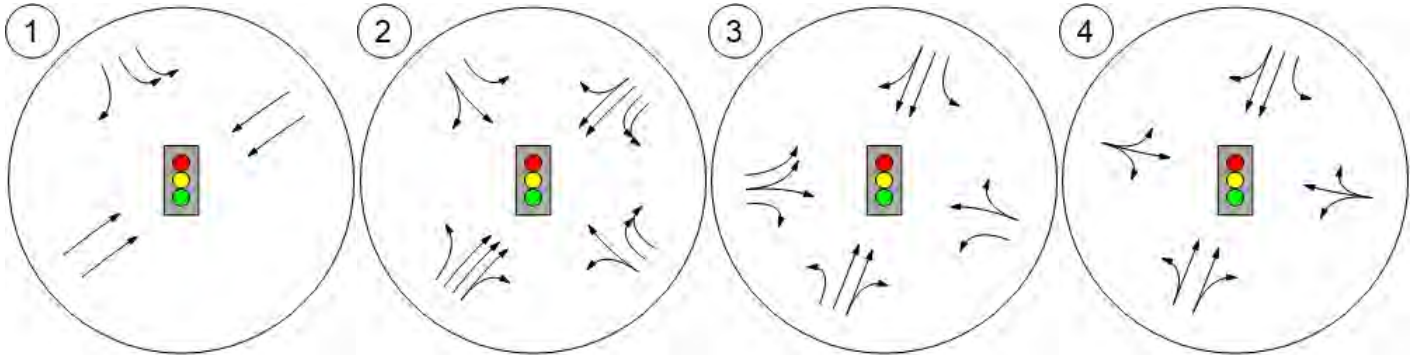


Lane Configuration and Traffic Control

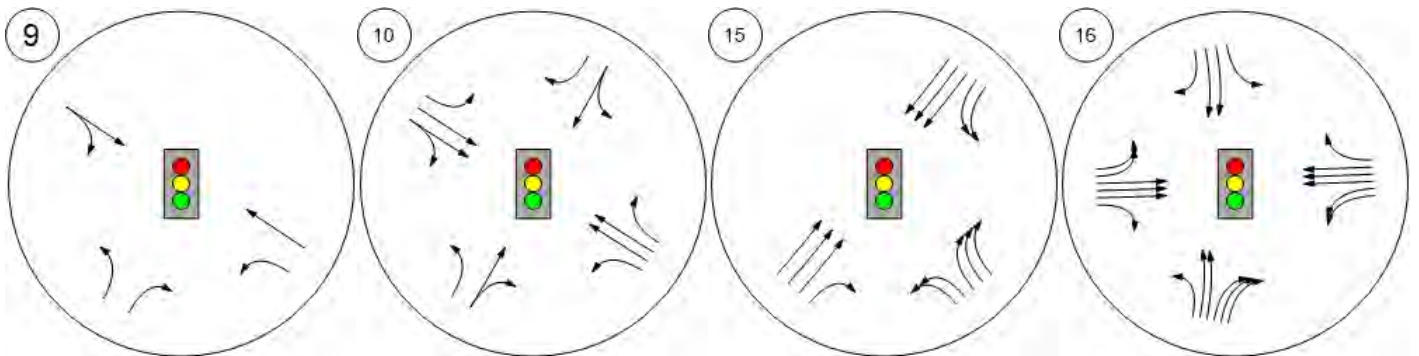


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



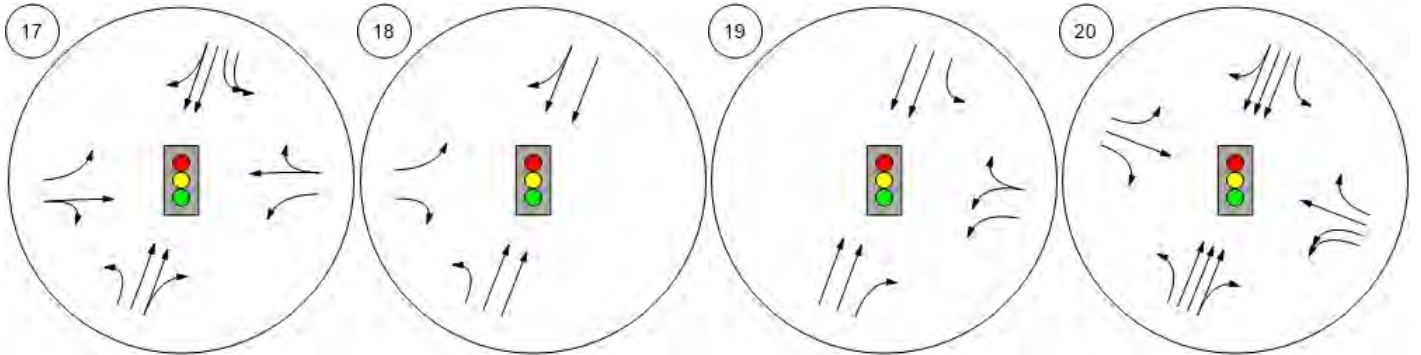
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



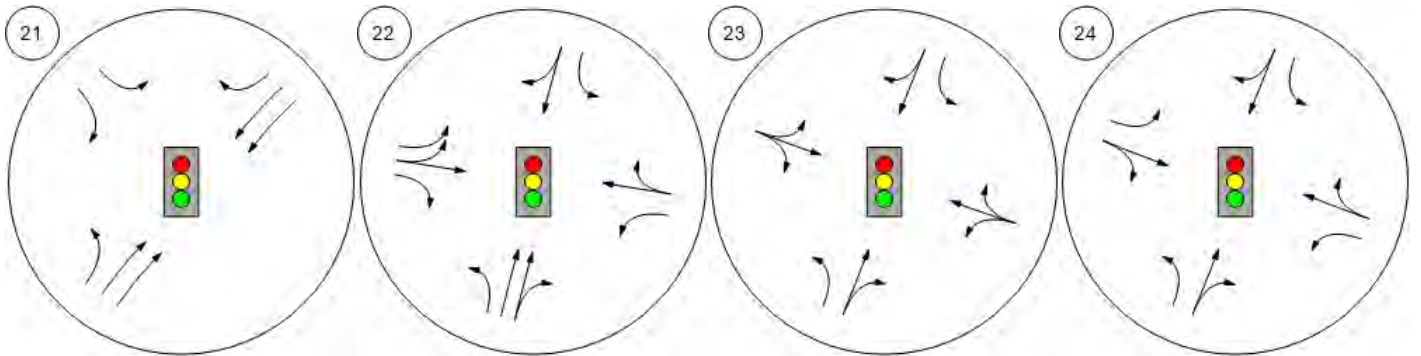
Lane Configuration and Traffic Control



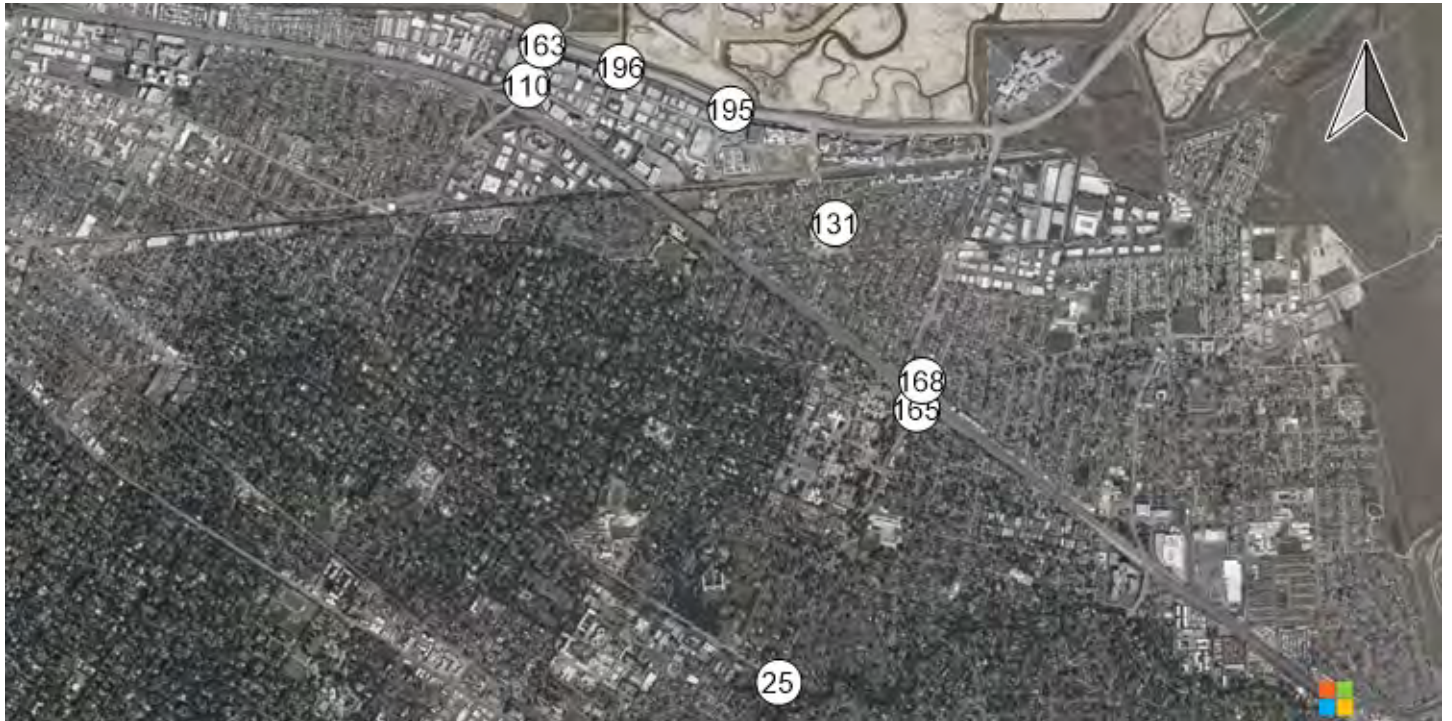
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



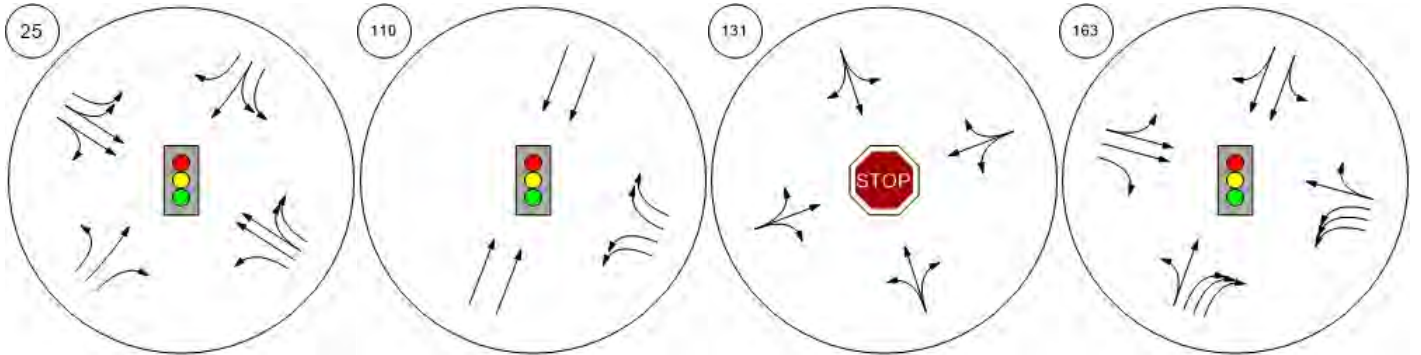
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



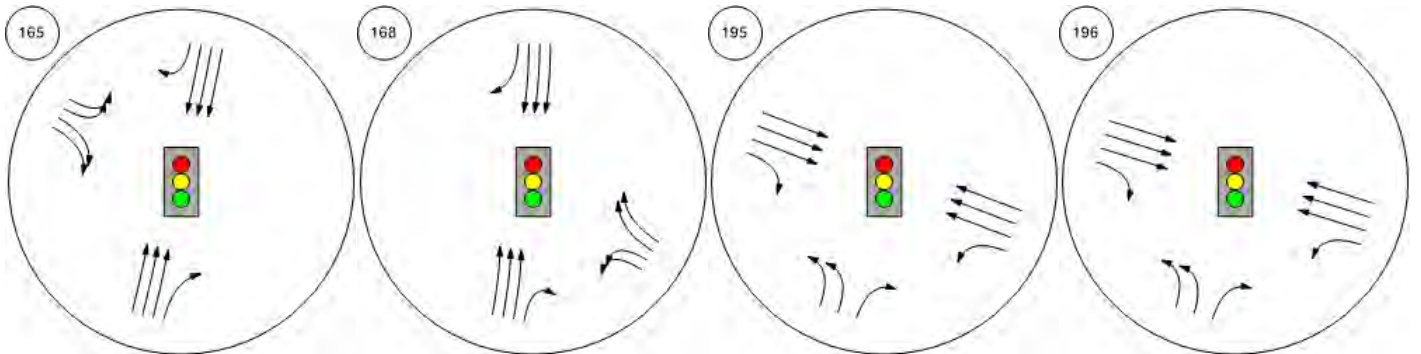
Lane Configuration and Traffic Control



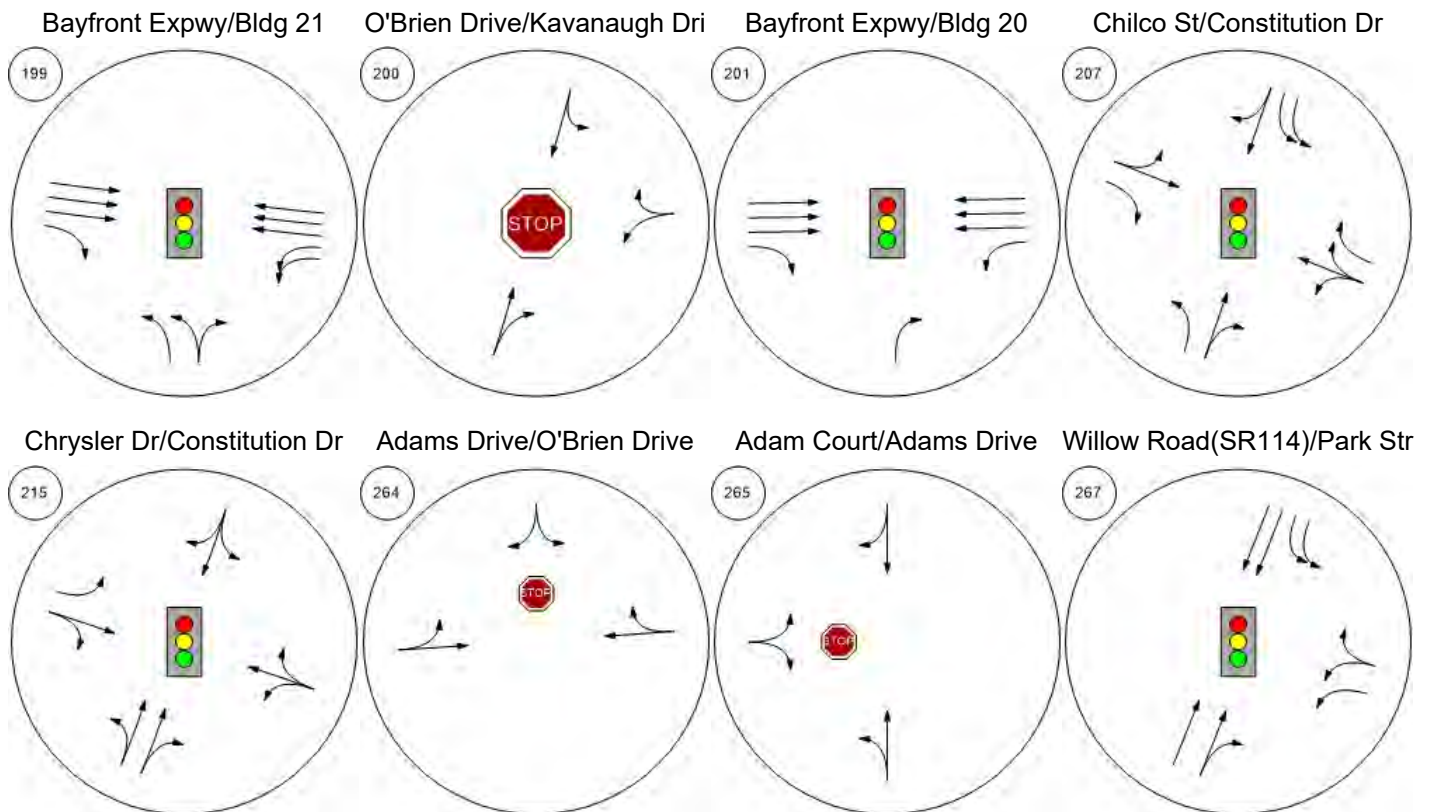
Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



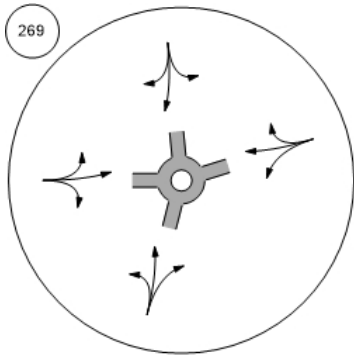
Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



O'Brien Drive/Loop Road

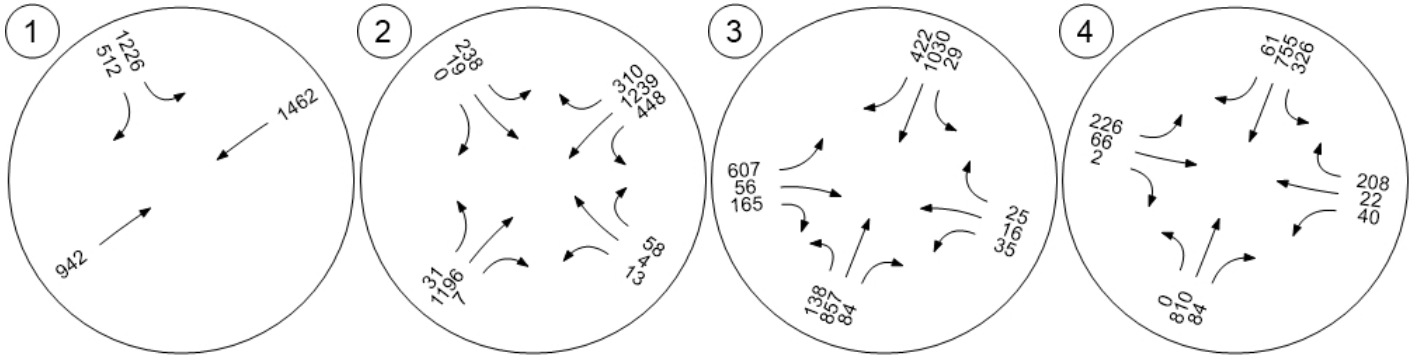


Traffic Volume - Base Volume

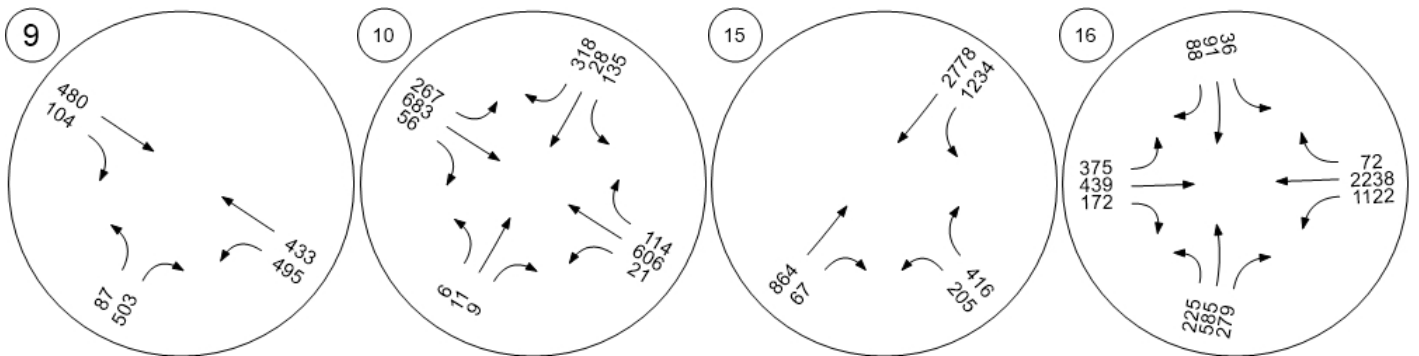


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



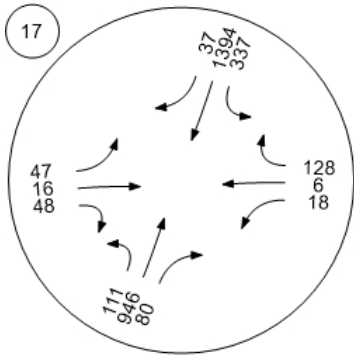
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



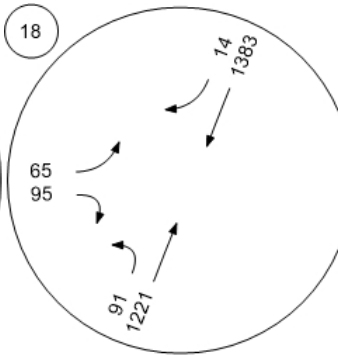
Traffic Volume - Base Volume



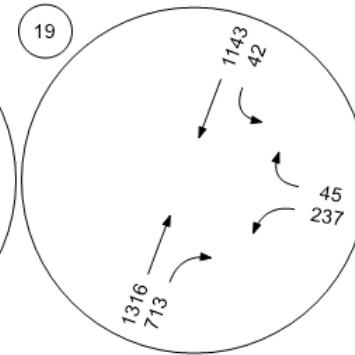
Willow Rd (SR 114)/Hamilton



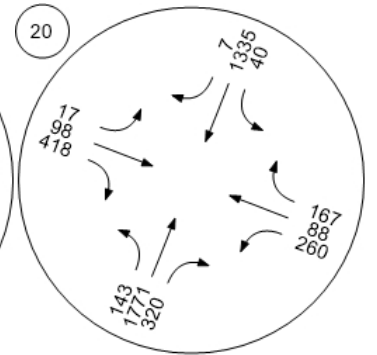
Willow Rd (SR 114)/Ivy Dr



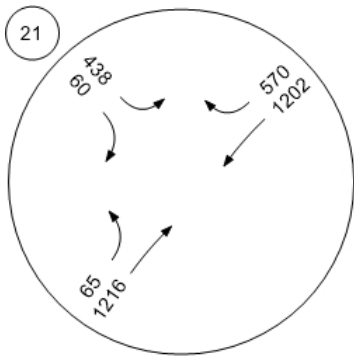
Willow Rd (SR 114)/O'Brien



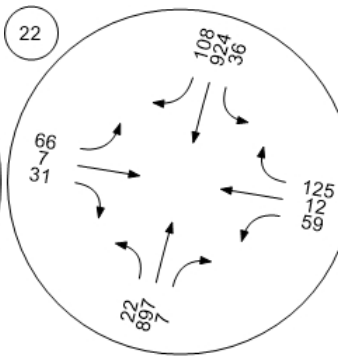
Willow Rd (SR 114)/Newbrid



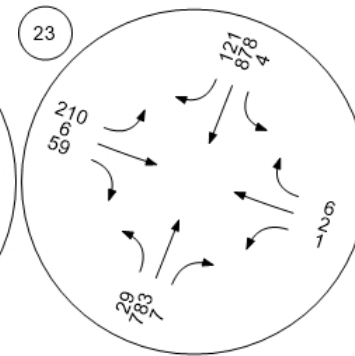
Willow Rd/Bay Rd



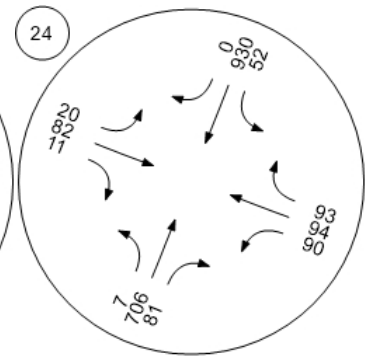
Willow Rd/Durham St-VA Me



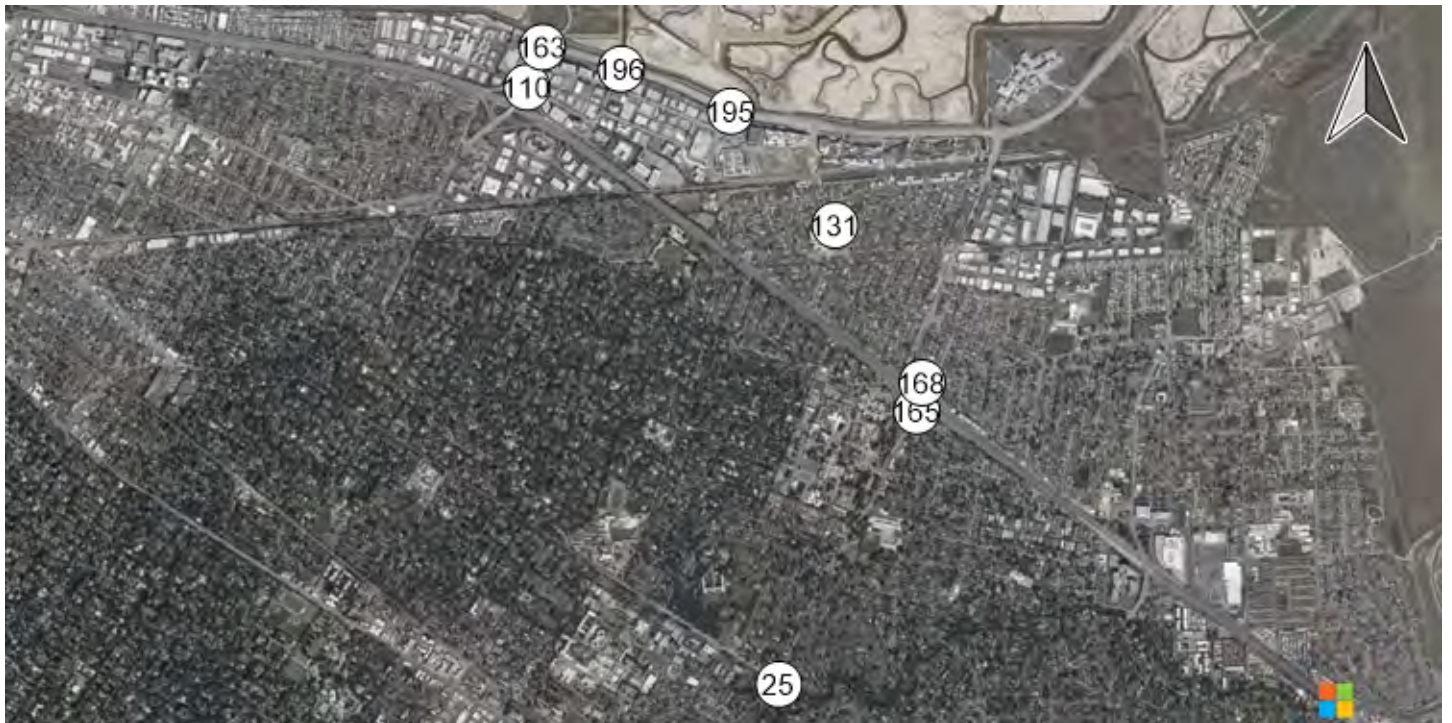
Willow Rd/Coleman Ave



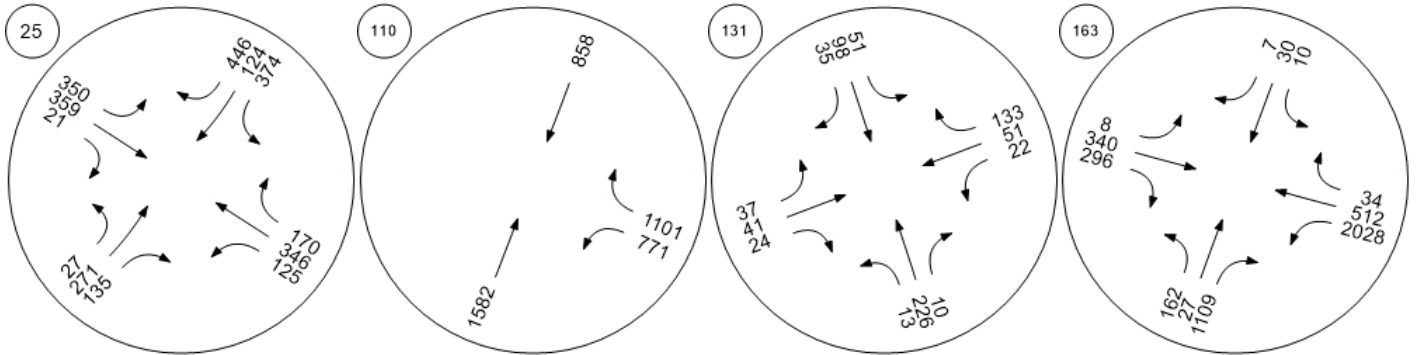
Willow Rd/Gilbert Ave



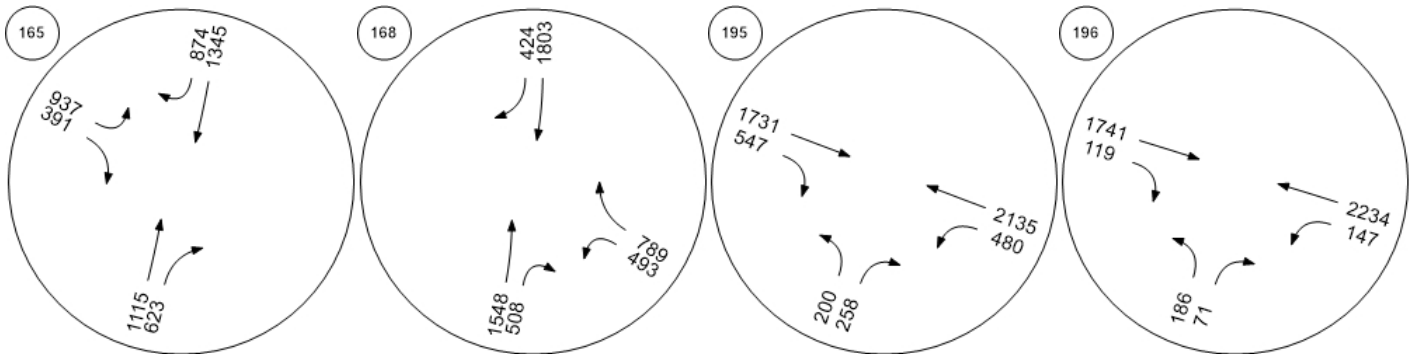
Traffic Volume - Base Volume



Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd

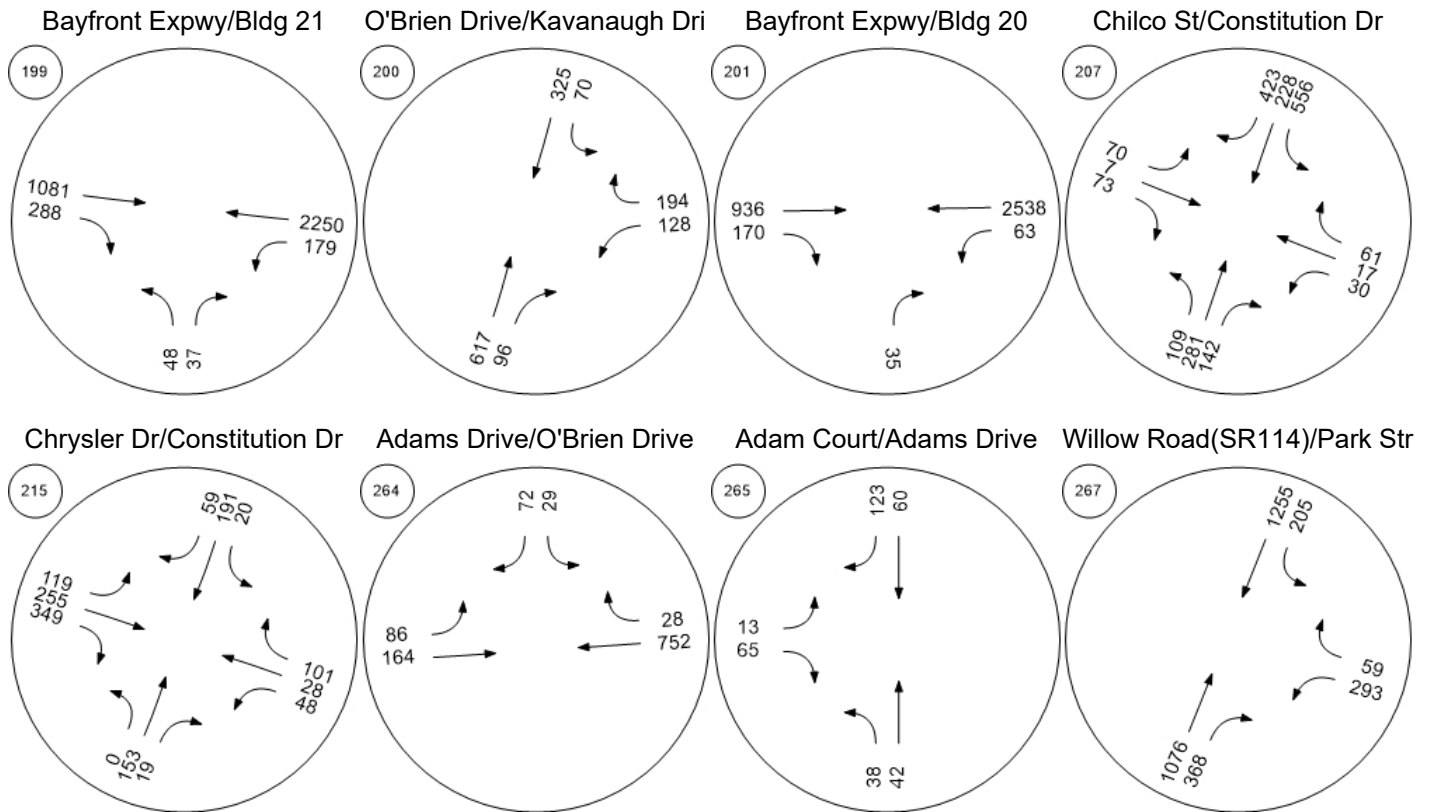


Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive





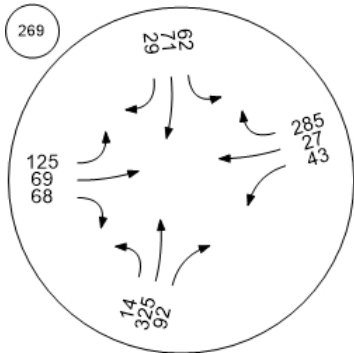
Traffic Volume - Base Volume



Traffic Volume - Base Volume



O'Brien Drive/Loop Road

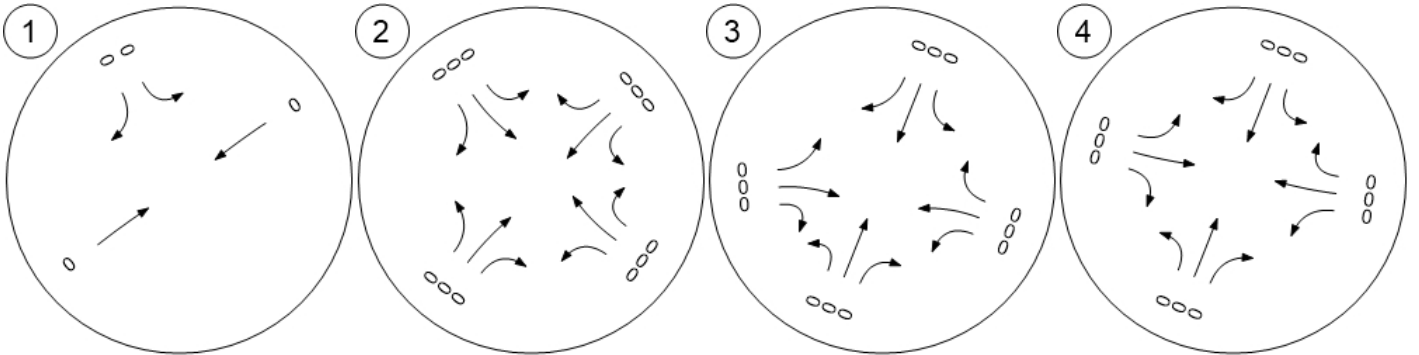


Traffic Volume - In-Process Volume

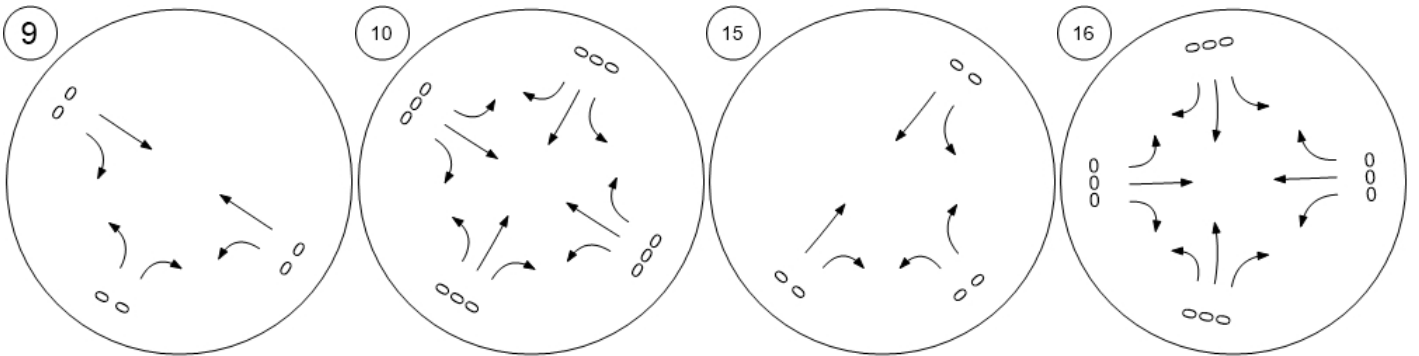


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



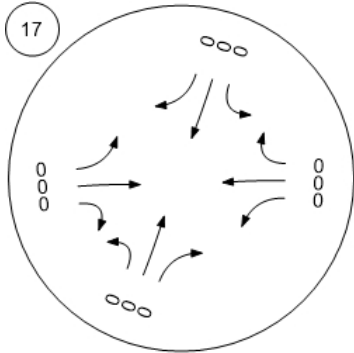
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



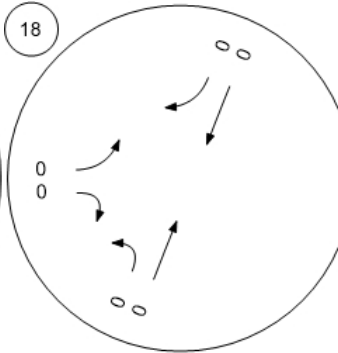
Traffic Volume - In-Process Volume



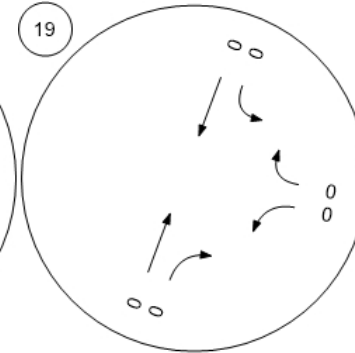
Willow Rd (SR 114)/Hamilton



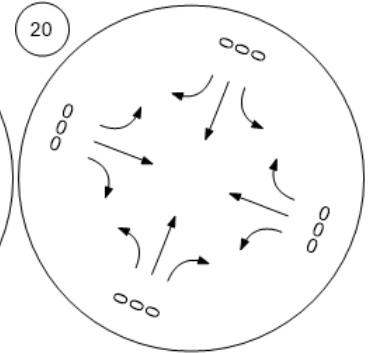
Willow Rd (SR 114)/Ivy Dr



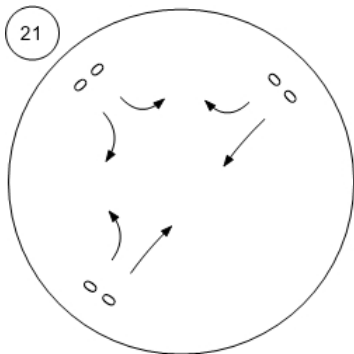
Willow Rd (SR 114)/O'Brien



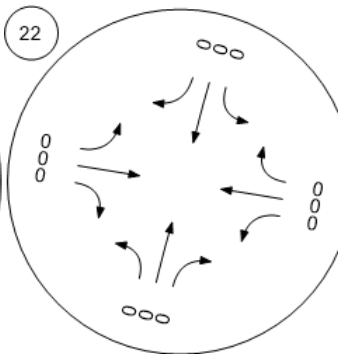
Willow Rd (SR 114)/Newbrid



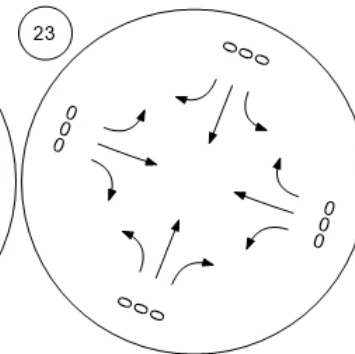
Willow Rd/Bay Rd



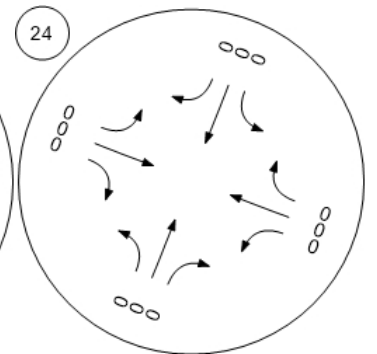
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



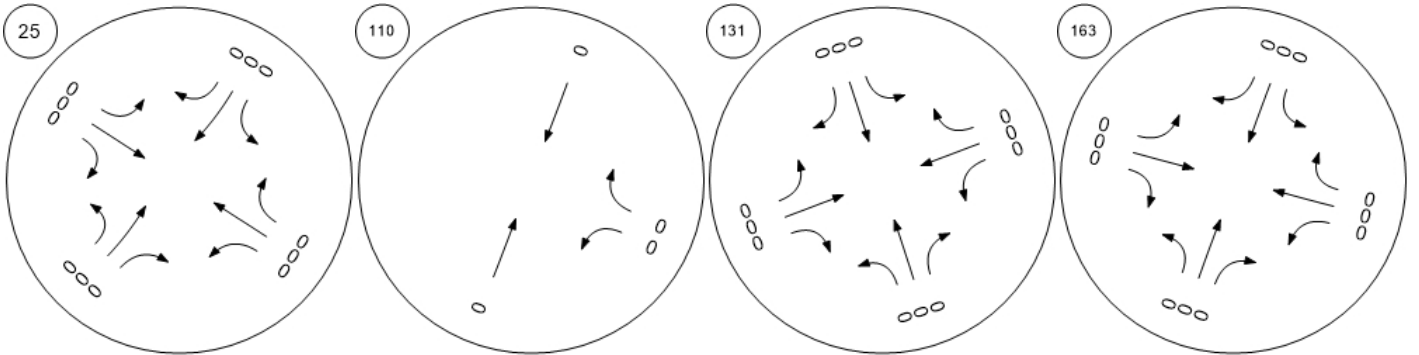
Willow Rd/Gilbert Ave



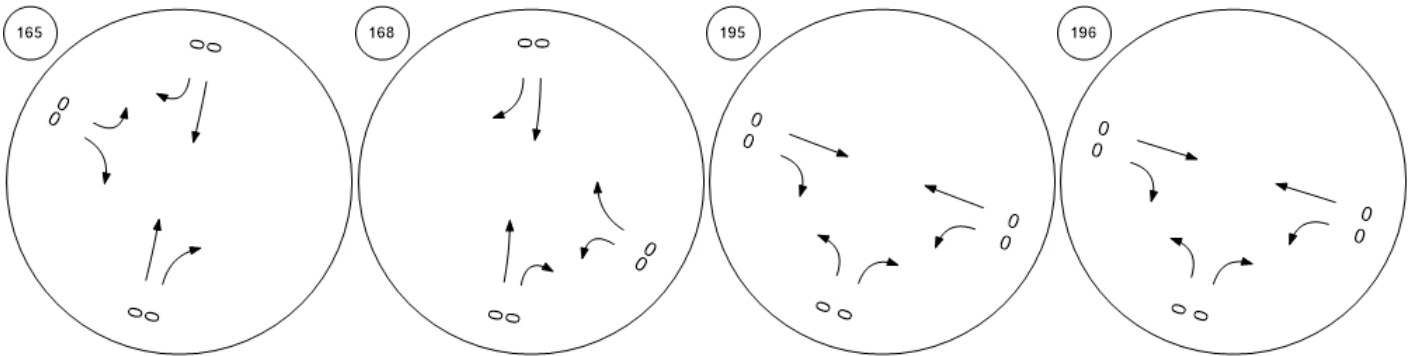
Traffic Volume - In-Process Volume



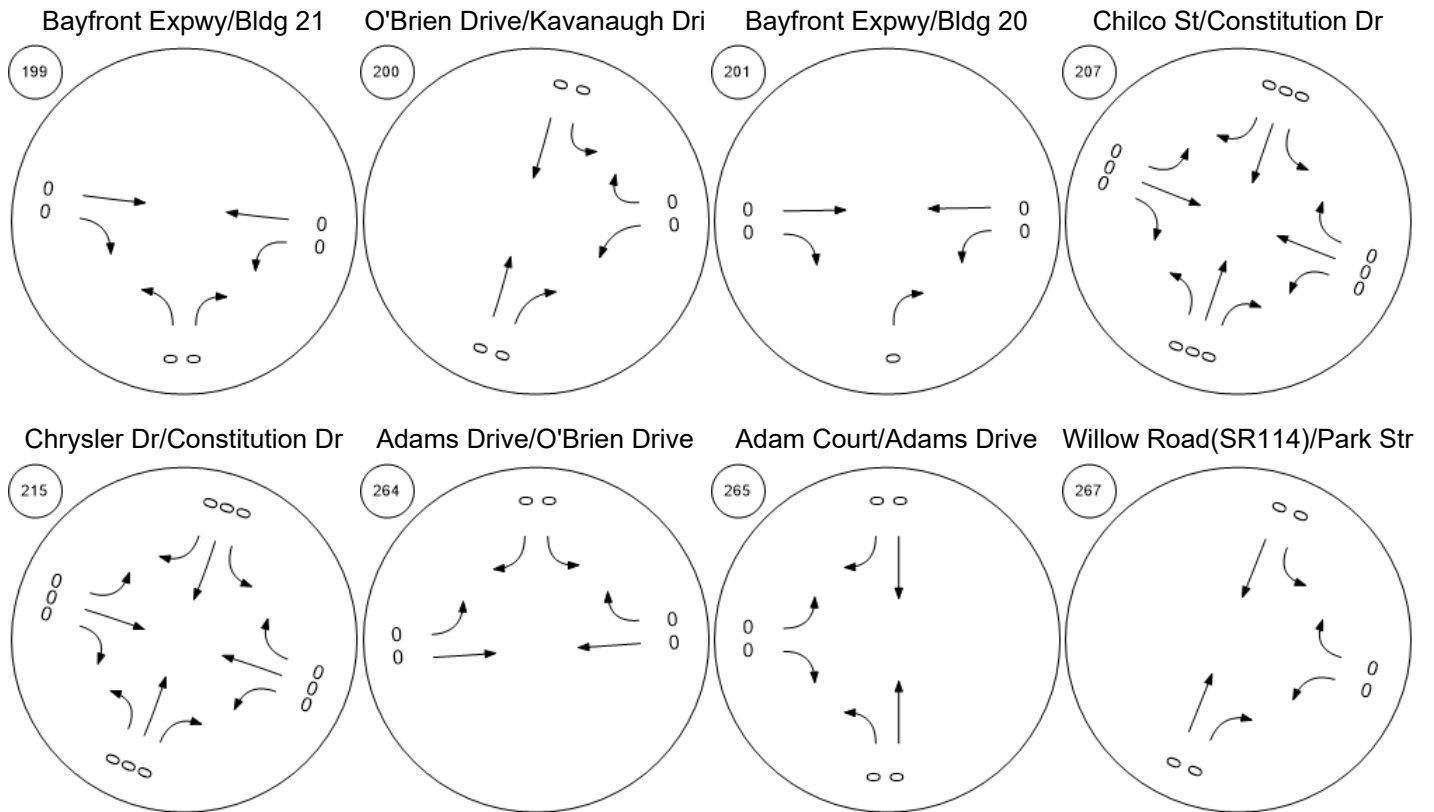
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



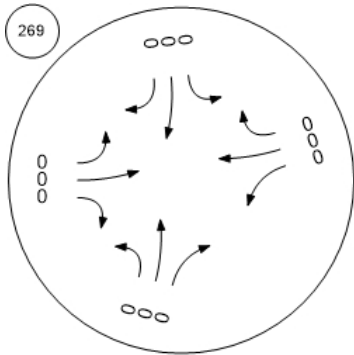
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

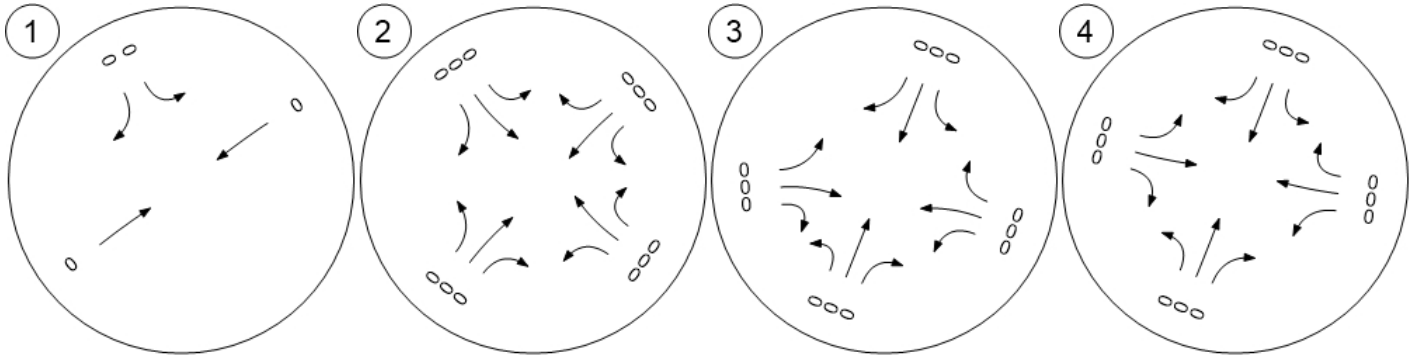


Traffic Volume - Net New Site Trips

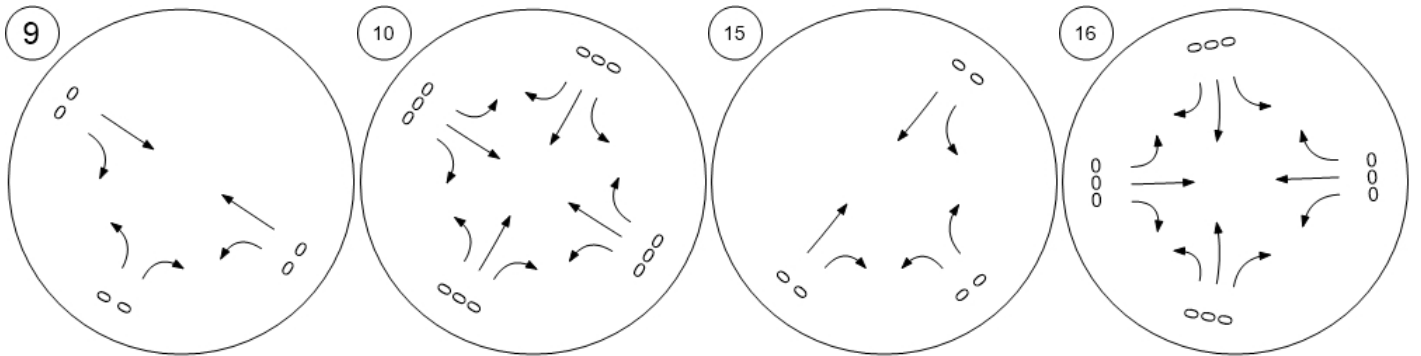


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow

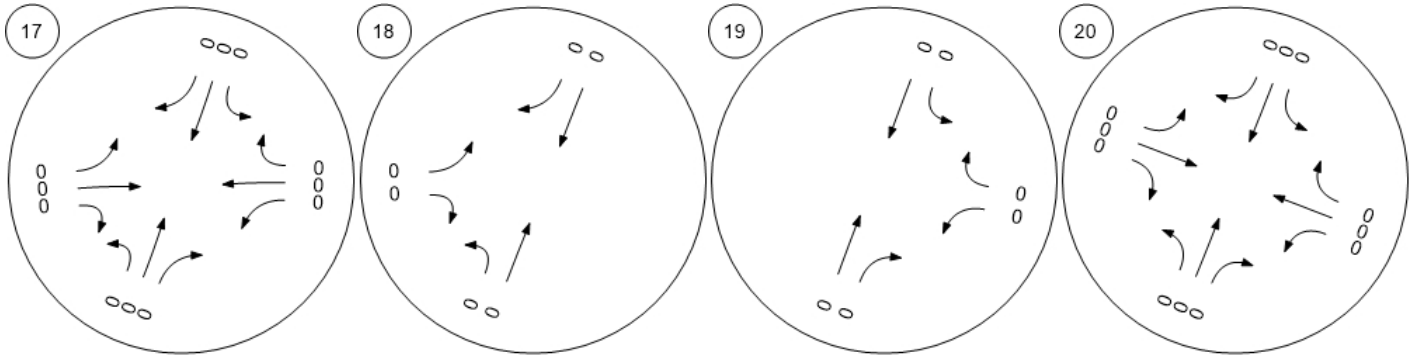




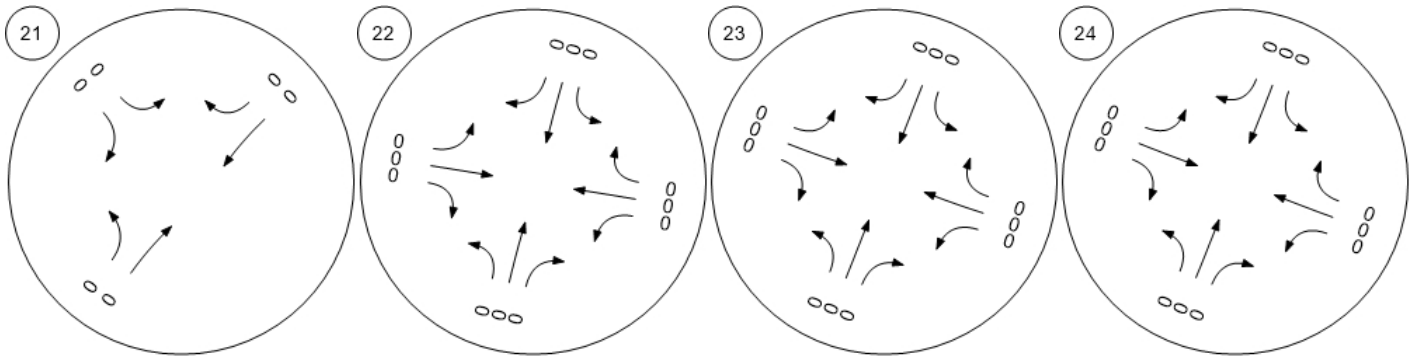
Traffic Volume - Net New Site Trips



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



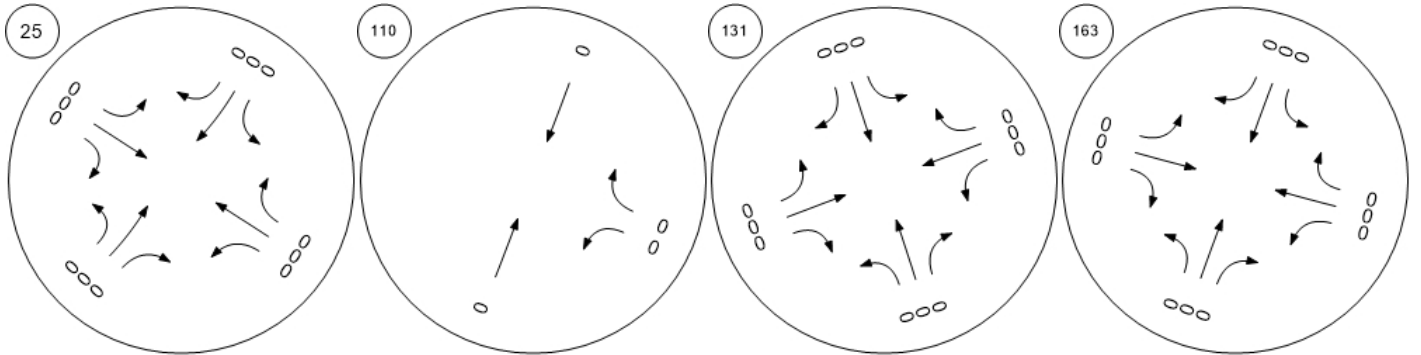
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



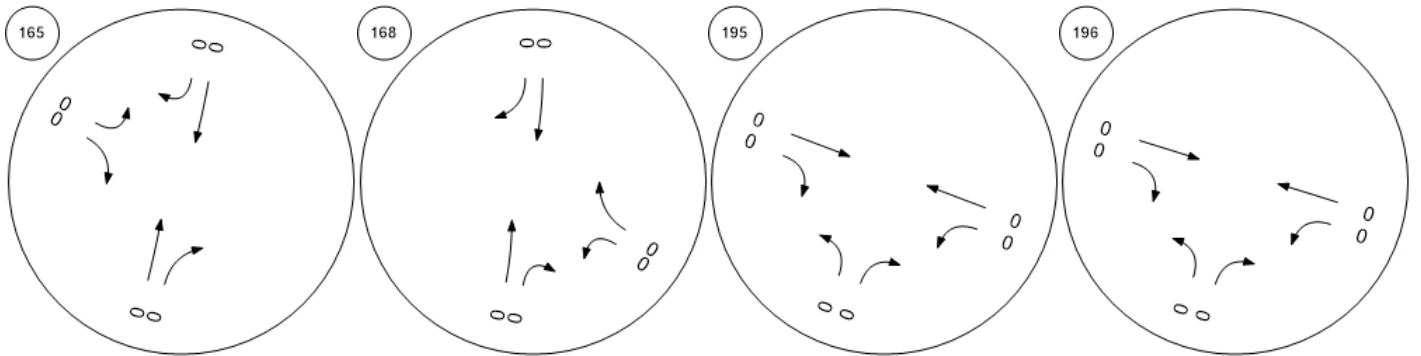
Traffic Volume - Net New Site Trips



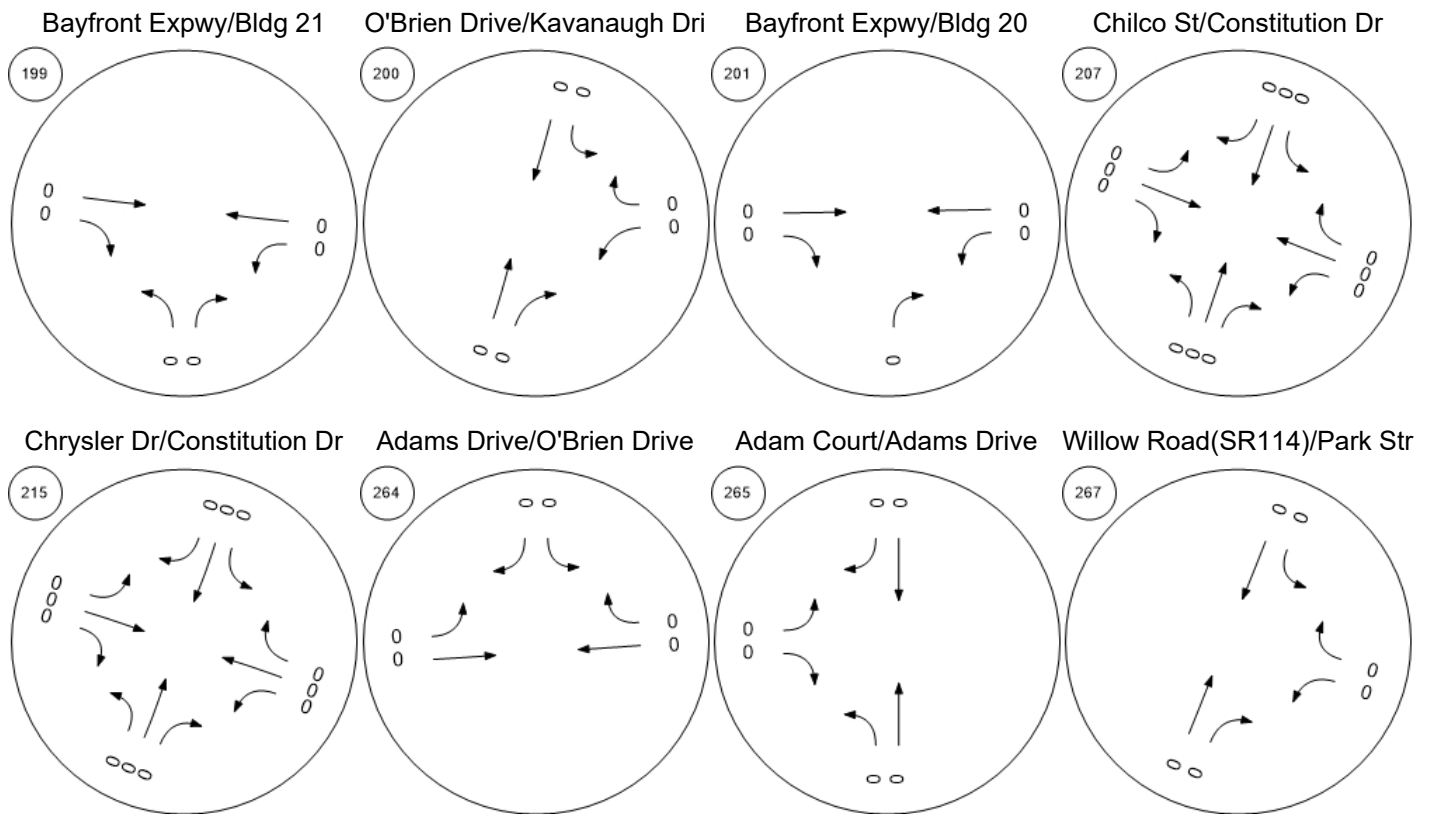
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



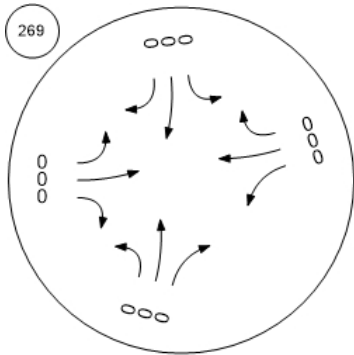
Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road

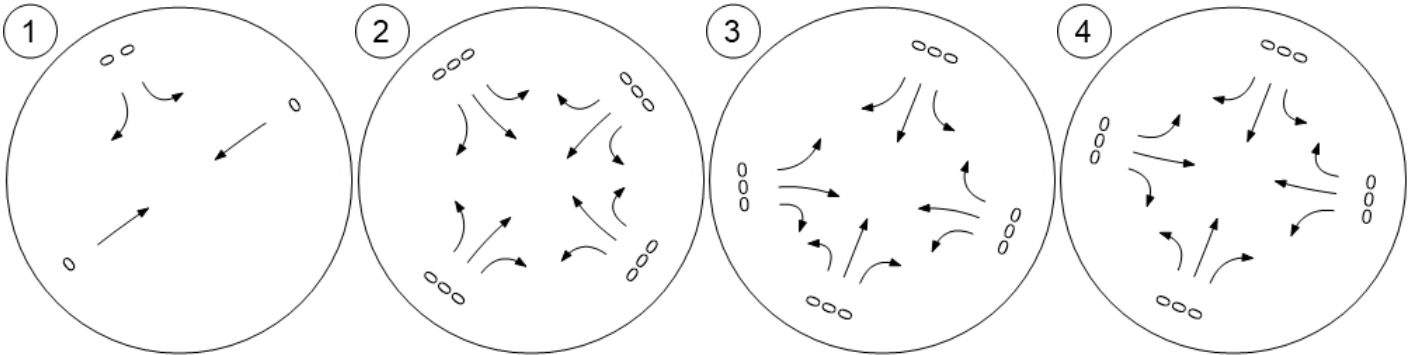


Traffic Volume - Other Volume

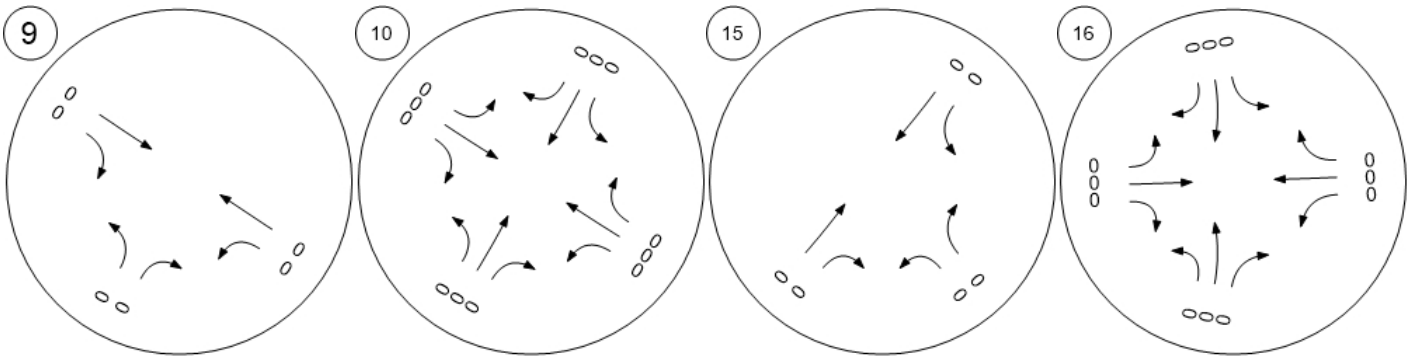


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



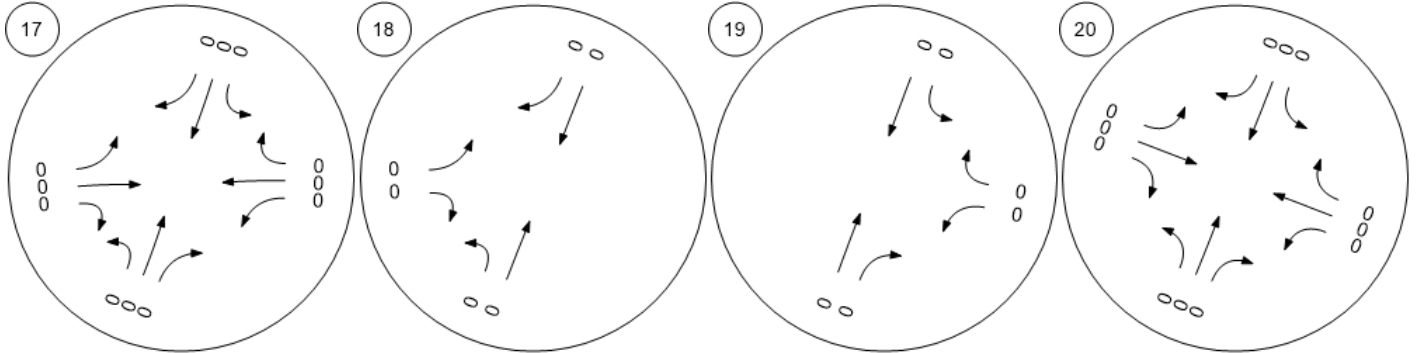
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



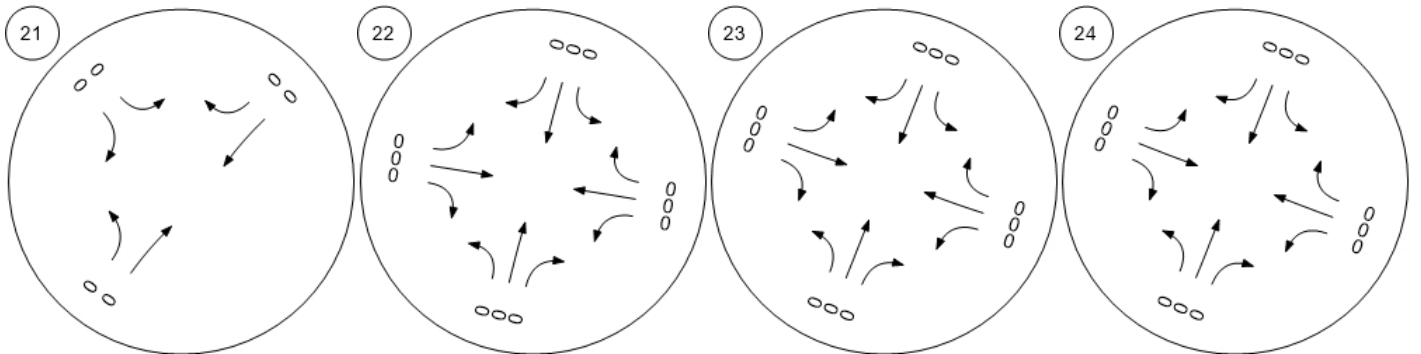
Traffic Volume - Other Volume



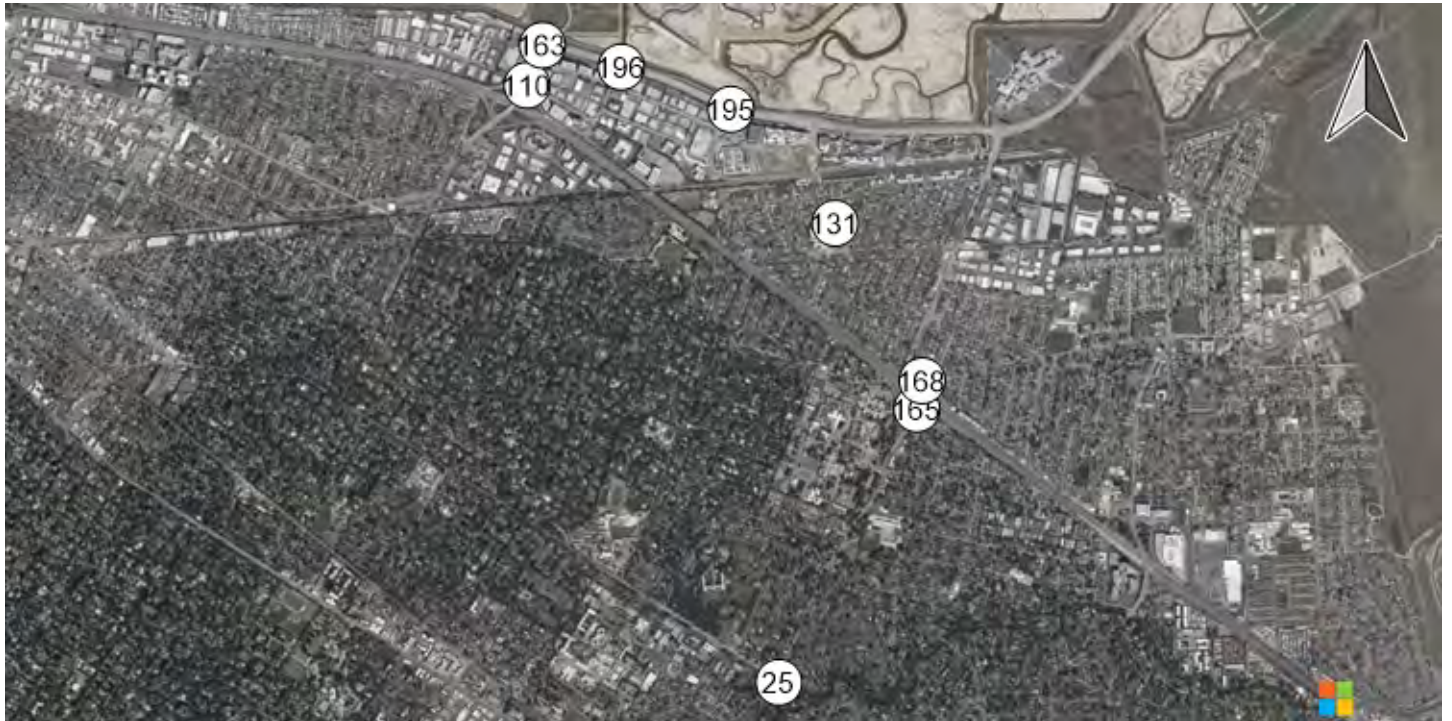
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



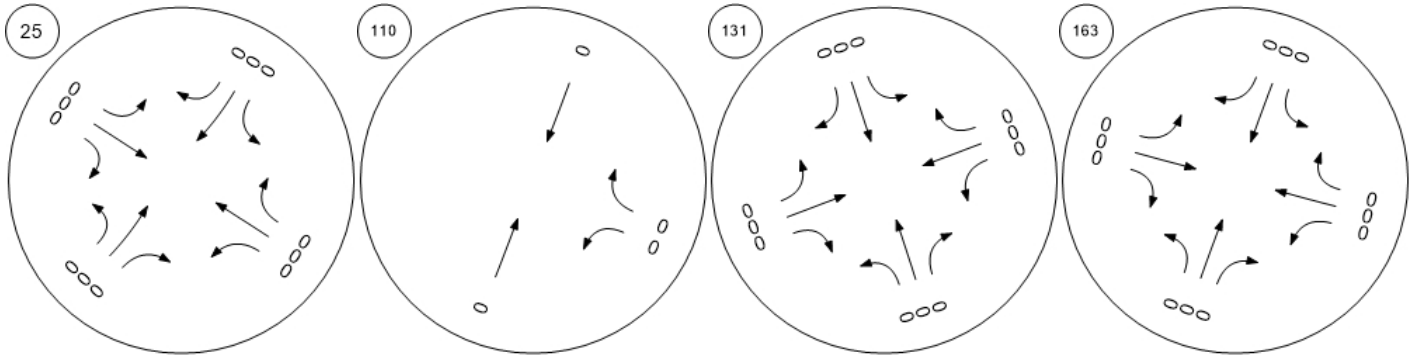
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



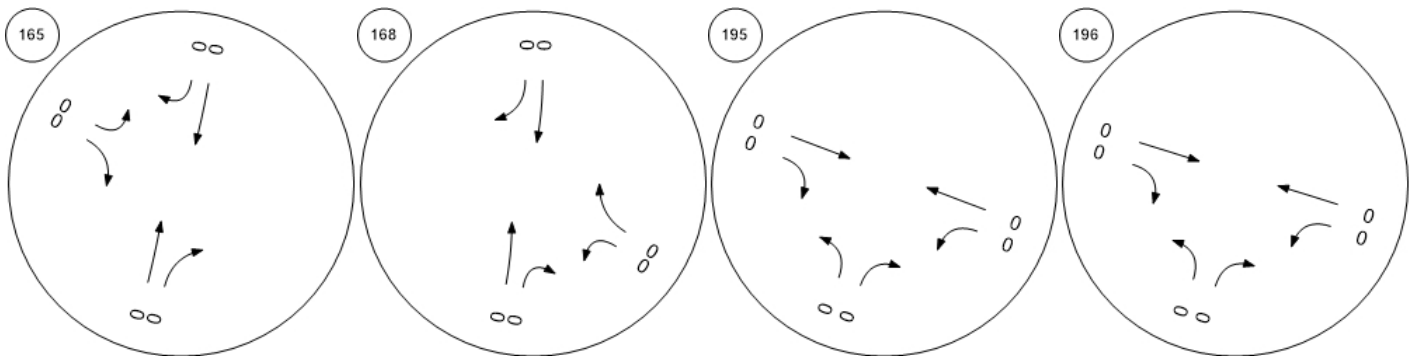
Traffic Volume - Other Volume



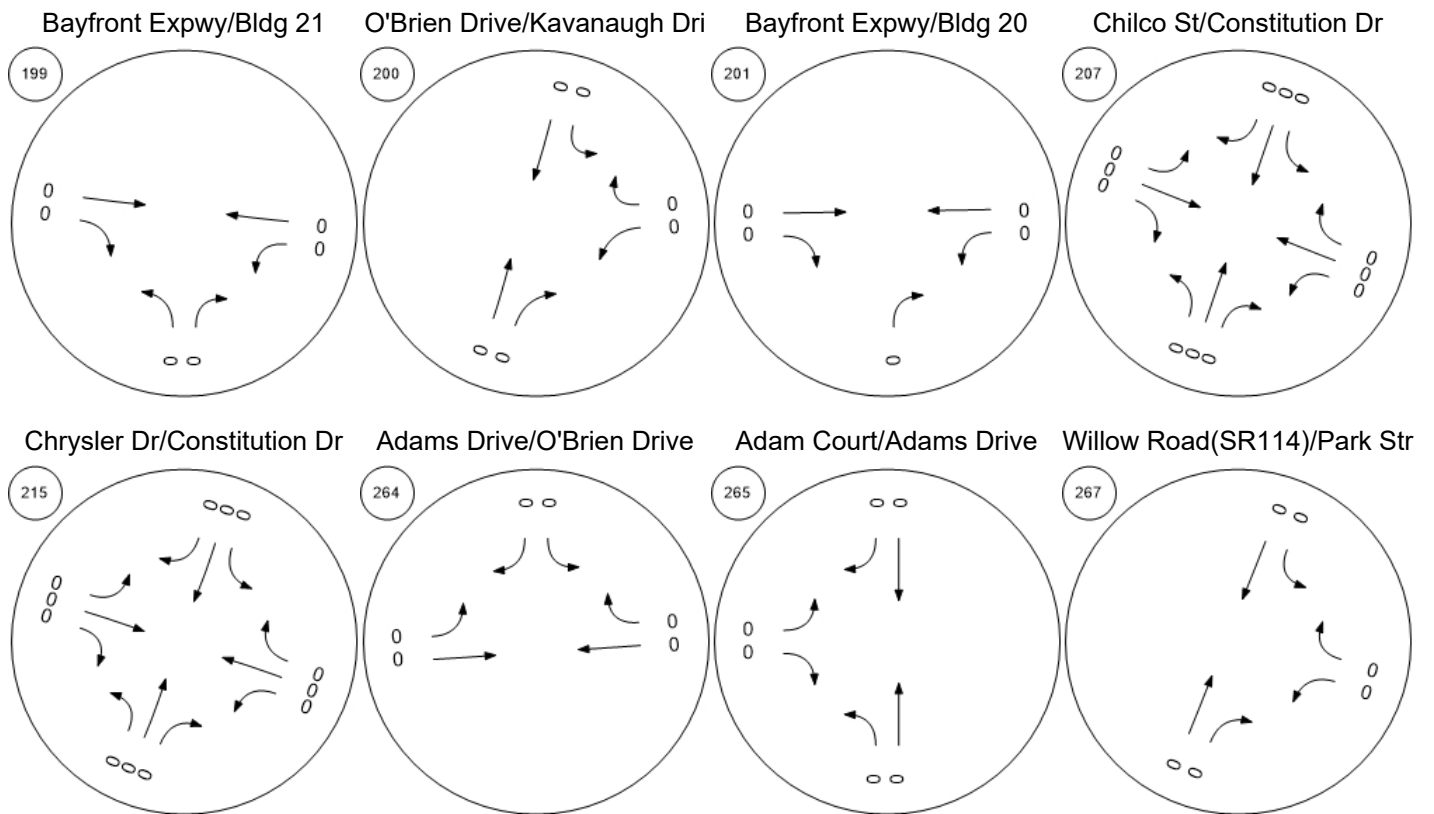
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



Traffic Volume - Other Volume

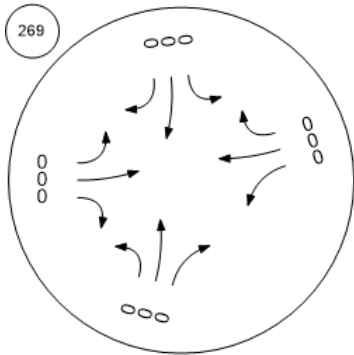




Traffic Volume - Other Volume



O'Brien Drive/Loop Road

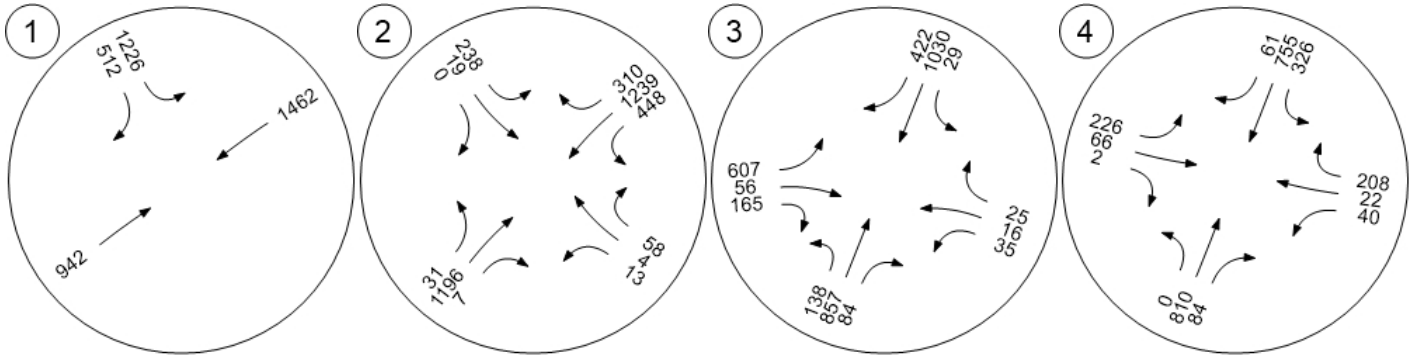


Traffic Volume - Future Total Volume

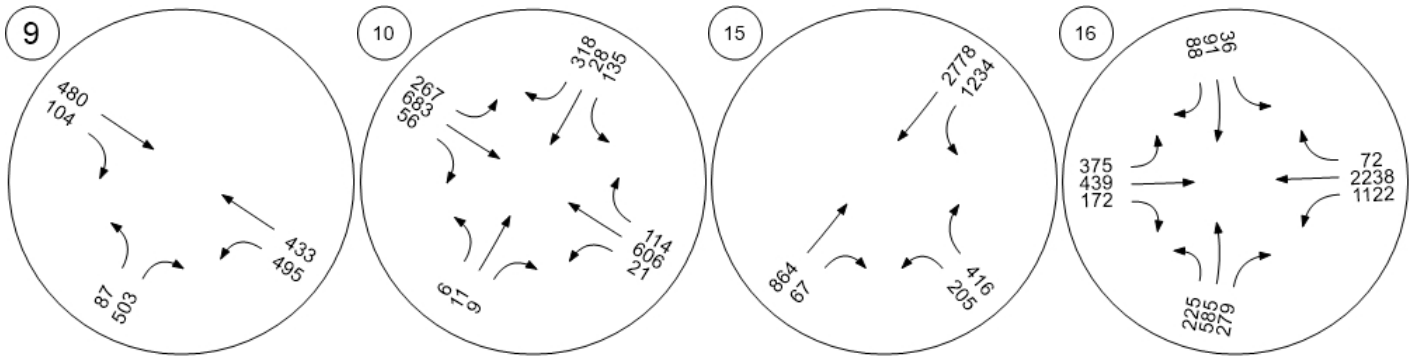


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



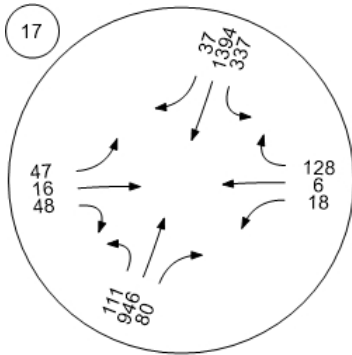
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



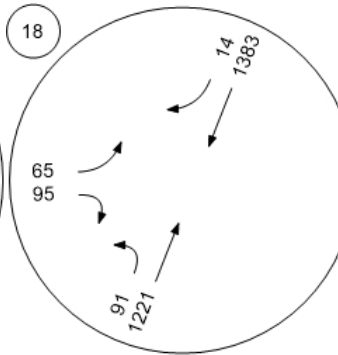
Traffic Volume - Future Total Volume



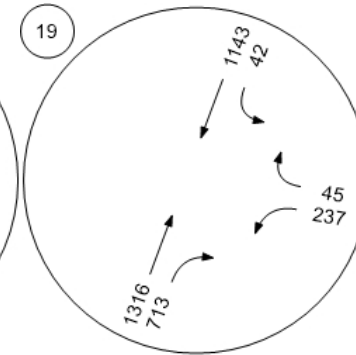
Willow Rd (SR 114)/Hamilton



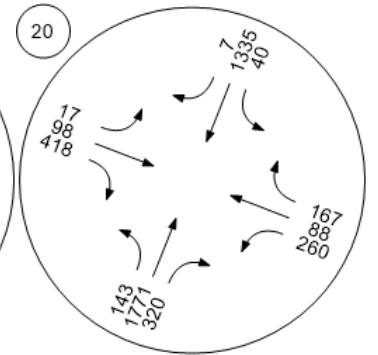
Willow Rd (SR 114)/Ivy Dr



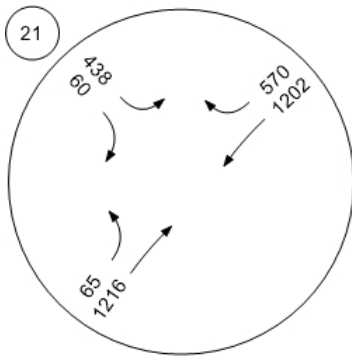
Willow Rd (SR 114)/O'Brien



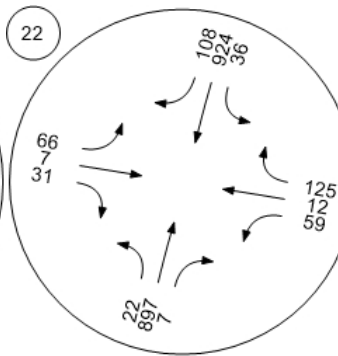
Willow Rd (SR 114)/Newbrid



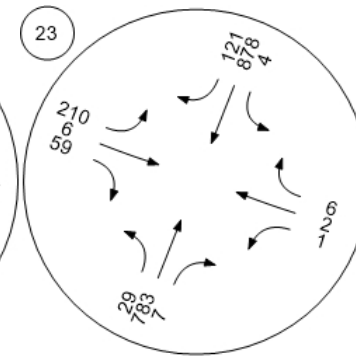
Willow Rd/Bay Rd



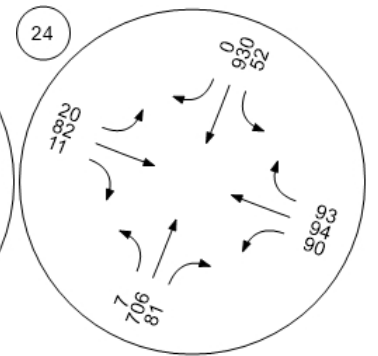
Willow Rd/Durham St-VA Me



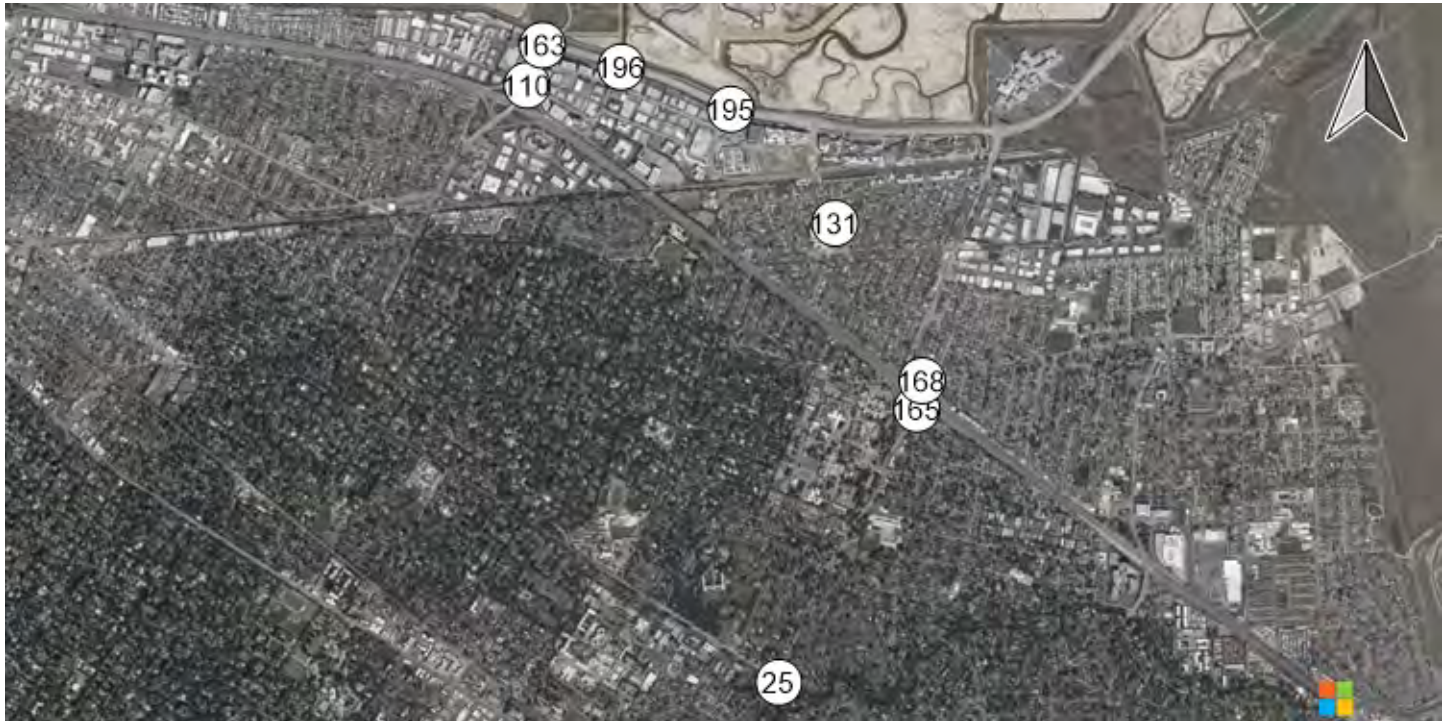
Willow Rd/Coleman Ave



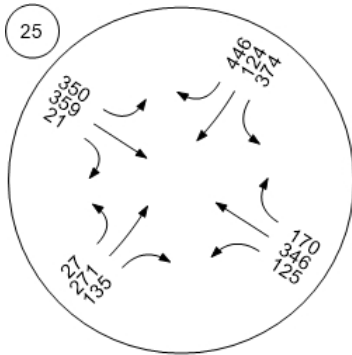
Willow Rd/Gilbert Ave



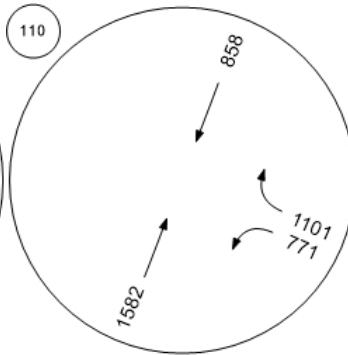
Traffic Volume - Future Total Volume



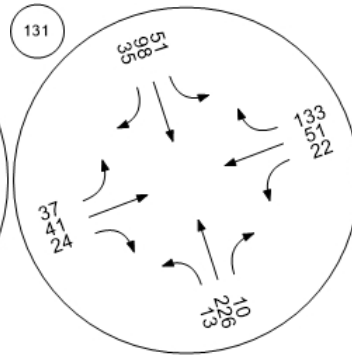
Middlefield Rd-Willow Rd



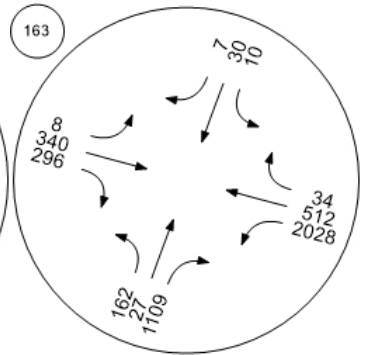
Marsh Road and US 101 NB



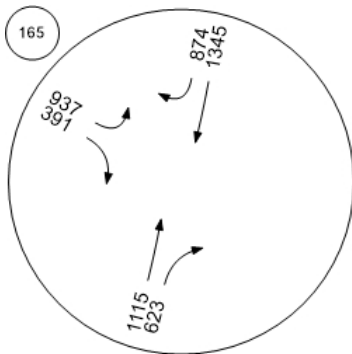
Chilco Street/Hamilton Avenue



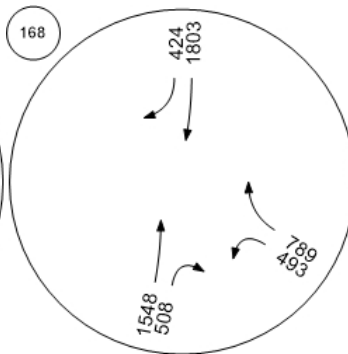
Bayfront Expy/Marsh Rd



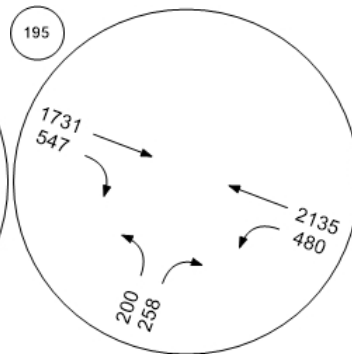
Willow Rd/US-101 SB Ramps



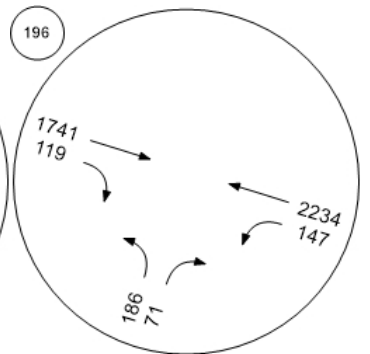
Willow Rd/US-101 NB Ramp



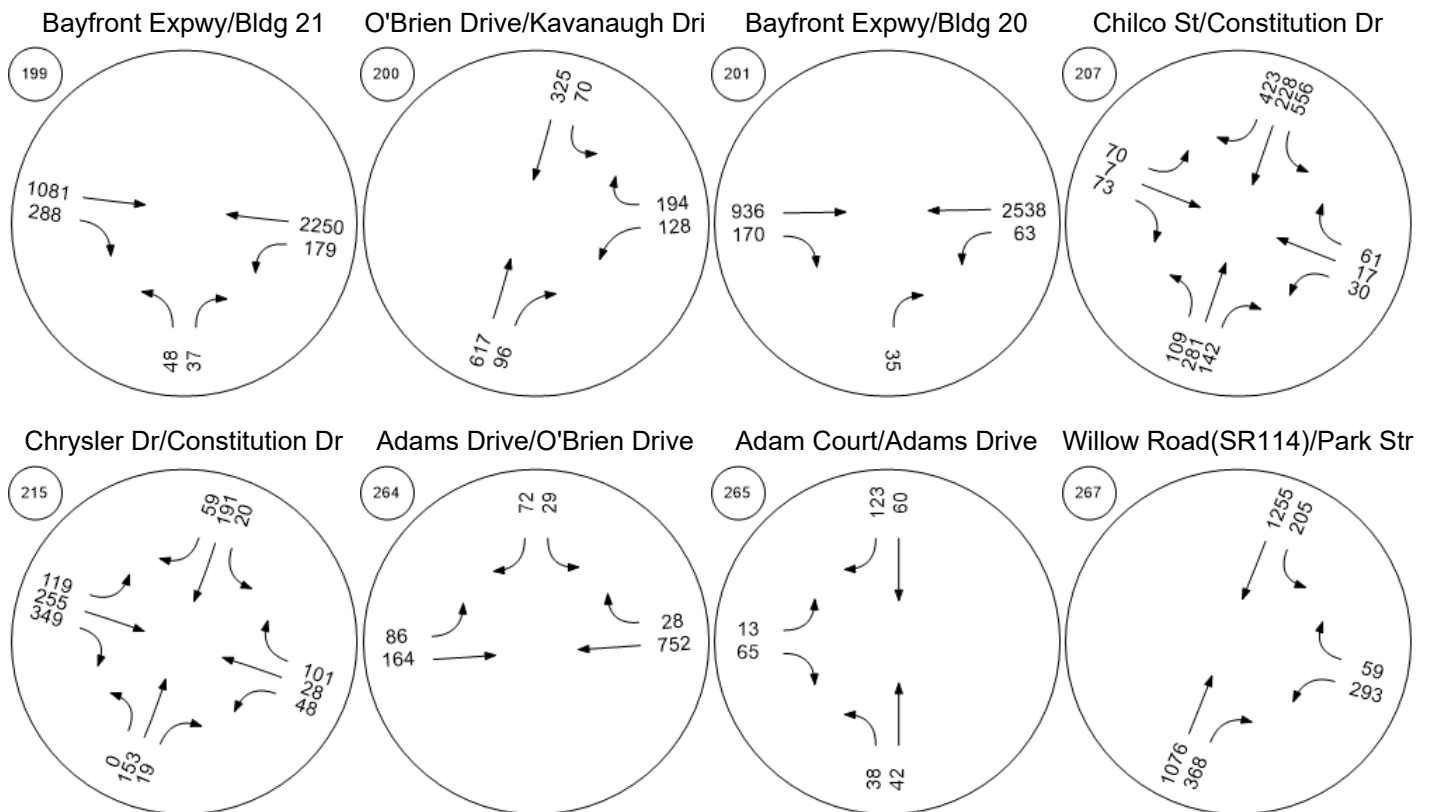
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



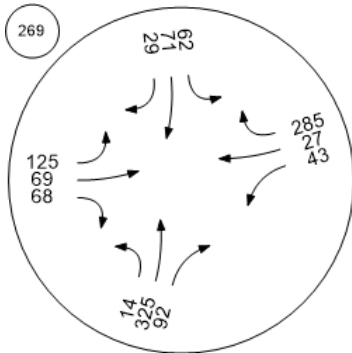
Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road

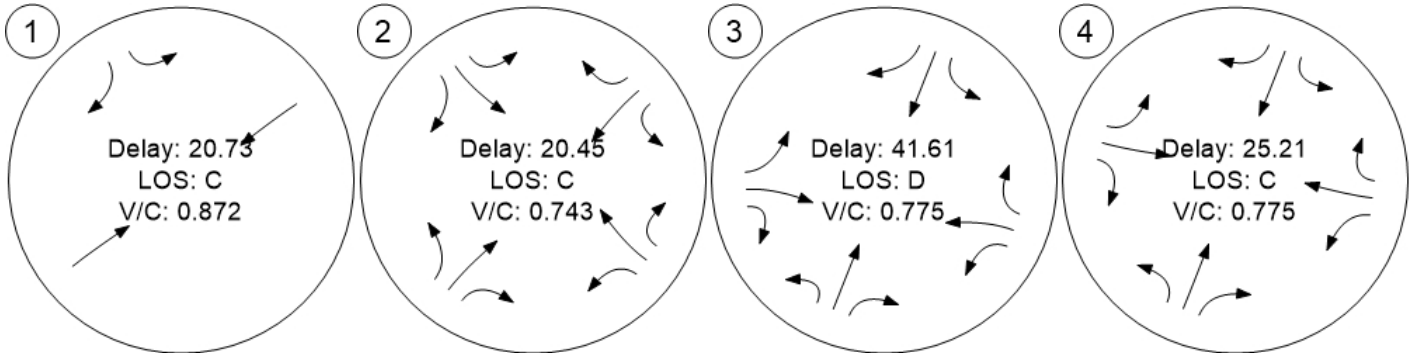


Traffic Conditions

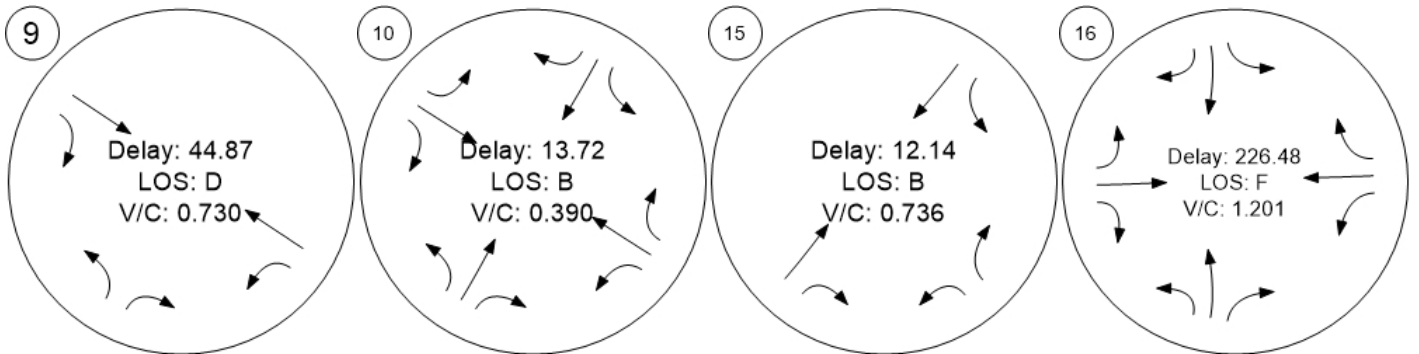


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



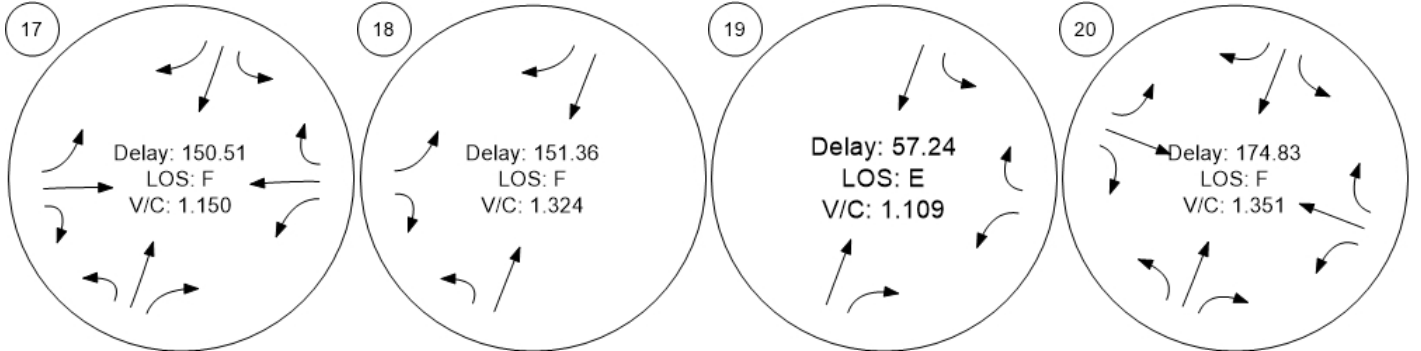
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



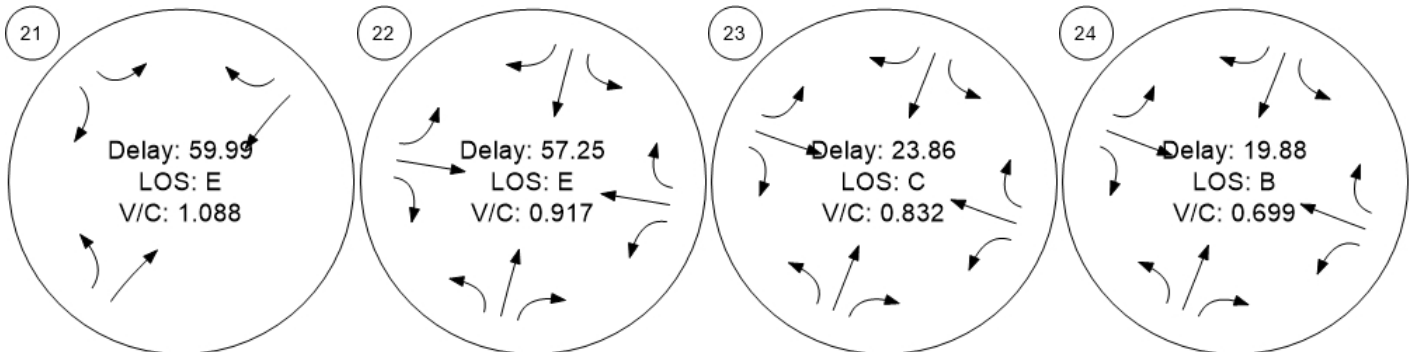
Traffic Conditions



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid

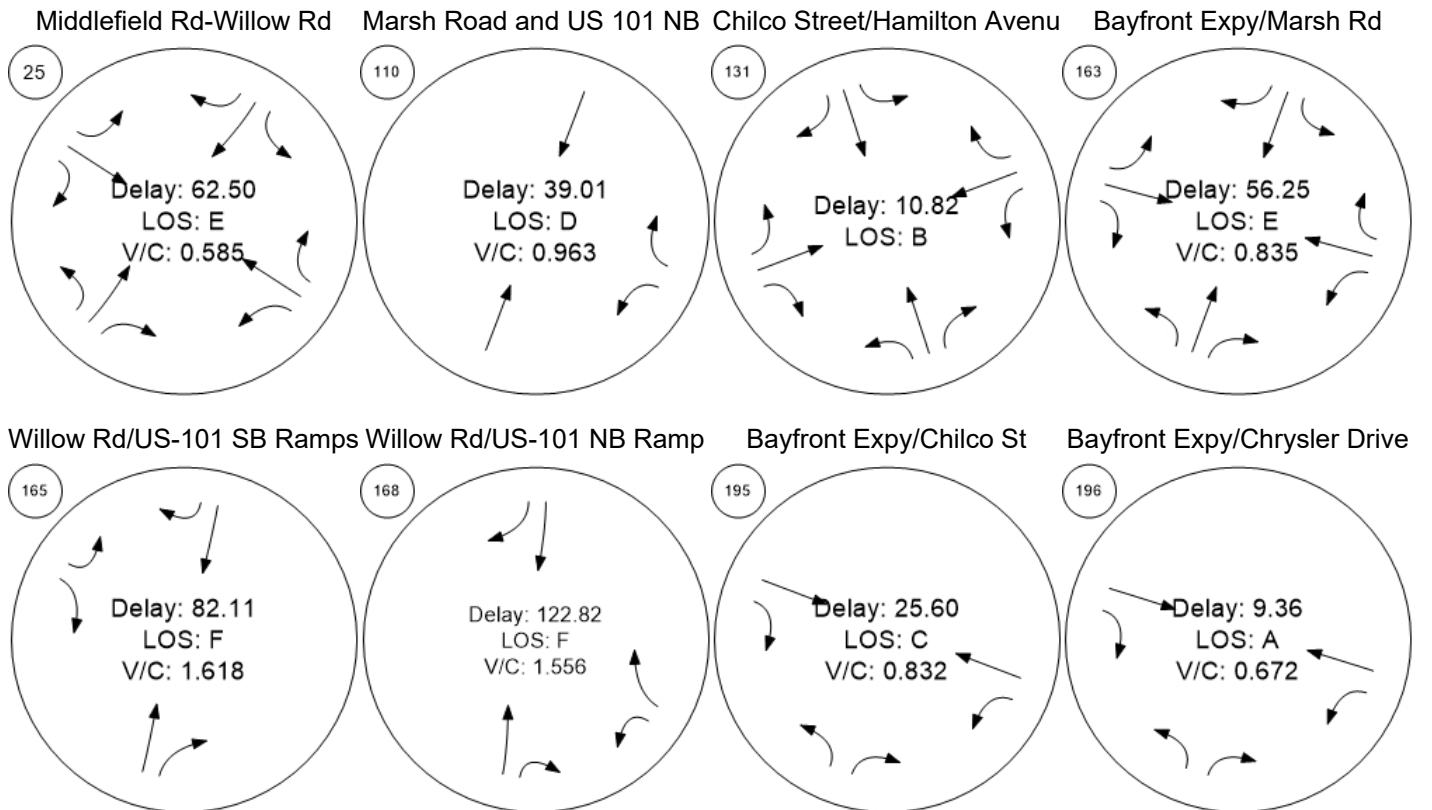
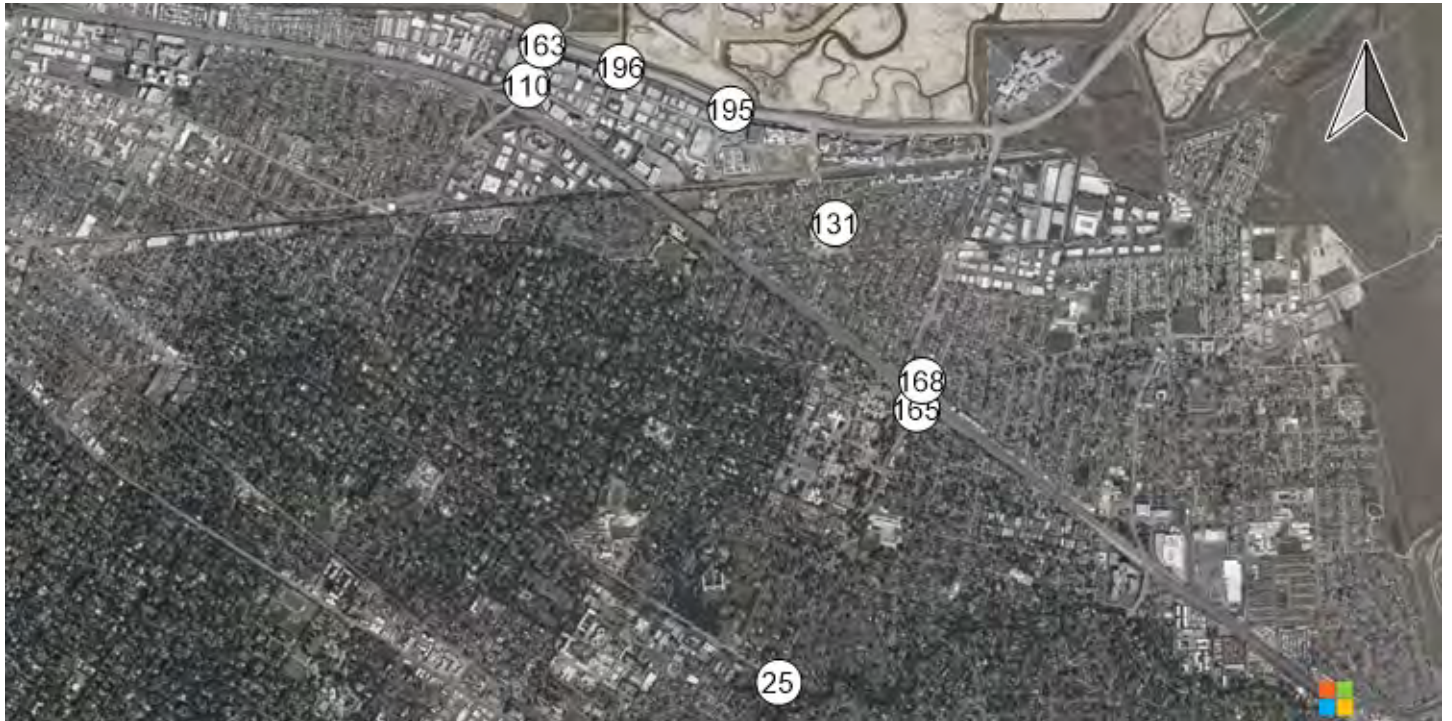


Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave

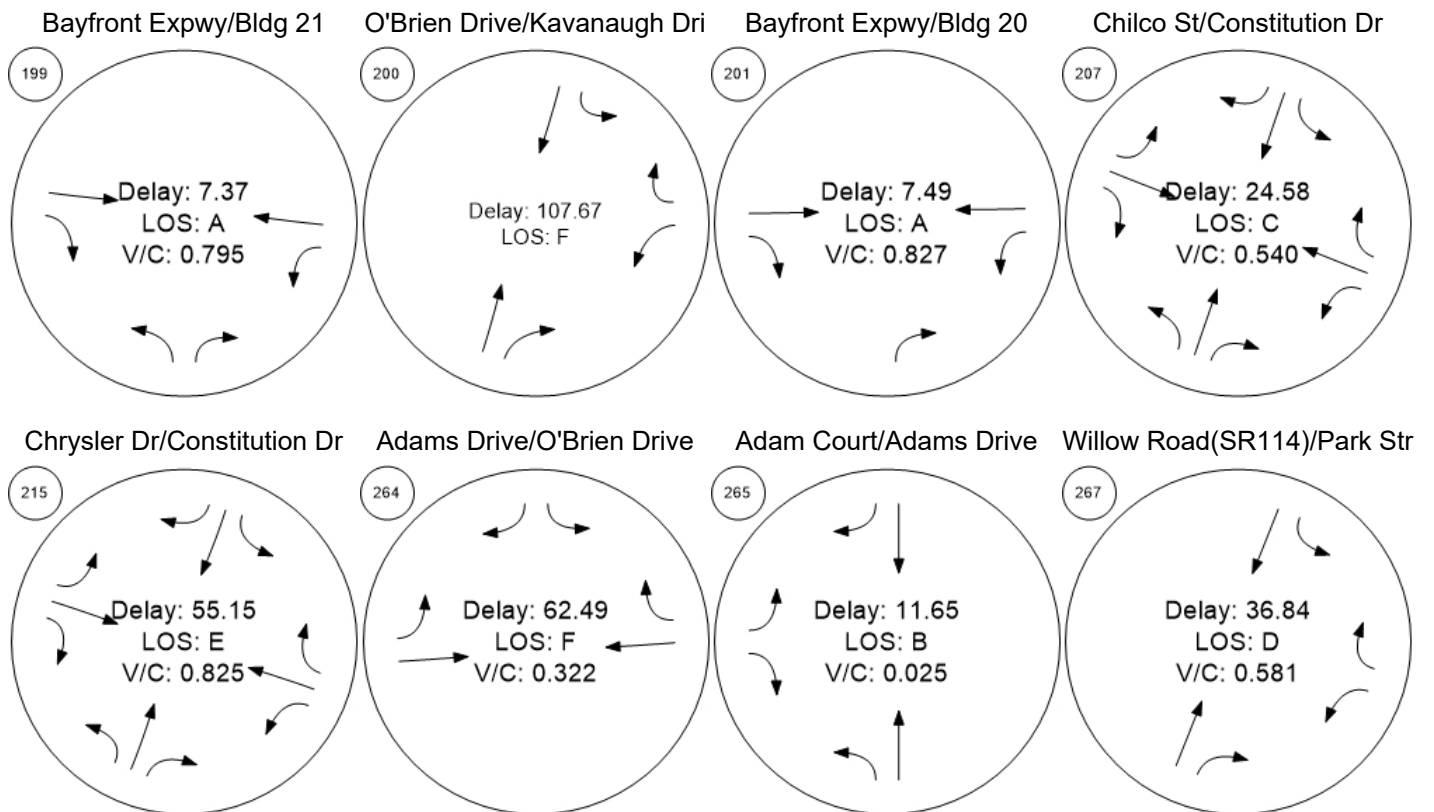




Traffic Conditions



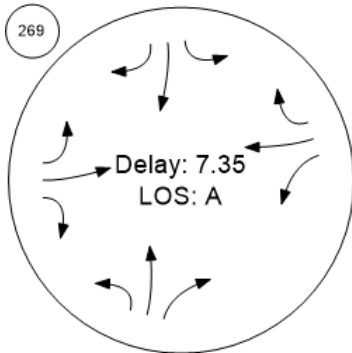
Traffic Conditions



Traffic Conditions

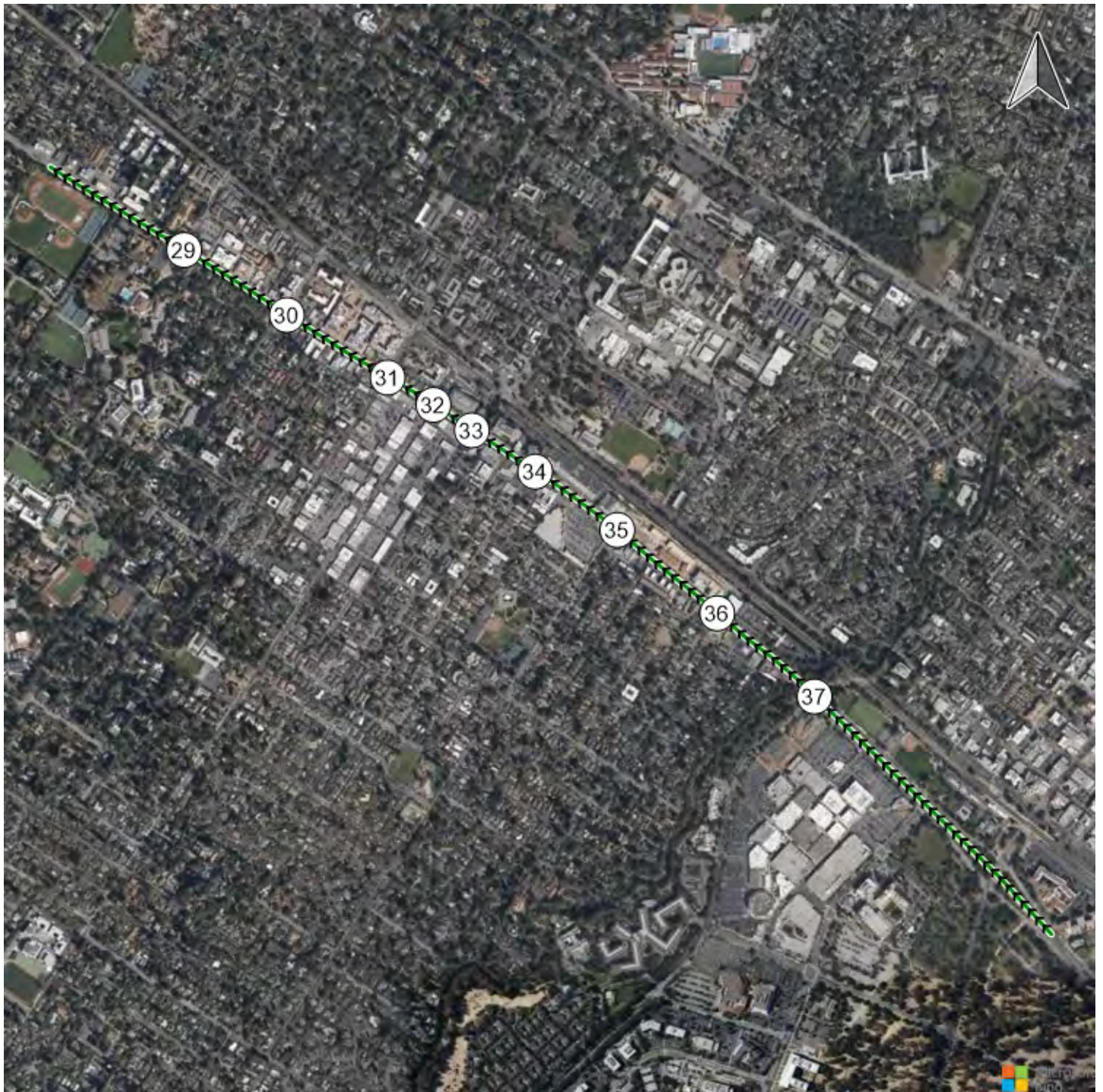


O'Brien Drive/Loop Road



Time Space Diagram - Flowing Off

Route 1: ECR NB



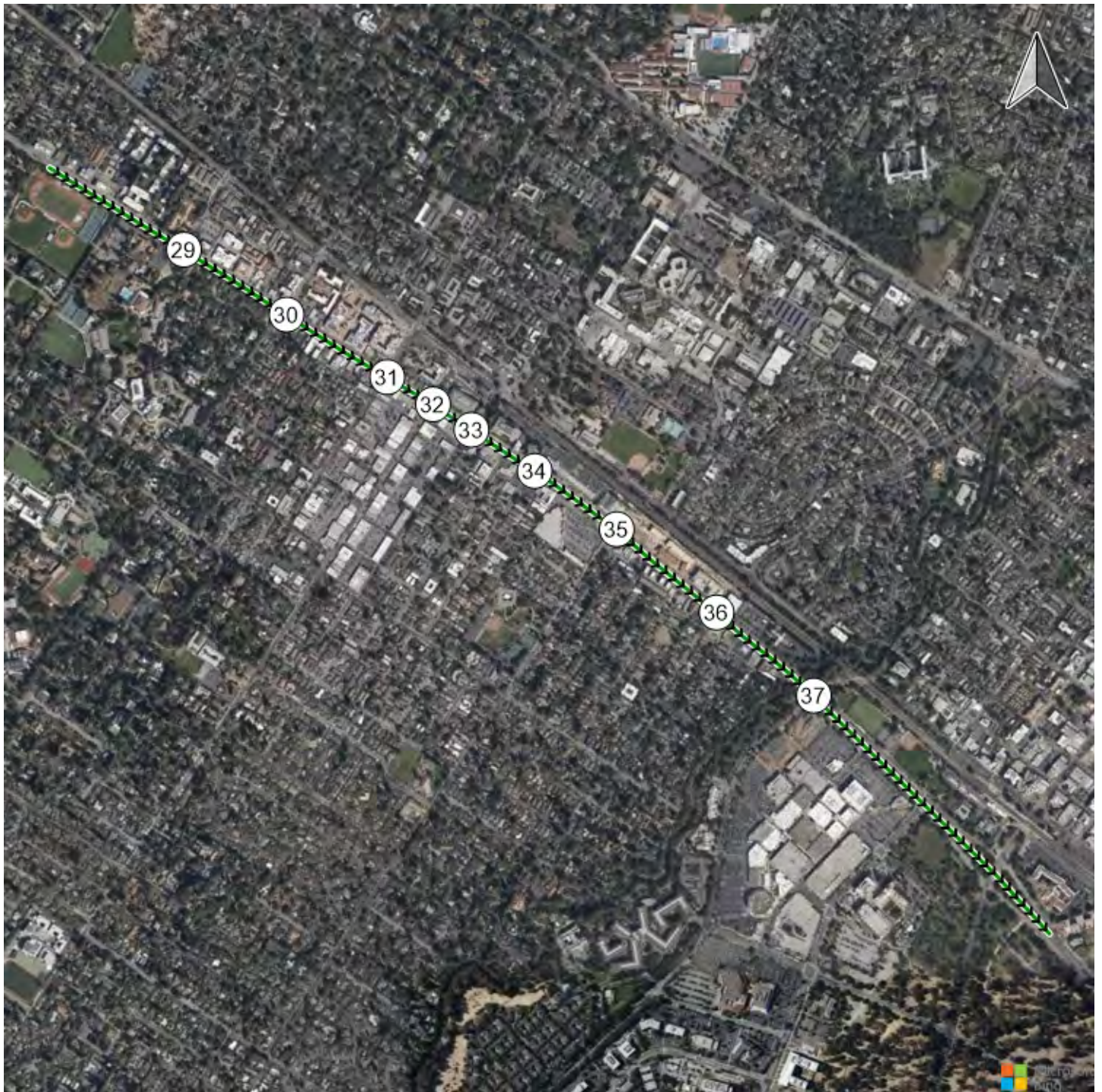
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Route 1: ECR NB

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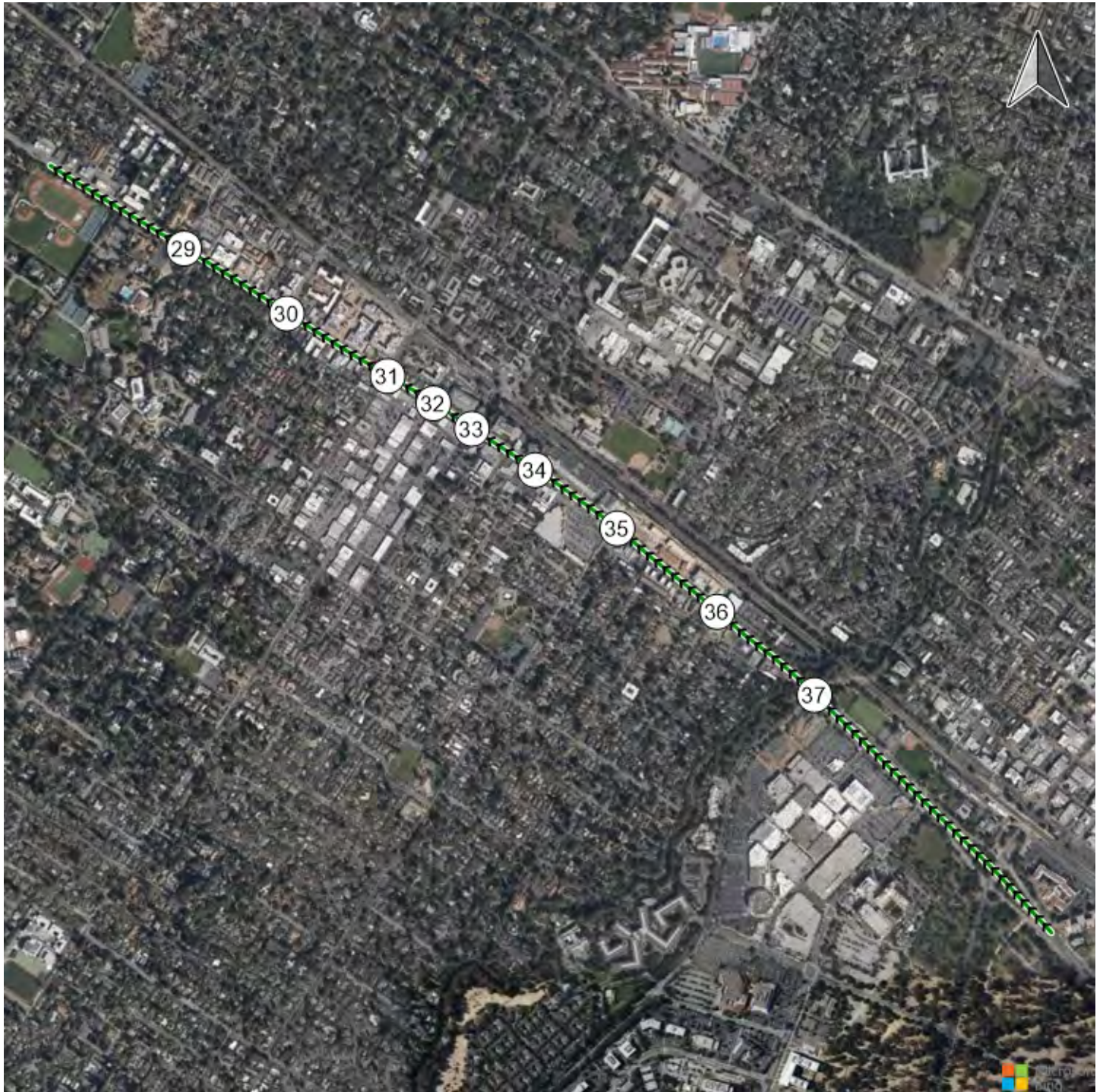
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB





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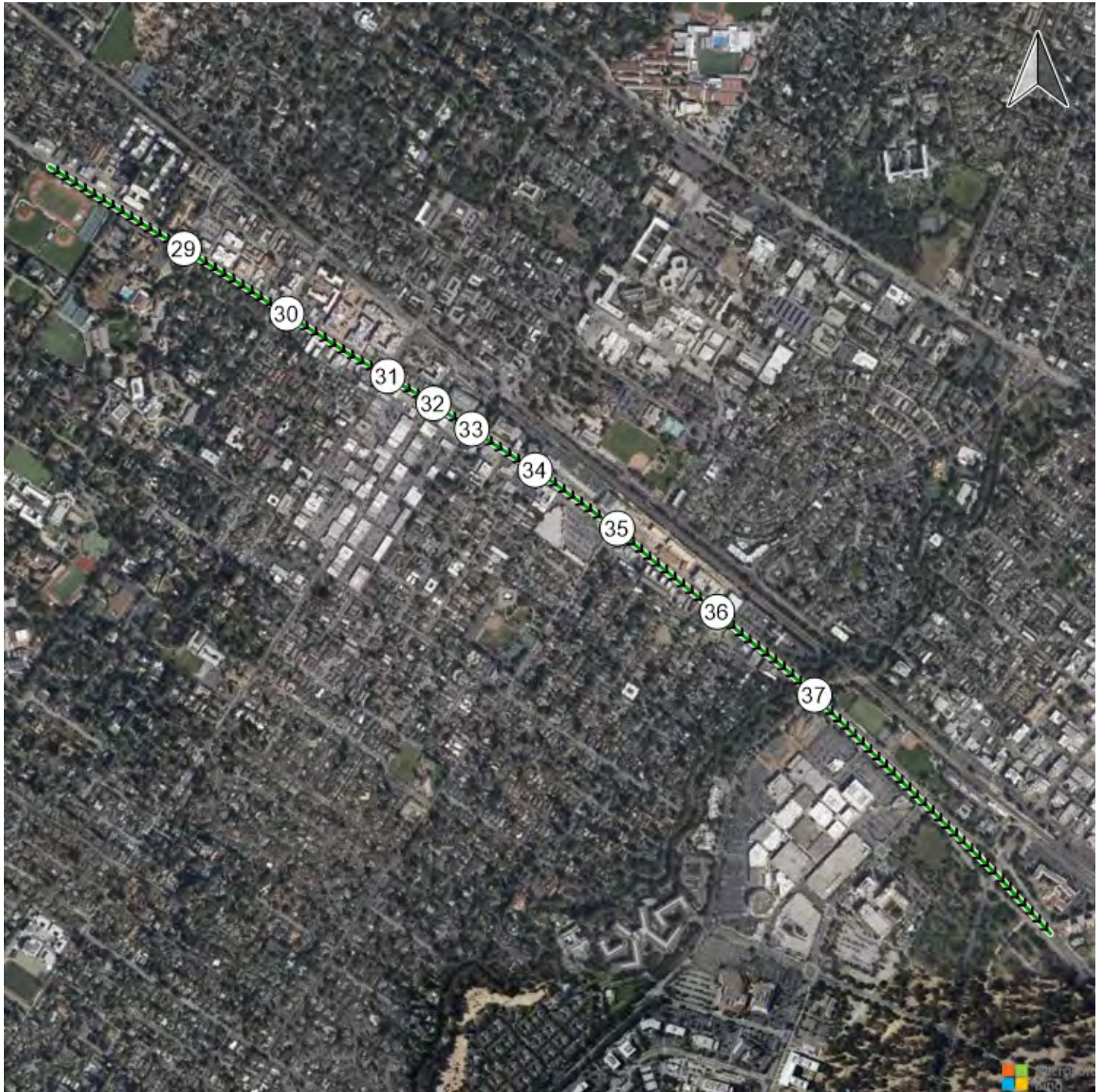
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



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Route 2: ECR SB

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Vistro File: P:\...\Vistro\_AllScenarios\_PM\_2021-12-29\_ChilconConstitution\_OZ.vistro

Scenario 18 Near-Term PM (2025 vols)+Project

Report File: P:\...\Near-Term + P PM.pdf

12/30/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Left	0.740	17.6	B
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.498	15.9	B
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.731	37.3	D
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.652	19.1	B
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NEB Left	2.402	17.9	B
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 6th Edition	NEB Left	0.435	15.4	B
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Right	1.083	108.7	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	SB Thru	1.224	175.0	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	SB Left	1.673	404.6	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	SB Right	1.239	116.6	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	WB Right	1.390	185.0	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.283	151.3	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.378	201.3	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.231	197.2	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.650	10.8	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.535	12.4	B
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NWB Right	0.617	34.7	C
			HCM 6th				

110	Marsh Road/101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	0.886	16.8	B
131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	SB Thru	1.004	38.0	E
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	SB Right	0.949	38.7	D
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.692	96.0	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.120	148.9	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	0.987	35.9	D
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.856	18.3	B
199	Bafront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.826	15.0	B
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	1.206	73.7	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.768	9.4	A
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	EB Right	0.783	54.3	D
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	WB Right	0.549	30.4	C
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	1.288	304.2	F
265	Adam Court/ Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.065	11.9	B
267	Willow Road(SR114)/Park Street	Signalized	HCM 6th Edition	SB Left	0.694	17.5	B
269	O'Brien Drive/Loop Road	Roundabout	HCM 6th Edition	SB Thru		9.2	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↶↷↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	959	1034	279	1263	349
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	959	1034	279	1263	349
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	245	264	70	322	89
Total Analysis Volume [veh/h]	0	979	1055	279	1289	356
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	7	0	5	0
Pedestrian Clearance [s]	0	0	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	43	41	33	33
g / C, Green / Cycle	0.53	0.51	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.24	0.30	0.38	0.22
s, saturation flow rate [veh/h]	4000	3540	3414	1609
c, Capacity [veh/h]	2139	1801	1396	658
d1, Uniform Delay [s]	11.44	13.74	22.43	17.93
k, delay calibration	0.50	0.50	0.04	0.09
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	1.40	1.20	0.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.46	0.59	0.92	0.54
d, Delay for Lane Group [s/veh]	12.15	15.14	23.63	18.50
Lane Group LOS	B	B	C	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.89	6.22	10.83	4.78
50th-Percentile Queue Length [ft/ln]	122.35	155.48	270.78	119.58
95th-Percentile Queue Length [veh/ln]	8.52	10.31	16.23	8.37
95th-Percentile Queue Length [ft/ln]	213.05	257.73	405.71	209.25

**Movement, Approach, & Intersection Results**

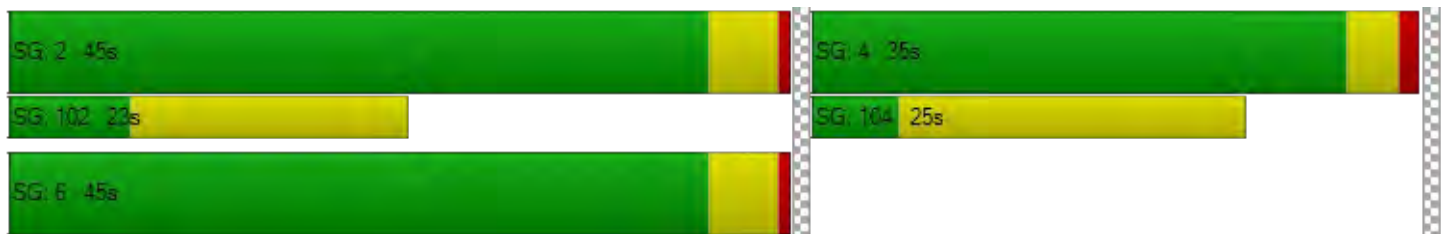
d_M, Delay for Movement [s/veh]	0.00	12.15	15.14	0.00	23.63	18.50
Movement LOS		B	B		C	B
d_A, Approach Delay [s/veh]	12.15		15.14		22.52	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	17.65					
Intersection LOS	B					
Intersection V/C	0.740					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	29.73
I_p,int, Pedestrian LOS Score for Intersection	2.806	0.000	2.468
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.81	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.367	2.430	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.498

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	40	1327	7	55	896	200	15	5	388	272	6	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	3.70	0.00	1.70	1.30	7.70	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	326	0	0	0
Total Hourly Volume [veh/h]	40	1327	7	55	896	200	15	5	62	272	6	4
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	346	2	14	233	52	4	1	16	71	2	1
Total Analysis Volume [veh/h]	42	1382	7	57	933	208	16	5	65	283	6	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			0			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			0			1	
v_co, Outbound Pedestrian Volume crossing		0			0			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			1			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	51	0	12	48	0	0	41	0	0	36	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	6	102	102	101	101	101	8	8	17	17
g / C, Green / Cycle	0.04	0.73	0.73	0.72	0.72	0.72	0.06	0.06	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.26	0.26	0.06	0.31	0.32	0.01	0.02	0.08	0.08
s, saturation flow rate [veh/h]	1761	3549	1859	887	1877	1745	1830	2820	1791	1697
c, Capacity [veh/h]	79	2576	1349	663	1353	1258	105	162	214	203
d1, Uniform Delay [s]	65.38	7.08	7.08	7.23	7.94	7.98	62.86	63.60	59.17	59.17
k, delay calibration	0.08	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.09	0.38	0.73	0.02	1.02	1.12	0.68	1.19	3.09	3.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.53	0.35	0.35	0.09	0.43	0.44	0.20	0.40	0.70	0.70
d, Delay for Lane Group [s/veh]	69.46	7.46	7.81	7.25	8.95	9.10	63.54	64.79	62.27	62.44
Lane Group LOS	E	A	A	A	A	A	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.55	4.76	5.12	0.25	7.00	6.65	0.74	1.16	5.37	5.10
50th-Percentile Queue Length [ft/ln]	38.84	119.06	127.99	6.26	175.02	166.33	18.55	28.94	134.17	127.41
95th-Percentile Queue Length [veh/ln]	2.80	8.34	8.83	0.45	11.34	10.88	1.34	2.08	9.17	8.80
95th-Percentile Queue Length [ft/ln]	69.91	208.54	220.76	11.26	283.50	272.09	33.39	52.08	229.15	219.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	69.46	7.58	7.81	7.25	9.01	9.10	63.54	63.54	64.79	62.35	62.44	62.44
Movement LOS	E	A	A	A	A	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	9.40			8.94			64.49			62.35		
Approach LOS	A			A			E			E		
d_I, Intersection Delay [s/veh]	15.95											
Intersection LOS	B											
Intersection V/C	0.498											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	58.49			58.49			59.41			59.41		
I_p,int, Pedestrian LOS Score for Intersection	2.925			3.143			2.918			2.110		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	657			615			526			454		
d_b, Bicycle Delay [s]	31.53			33.60			38.01			41.79		
I_b,int, Bicycle LOS Score for Intersection	2.347			2.548			2.239			2.043		
Bicycle LOS	B			B			B			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.731

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	208	675	39	13	825	384	445	20	178	109	54	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	174	0	0	0
Total Hourly Volume [veh/h]	208	675	39	13	825	384	445	20	4	109	54	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	181	10	3	222	103	120	5	1	29	15	11
Total Analysis Volume [veh/h]	224	726	42	14	887	413	478	22	4	117	58	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing in	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	55	55	12	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	90	90	4	73	73	24	24	24	14	14
g / C, Green / Cycle	0.14	0.64	0.64	0.03	0.52	0.52	0.17	0.17	0.17	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.13	0.21	0.21	0.01	0.37	0.38	0.14	0.14	0.00	0.07	0.06
s, saturation flow rate [veh/h]	1771	1852	1812	1714	1867	1638	1774	1817	1571	1751	1751
c, Capacity [veh/h]	252	1187	1161	45	979	859	307	315	272	179	179
d1, Uniform Delay [s]	58.85	11.41	11.41	66.82	24.88	25.36	55.48	55.48	47.87	60.32	59.74
k, delay calibration	0.48	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.18	0.73	0.75	1.45	4.09	5.15	3.68	3.60	0.02	2.96	2.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.89	0.33	0.33	0.31	0.70	0.72	0.80	0.80	0.01	0.65	0.56
d, Delay for Lane Group [s/veh]	92.03	12.14	12.17	68.27	28.97	30.51	59.16	59.07	47.89	63.28	61.79
Lane Group LOS	F	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.07	5.58	5.48	0.51	17.66	16.52	8.76	8.97	0.12	4.18	3.55
50th-Percentile Queue Length [ft/ln]	251.72	139.44	137.01	12.71	441.53	412.92	219.06	224.22	2.98	104.62	88.84
95th-Percentile Queue Length [veh/ln]	15.27	9.45	9.32	0.91	24.55	23.18	13.62	13.88	0.21	7.53	6.40
95th-Percentile Queue Length [ft/ln]	381.82	236.26	232.99	22.87	613.84	579.55	340.43	347.00	5.37	188.32	159.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	92.03	12.15	12.17	68.27	29.33	30.51	59.12	59.07	47.89	63.28	61.79	61.79
Movement LOS	F	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	30.19			30.11			59.03			62.59		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	37.29											
Intersection LOS	D											
Intersection V/C	0.731											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	59.37			59.37			59.37			59.37		
I_p,int, Pedestrian LOS Score for Intersection	2.886			3.031			2.679			2.041		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	721			578			458			469		
d_b, Bicycle Delay [s]	28.63			35.41			41.66			41.01		
I_b,int, Bicycle LOS Score for Intersection	2.378			2.644			2.678			1.919		
Bicycle LOS	B			B			B			A		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	745	58	167	701	97	71	16	2	65	15	295
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	745	58	167	701	97	71	16	2	65	15	295
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	209	16	47	197	27	20	4	1	18	4	83
Total Analysis Volume [veh/h]	2	837	65	188	788	109	80	18	2	73	17	331
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			6			0			6	
v_di, Inbound Pedestrian Volume crossing in		0			6			0			6	
v_co, Outbound Pedestrian Volume crossing		0			3			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			1			5			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	34	34	12	49	49	26	26
g / C, Green / Cycle	0.43	0.43	0.15	0.62	0.62	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.10	0.24	0.24	0.14	0.26
s, saturation flow rate [veh/h]	1863	1647	1795	1885	1793	713	1642
c, Capacity [veh/h]	840	702	273	1161	1104	314	589
d1, Uniform Delay [s]	17.73	17.76	32.18	7.81	7.83	21.25	24.16
k, delay calibration	0.50	0.50	0.11	0.50	0.50	0.23	0.33
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.81	3.84	3.09	1.01	1.07	1.24	4.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.61	0.69	0.39	0.40	0.32	0.71
d, Delay for Lane Group [s/veh]	20.54	21.61	35.27	8.81	8.90	22.49	29.02
Lane Group LOS	C	C	D	A	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.86	6.26	3.54	3.60	3.48	1.57	7.55
50th-Percentile Queue Length [ft/ln]	171.40	156.55	88.60	90.10	87.00	39.23	188.76
95th-Percentile Queue Length [veh/ln]	11.15	10.37	6.38	6.49	6.26	2.82	12.06
95th-Percentile Queue Length [ft/ln]	278.76	259.14	159.48	162.17	156.60	70.61	301.42



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	20.54	21.00	21.61	35.27	8.85	8.90	22.49	22.49	22.49	29.02	29.02	29.02
Movement LOS	C	C	C	D	A	A	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	21.04			13.43			22.49			29.02		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	19.15											
Intersection LOS	B											
Intersection V/C	0.652											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			29.79			29.79			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.938			1.804			0.000		
Crosswalk LOS	F			C			A			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	597			1072			682			682		
d_b, Bicycle Delay [s]	19.71			8.63			17.43			17.40		
I_b,int, Bicycle LOS Score for Intersection	2.305			2.455			1.725			2.254		
Bicycle LOS	B			B			A			B		

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.402

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	137	525	424	577	445	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.10	1.30	0.60	1.40	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	137	0	424	577	445	104
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	0	109	149	115	27
Total Analysis Volume [veh/h]	141	0	437	595	459	107
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing in	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	58.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	5	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.0	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	79	79	79	79	79
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	12	12	23	60	38
g / C, Green / Cycle	0.15	0.15	0.29	0.76	0.48
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.24	0.31	0.31
s, saturation flow rate [veh/h]	1781	1588	1791	1891	1803
c, Capacity [veh/h]	273	243	529	1444	857
d1, Uniform Delay [s]	30.79	0.00	25.96	3.23	15.86
k, delay calibration	0.08	0.08	0.15	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.13	0.00	4.52	0.19	3.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	0.83	0.41	0.66
d, Delay for Lane Group [s/veh]	31.92	0.00	30.48	3.42	19.84
Lane Group LOS	C	A	C	A	B
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.49	0.00	7.80	1.87	7.86
50th-Percentile Queue Length [ft/ln]	62.21	0.00	195.07	46.87	196.39
95th-Percentile Queue Length [veh/ln]	4.48	0.00	12.38	3.37	12.45
95th-Percentile Queue Length [ft/ln]	111.98	0.00	309.60	84.36	311.30

**Movement, Approach, & Intersection Results**

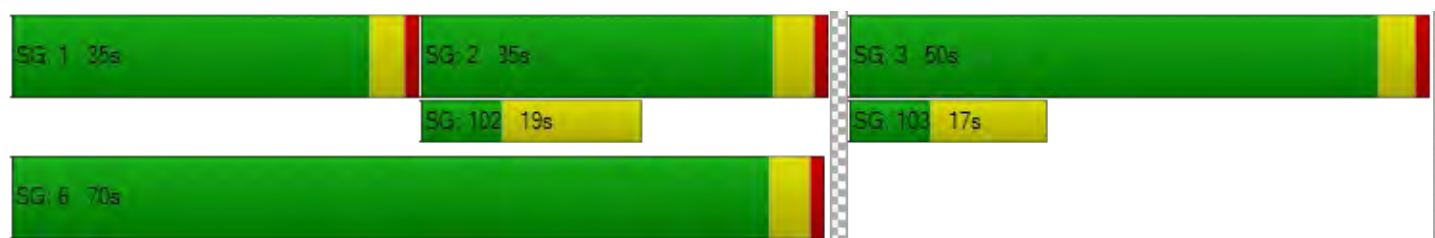
d_M, Delay for Movement [s/veh]	31.92	0.00	30.48	3.42	19.84	19.84
Movement LOS	C	A	C	A	B	B
d_A, Approach Delay [s/veh]	31.92		14.88		19.84	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	17.87					
Intersection LOS	B					
Intersection V/C	2.402					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.24	29.24	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.903	2.832	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1160	1657	770
d_b, Bicycle Delay [s]	7.00	1.18	14.99
I_b,int, Bicycle LOS Score for Intersection	1.560	3.262	2.494
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringwood Ave**

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.435

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↑			↑↵			↵↵↵			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	34	32	32	70	0	227	2	696	112	315	636	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	0.00	0.00	0.00	0.00	2.20	0.00	1.70	0.00	2.10	1.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	8	0	0	57	0	0	0
Total Hourly Volume [veh/h]	34	32	32	70	0	219	2	696	55	315	636	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	8	8	18	0	58	1	183	14	83	167	1
Total Analysis Volume [veh/h]	36	34	34	74	0	231	2	733	58	332	669	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing in	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	58.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.0	2.9	3.0	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	22	22	22	22	94	80	80	91	87	87
g / C, Green / Cycle	0.18	0.18	0.18	0.18	0.78	0.67	0.67	0.76	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.08	0.15	0.00	0.21	0.04	0.39	0.18	0.18
s, saturation flow rate [veh/h]	1419	1711	978	1525	805	3569	1563	862	1873	1871
c, Capacity [veh/h]	164	316	241	282	665	2375	1040	677	1355	1353
d1, Uniform Delay [s]	52.88	41.53	47.49	46.67	3.75	8.45	6.97	5.20	5.60	5.60
k, delay calibration	0.10	0.10	0.10	0.12	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.64	0.32	0.68	6.37	0.00	0.34	0.10	2.53	0.44	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.22	0.22	0.31	0.82	0.00	0.31	0.06	0.49	0.25	0.25
d, Delay for Lane Group [s/veh]	53.52	41.85	48.18	53.04	3.75	8.79	7.07	7.72	6.03	6.04
Lane Group LOS	D	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.08	1.78	2.08	7.07	0.01	3.81	0.51	2.47	2.65	2.65
50th-Percentile Queue Length [ft/ln]	27.01	44.51	51.95	176.65	0.25	95.31	12.81	61.68	66.36	66.30
95th-Percentile Queue Length [veh/ln]	1.94	3.20	3.74	11.43	0.02	6.86	0.92	4.44	4.78	4.77
95th-Percentile Queue Length [ft/ln]	48.61	80.12	93.50	285.64	0.45	171.55	23.05	111.03	119.45	119.34

**Movement, Approach, & Intersection Results**

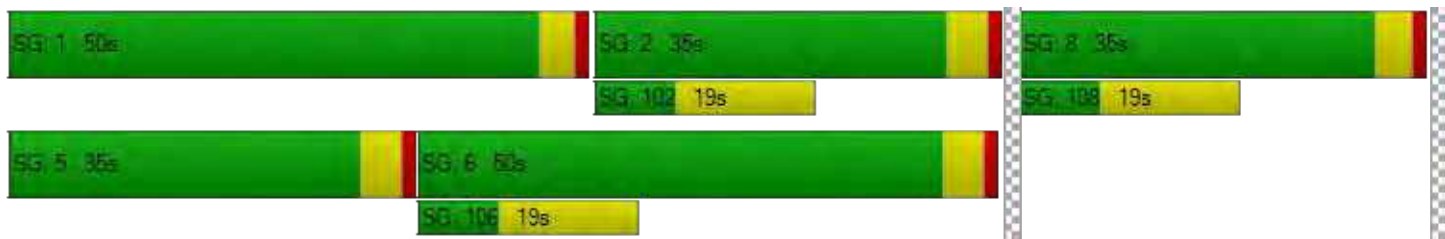
d_M, Delay for Movement [s/veh]	53.52	41.85	41.85	48.18	48.18	53.04	3.75	8.79	7.07	7.72	6.04	6.04
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	45.89			51.86			8.65			6.59		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	15.45											
Intersection LOS	B											
Intersection V/C	0.435											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersection	1.980	2.536	2.961	2.822
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	513	513	757	507
d_b, Bicycle Delay [s]	33.24	33.50	23.40	33.69
I_b,int, Bicycle LOS Score for Intersection	1.731	2.076	2.261	2.387
Bicycle LOS	A	B	B	B

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	108.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.083

**Intersection Setup**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3481	20	359	970	72	1814
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	16.10	4.90	3.80	9.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3481	20	359	970	72	1814
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	888	5	92	247	18	463
Total Analysis Volume [veh/h]	3552	20	366	990	73	1851
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	90	140	50	140	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	5.8	1.5	5.8	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	7.80	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	5.80	2.00	0.00
g_i, Effective Green Time [s]	90	90	34	126	15	53
g / C, Green / Cycle	0.59	0.59	0.22	0.82	0.10	0.35
(v / s)_i Volume / Saturation Flow Rate	0.70	0.01	0.11	0.20	0.02	0.44
s, saturation flow rate [veh/h]	5077	1399	3378	5020	3264	4237
c, Capacity [veh/h]	2992	824	757	4139	321	1477
d1, Uniform Delay [s]	31.38	13.07	51.55	2.93	63.53	49.75
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	85.28	0.01	0.18	0.04	0.13	114.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.19	0.02	0.48	0.24	0.23	1.25
d, Delay for Lane Group [s/veh]	116.65	13.09	51.73	2.96	63.67	164.15
Lane Group LOS	F	B	D	A	E	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	56.14	0.28	5.95	1.42	1.32	34.19
50th-Percentile Queue Length [ft/ln]	1403.48	6.88	148.73	35.53	32.95	854.65
95th-Percentile Queue Length [veh/ln]	78.38	0.50	9.95	2.56	2.37	50.25
95th-Percentile Queue Length [ft/ln]	1959.53	12.38	248.73	63.95	59.30	1256.36

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	116.65	13.09	51.73	2.96	63.67	164.15
Movement LOS	F	B	D	A	E	F
d_A, Approach Delay [s/veh]	116.07		16.13		160.34	
Approach LOS	F		B		F	
d_I, Intersection Delay [s/veh]	108.72					
Intersection LOS	F					
Intersection V/C	1.083					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	67.62	0.00	67.62
I_p,int, Pedestrian LOS Score for Intersection	3.804	0.000	3.080
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	550	576	196
d_b, Bicycle Delay [s]	40.13	38.71	62.09
I_b,int, Bicycle LOS Score for Intersection	3.524	2.305	1.670
Bicycle LOS	D	B	A

**Sequence**

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	175.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.224

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	189	101	1112	159	315	133	131	1972	223	559	811	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	70	0	0	45	0	0	1
Total Hourly Volume [veh/h]	189	101	1112	159	315	63	131	1972	178	559	811	33
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	26	287	41	81	16	34	508	46	144	209	9
Total Analysis Volume [veh/h]	195	104	1146	164	325	65	135	2033	184	576	836	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			11			11			0	
v_di, Inbound Pedestrian Volume crossing in		0			11			11			0	
v_co, Outbound Pedestrian Volume crossing		8			0			8			0	
v_ci, Inbound Pedestrian Volume crossing mi		8			0			8			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			3			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.0	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	0	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	2.5	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	4.50	4.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	2.50	2.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	14	13	39	9	10	10	66	40	40	66	56	56
g / C, Green / Cycle	0.13	0.13	0.38	0.09	0.09	0.09	0.64	0.38	0.38	0.64	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.11	0.07	0.28	0.09	0.20	0.04	0.14	0.66	0.21	0.39	0.17	0.02
s, saturation flow rate [veh/h]	1749	1479	4142	1748	1606	1455	994	3084	889	1475	4959	1615
c, Capacity [veh/h]	230	186	1566	151	152	137	645	1186	342	925	2662	867
d1, Uniform Delay [s]	44.23	42.80	27.73	47.58	47.16	44.53	8.02	32.06	24.89	23.80	13.44	11.41
k, delay calibration	0.11	0.11	0.15	0.35	0.43	0.11	0.11	0.12	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.44	2.61	0.93	85.92	533.97	2.52	0.16	322.50	1.32	0.69	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	0.56	0.73	1.09	2.15	0.47	0.21	1.71	0.54	0.62	0.31	0.04
d, Delay for Lane Group [s/veh]	52.66	45.41	28.66	133.50	581.13	47.05	8.18	354.56	26.21	24.49	13.51	11.43
Lane Group LOS	D	D	C	F	F	D	A	F	C	C	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	5.32	1.29	7.84	7.57	13.22	1.70	0.57	44.97	3.58	2.72	3.54	0.37
50th-Percentile Queue Length [ft/ln]	132.98	32.35	196.06	189.21	330.53	42.60	14.37	1124.36	89.60	68.01	88.38	9.23
95th-Percentile Queue Length [veh/ln]	9.10	2.33	12.44	12.44	22.88	3.07	1.03	72.83	6.45	4.90	6.36	0.66
95th-Percentile Queue Length [ft/ln]	227.54	58.23	310.88	310.99	571.88	76.68	25.86	1820.81	161.27	122.42	159.09	16.61

**Movement, Approach, & Intersection Results**

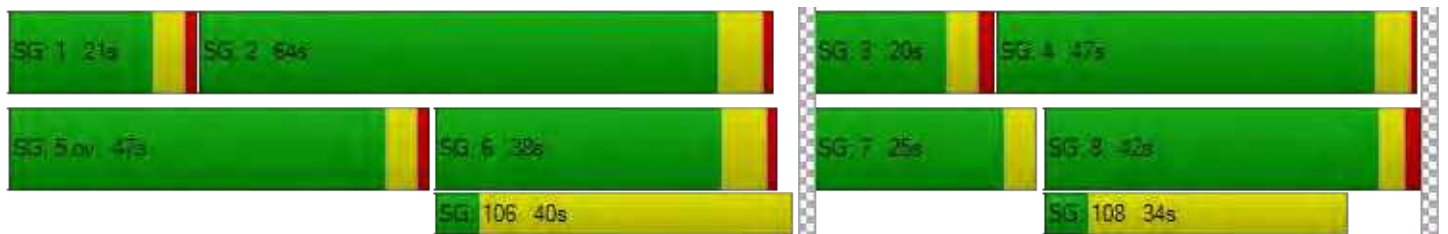
d_M, Delay for Movement [s/veh]	52.66	45.41	28.66	133.50	581.13	47.05	8.18	354.56	26.21	24.49	13.51	11.43
Movement LOS	D	D	C	F	F	D	A	F	C	C	B	B
d_A, Approach Delay [s/veh]	33.10			385.96			308.99			17.83		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	174.95											
Intersection LOS	F											
Intersection V/C	1.224											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.42	0.00	43.42	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.461	0.000	3.235	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	819	721	615	1115
d_b, Bicycle Delay [s]	18.16	21.32	24.95	10.19
I_b,int, Bicycle LOS Score for Intersection	2.752	2.074	2.878	2.355
Bicycle LOS	C	B	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	404.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.673

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	44	1292	23	284	946	54	94	9	35	75	16	334
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.50	33.30	7.70	3.50	0.00	0.60	26.70	5.10	0.70	5.90	1.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	1292	23	284	946	54	94	9	35	75	16	334
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	367	7	81	269	15	27	3	10	21	5	95
Total Analysis Volume [veh/h]	50	1468	26	323	1075	61	107	10	40	85	18	380
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			86			11			85	
v_di, Inbound Pedestrian Volume crossing in		11			85			12			86	
v_co, Outbound Pedestrian Volume crossing		13			14			14			13	
v_ci, Inbound Pedestrian Volume crossing mi		13			14			14			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			18			7			15	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	8	67	66	7	66	67	66	66	66	66	66	66
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	70	63	63	70	63	63	63	63	63	63
g / C, Green / Cycle	0.50	0.45	0.45	0.50	0.45	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.08	0.91	0.91	0.45	0.69	0.70	0.11	0.09	0.06	0.61
s, saturation flow rate [veh/h]	592	826	820	711	826	804	997	573	1351	656
c, Capacity [veh/h]	150	373	370	133	371	361	51	256	549	295
d1, Uniform Delay [s]	32.86	38.42	38.42	43.11	38.57	38.57	70.00	23.41	28.81	38.58
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.04	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.89	462.89	465.96	665.96	256.70	266.06	500.39	0.14	0.13	178.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.33	2.01	2.01	2.43	1.54	1.56	2.08	0.20	0.15	1.35
d, Delay for Lane Group [s/veh]	38.75	501.31	504.38	709.07	295.26	304.63	570.39	23.55	28.94	217.20
Lane Group LOS	D	F	F	F	F	F	F	C	C	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.07	60.18	60.06	13.50	38.97	38.85	9.01	1.04	1.79	24.65
50th-Percentile Queue Length [ft/ln]	26.82	1504.56	1501.39	337.50	974.20	971.22	225.30	26.00	44.65	616.15
95th-Percentile Queue Length [veh/ln]	1.93	99.99	99.85	24.30	62.57	62.67	16.22	1.87	3.21	39.24
95th-Percentile Queue Length [ft/ln]	48.28	2499.87	2496.33	607.49	1564.22	1566.73	405.53	46.80	80.37	980.88

**Movement, Approach, & Intersection Results**

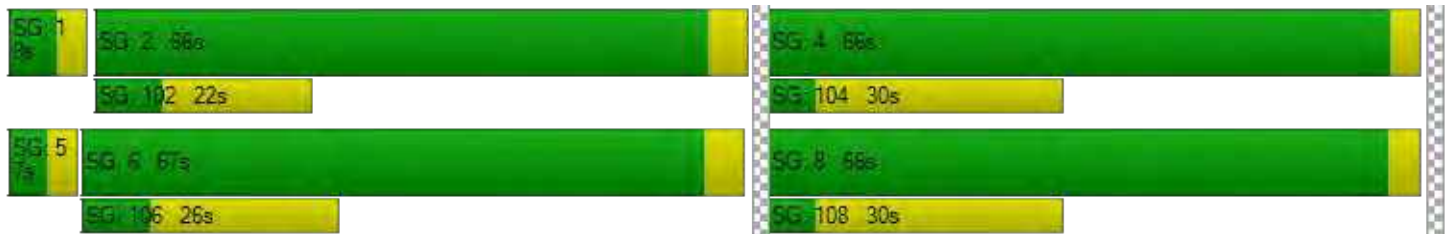
d_M, Delay for Movement [s/veh]	38.75	502.82	504.38	709.07	299.65	304.63	570.39	23.55	23.55	28.94	217.20	217.20
Movement LOS	D	F	F	F	F	F	F	C	C	C	F	F
d_A, Approach Delay [s/veh]	487.81			390.50			396.24			184.07		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	404.62											
Intersection LOS	F											
Intersection V/C	1.673											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.29	61.29	59.43	59.43
I_p,int, Pedestrian LOS Score for Intersection	3.245	3.244	2.072	2.678
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	886	897	900
d_b, Bicycle Delay [s]	21.19	21.93	21.36	21.33
I_b,int, Bicycle LOS Score for Intersection	2.833	2.763	1.819	2.357
Bicycle LOS	C	C	A	B

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	116.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.239

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↵		↵		↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	83	945	1389	51	71	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	3.30	2.80	0.00	0.00	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	945	1389	51	71	114
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	254	373	14	19	31
Total Analysis Volume [veh/h]	89	1016	1494	55	76	123
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing in	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	24	106	90	90	24	24
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	11	103	90	90	20	20
g / C, Green / Cycle	0.08	0.79	0.69	0.69	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.07	0.64	0.93	0.95	0.07	0.14
s, saturation flow rate [veh/h]	1270	1576	831	819	1021	897
c, Capacity [veh/h]	103	1251	574	565	155	136
d1, Uniform Delay [s]	58.97	7.75	20.12	20.12	50.41	53.87
k, delay calibration	0.04	0.50	0.50	0.50	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.04	5.81	168.97	177.75	0.89	20.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.87	0.81	1.35	1.37	0.49	0.90
d, Delay for Lane Group [s/veh]	67.01	13.56	189.09	197.87	51.30	74.57
Lane Group LOS	E	B	F	F	D	E
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.08	6.88	41.47	42.24	2.31	4.72
50th-Percentile Queue Length [ft/ln]	77.09	172.05	1036.70	1056.01	57.82	117.95
95th-Percentile Queue Length [veh/ln]	5.55	11.18	64.52	66.11	4.16	8.28
95th-Percentile Queue Length [ft/ln]	138.77	279.61	1612.88	1652.76	104.07	207.01

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	67.01	13.56	193.32	197.87	51.30	74.57
Movement LOS	E	B	F	F	D	E
d_A, Approach Delay [s/veh]	17.87		193.48		65.68	
Approach LOS	B		F		E	
d_I, Intersection Delay [s/veh]	116.55					
Intersection LOS	F					
Intersection V/C	1.239					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.026	3.008	2.069
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.00	7.44	45.70
I_b,int, Bicycle LOS Score for Intersection	2.471	2.838	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	185.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.390

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	



**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1110	414	57	1102	274	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	6.50	2.80	2.70	1.80	6.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1110	414	57	1102	274	45
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	298	111	15	296	74	12
Total Analysis Volume [veh/h]	1194	445	61	1185	295	48
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	16.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	84	84	13	100	23	23
g / C, Green / Cycle	0.65	0.65	0.10	0.77	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.92	0.82	0.09	0.92	0.27	0.28
s, saturation flow rate [veh/h]	1293	540	643	1286	648	601
c, Capacity [veh/h]	838	350	63	989	114	105
d1, Uniform Delay [s]	22.83	21.66	58.46	15.00	53.56	53.56
k, delay calibration	0.50	0.50	0.10	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	197.76	142.36	43.45	99.15	291.72	296.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.42	1.27	0.97	1.20	1.56	1.57
d, Delay for Lane Group [s/veh]	220.59	164.03	101.91	114.15	345.28	349.74
Lane Group LOS	F	F	F	F	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	34.19	22.69	2.73	24.31	12.92	12.11
50th-Percentile Queue Length [ft/ln]	854.67	567.36	68.17	607.86	322.92	302.78
95th-Percentile Queue Length [veh/ln]	55.22	36.06	4.91	37.33	22.13	20.95
95th-Percentile Queue Length [ft/ln]	1380.55	901.51	122.71	933.35	553.32	523.64

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	220.59	164.03	101.91	114.15	347.07	349.74
Movement LOS	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	205.23		113.55		347.43	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	184.95					
Intersection LOS	F					
Intersection V/C	1.390					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.234
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.14	3.46	44.22
I_b,int, Bicycle LOS Score for Intersection	2.912	2.588	2.126
Bicycle LOS	C	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	151.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.283

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑ →			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	268	1442	292	78	1275	26	27	183	373	261	255	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	268	1442	292	78	1275	26	27	183	198	261	255	70
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	396	80	21	350	7	7	50	54	72	70	19
Total Analysis Volume [veh/h]	295	1585	321	86	1401	29	30	201	218	287	280	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	62	62	8	57	57	29	29	29	16	16	16
g / C, Green / Cycle	0.10	0.48	0.48	0.06	0.44	0.44	0.22	0.22	0.22	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.23	0.51	0.53	0.09	0.51	0.51	0.02	0.21	0.14	0.08	0.21	0.05
s, saturation flow rate [veh/h]	1273	2481	1193	952	1853	960	1810	965	1538	3409	1303	1414
c, Capacity [veh/h]	127	1194	574	59	820	425	399	213	339	414	158	172
d1, Uniform Delay [s]	58.48	33.72	33.72	60.98	36.22	36.22	40.18	49.90	45.70	54.78	57.10	52.71
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.04	0.18	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	615.74	46.94	66.30	221.06	80.25	91.55	0.03	25.96	0.76	0.78	370.87	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.32	1.07	1.10	1.46	1.15	1.15	0.08	0.95	0.64	0.69	1.77	0.45
d, Delay for Lane Group [s/veh]	674.22	80.66	100.02	282.04	116.47	127.77	40.21	75.86	46.47	55.56	427.97	53.39
Lane Group LOS	F	F	F	F	F	F	D	E	D	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	25.92	25.52	27.63	5.57	22.02	24.16	0.77	7.95	6.44	4.56	21.49	2.36
50th-Percentile Queue Length [ft/ln]	648.06	638.12	690.82	139.19	550.46	603.97	19.35	198.68	161.08	114.00	537.17	59.09
95th-Percentile Queue Length [veh/ln]	41.88	35.58	38.80	10.02	32.61	35.46	1.39	12.57	10.61	8.06	34.79	4.25
95th-Percentile Queue Length [ft/ln]	1046.89	889.44	970.06	250.54	815.19	886.39	34.83	314.27	265.15	201.55	869.67	106.36



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	674.22	84.42	100.02	282.04	120.18	127.77	40.21	75.86	46.47	55.56	427.97	53.39
Movement LOS	F	F	F	F	F	F	D	E	D	E	F	D
d_A, Approach Delay [s/veh]	165.75			129.51			59.21			217.22		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	151.27											
Intersection LOS	F											
Intersection V/C	1.283											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.46	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.408	2.990	2.697	2.747
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	939	862	462	246
d_b, Bicycle Delay [s]	18.31	21.11	38.53	50.13
I_b,int, Bicycle LOS Score for Intersection	2.770	2.393	2.589	2.696
Bicycle LOS	C	B	B	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	201.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.378

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩ ↑		↑↩		↩↪	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	20	1349	716	190	301	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	20	1349	716	0	301	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	348	185	0	78	0
Total Analysis Volume [veh/h]	21	1391	738	0	310	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	82	82	82	82	82	82
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	2	41	36	36	31	31
g / C, Green / Cycle	0.02	0.50	0.44	0.44	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.01	0.83	0.44	0.00	0.36	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	1615	850	1596
c, Capacity [veh/h]	34	839	738	707	325	610
d1, Uniform Delay [s]	40.01	20.56	23.09	0.00	24.67	0.00
k, delay calibration	0.04	0.40	0.15	0.15	0.30	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.35	300.75	18.53	0.00	28.80	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.61	1.66	1.00	0.00	0.95	0.00
d, Delay for Lane Group [s/veh]	46.36	321.32	41.62	0.00	53.47	0.00
Lane Group LOS	D	F	F	A	D	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.47	42.17	8.26	0.00	8.07	0.00
50th-Percentile Queue Length [ft/ln]	11.87	1054.18	206.47	0.00	201.76	0.00
95th-Percentile Queue Length [veh/ln]	0.85	69.41	12.98	0.00	12.73	0.00
95th-Percentile Queue Length [ft/ln]	21.37	1735.28	324.42	0.00	318.23	0.00

**Movement, Approach, & Intersection Results**

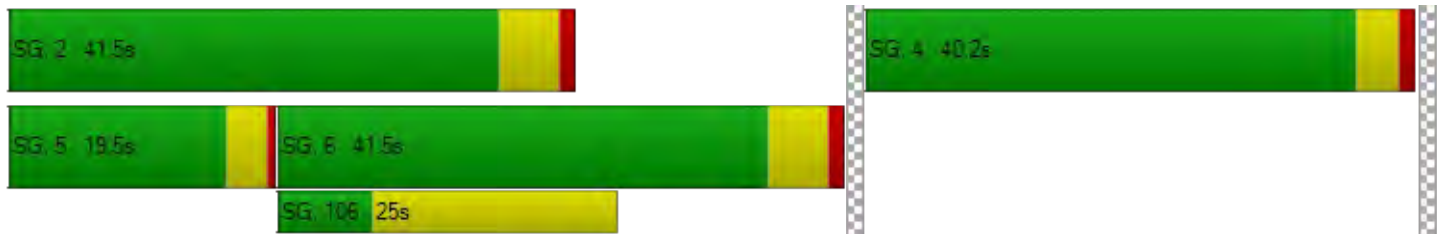
d_M, Delay for Movement [s/veh]	46.36	321.32	41.62	0.00	53.47	0.00
Movement LOS	D	F	F	A	D	A
d_A, Approach Delay [s/veh]	317.23		41.62		53.47	
Approach LOS	F		D		D	
d_I, Intersection Delay [s/veh]	201.31					
Intersection LOS	F					
Intersection V/C	1.378					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	30.78
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.197
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	877	877	877
d_b, Bicycle Delay [s]	13.01	12.98	12.96
I_b,int, Bicycle LOS Score for Intersection	2.725	2.352	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	197.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.231

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	9	1046	4	29	537	18	133	2	31	21	7	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	2.10	0.00	0.00	2.60	27.60	4.30	0.00	17.90	0.00	0.00	6.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	0
Total Hourly Volume [veh/h]	9	1046	4	29	537	18	133	2	13	21	7	33
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	291	1	8	149	5	37	1	4	6	2	9
Total Analysis Volume [veh/h]	10	1162	4	32	597	20	148	2	14	23	8	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing in	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	147	147	147	147	147	147	147	147	147	147
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	1	100	100	3	102	11	11	11	15	15
g / C, Green / Cycle	0.01	0.68	0.68	0.02	0.69	0.07	0.07	0.07	0.10	0.10
(v / s)_i Volume / Saturation Flow Rate	0.01	0.91	0.91	0.02	1.04	0.04	0.04	0.03	0.01	0.08
s, saturation flow rate [veh/h]	1095	688	589	1810	593	1748	1812	441	1810	555
c, Capacity [veh/h]	10	468	401	43	412	128	133	32	182	56
d1, Uniform Delay [s]	72.78	23.52	23.52	71.36	22.49	65.90	65.90	65.01	60.24	64.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	116.32	167.66	170.00	22.86	236.51	4.01	3.87	8.87	0.31	22.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.95	1.34	1.34	0.75	1.50	0.57	0.57	0.43	0.13	0.81
d, Delay for Lane Group [s/veh]	189.10	191.17	193.52	94.21	259.00	69.91	69.77	73.88	60.55	87.68
Lane Group LOS	F	F	F	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.72	36.98	31.90	1.48	40.25	2.90	3.00	0.60	0.81	2.02
50th-Percentile Queue Length [ft/ln]	17.99	924.40	797.57	37.05	1006.34	72.48	74.95	14.91	20.22	50.59
95th-Percentile Queue Length [veh/ln]	1.30	57.85	50.58	2.67	65.87	5.22	5.40	1.07	1.46	3.64
95th-Percentile Queue Length [ft/ln]	32.39	1446.14	1264.44	66.70	1646.65	130.46	134.91	26.84	36.40	91.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	189.10	192.25	193.52	94.21	259.00	259.00	69.84	69.77	73.88	60.55	87.68	87.68
Movement LOS	F	F	F	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	192.23			250.88			70.18			78.50		
Approach LOS	F			F			E			E		
d_I, Intersection Delay [s/veh]	197.24											
Intersection LOS	F											
Intersection V/C	1.231											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	62.86	62.86	62.86	62.86
I_p,int, Pedestrian LOS Score for Intersection	2.526	2.747	2.198	1.992
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	272	272	408	408
d_b, Bicycle Delay [s]	54.89	55.05	46.53	46.53
I_b,int, Bicycle LOS Score for Intersection	2.530	2.630	1.860	1.672
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.650

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue					
Base Volume Input [veh/h]	14	693	5	2	702	100	107	2	37	15	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.10	0.00	0.00	3.70	2.40	3.90	0.00	3.20	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	693	5	2	702	100	107	2	37	15	4	6
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	190	1	1	193	27	29	1	10	4	1	2
Total Analysis Volume [veh/h]	15	762	5	2	771	110	118	2	41	16	4	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	19			15			19			15		
v_di, Inbound Pedestrian Volume crossing in	19			15			19			15		
v_co, Outbound Pedestrian Volume crossing	10			8			8			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			8			8			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			4			4			4		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	76	76	76	76	16	16
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.41	0.00	0.49	0.11	0.02
s, saturation flow rate [veh/h]	640	1851	712	1796	1409	1512
c, Capacity [veh/h]	391	1402	471	1361	288	300
d1, Uniform Delay [s]	12.89	5.01	9.68	5.76	39.36	35.79
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	1.54	0.02	2.39	1.69	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.04	0.55	0.00	0.65	0.56	0.09
d, Delay for Lane Group [s/veh]	13.08	6.55	9.70	8.15	41.05	35.91
Lane Group LOS	B	A	A	A	D	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.19	5.92	0.02	7.53	3.83	0.58
50th-Percentile Queue Length [ft/ln]	4.83	147.91	0.52	188.33	95.82	14.44
95th-Percentile Queue Length [veh/ln]	0.35	9.91	0.04	12.03	6.90	1.04
95th-Percentile Queue Length [ft/ln]	8.69	247.64	0.94	300.86	172.48	25.99

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.08	6.55	6.55	9.70	8.15	8.15	41.05	41.05	41.05	35.91	35.91	35.91
Movement LOS	B	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	6.68			8.16			41.05			35.91		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	10.79											
Intersection LOS	B											
Intersection V/C	0.650											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.59			39.59			39.59			39.59		
I_p,int, Pedestrian LOS Score for Intersection	2.404			2.688			1.882			1.737		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.85			4.84			29.77			29.77		
I_b,int, Bicycle LOS Score for Intersection	2.850			3.017			1.825			1.604		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	12.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.535

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	656	91	54	681	10	25	88	5	80	51	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	2.70	0.00	3.30	2.00	10.10	0.00	2.30	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	656	91	54	681	10	25	88	5	80	51	58
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	171	24	14	177	3	7	23	1	21	13	15
Total Analysis Volume [veh/h]	3	683	95	56	709	10	26	92	5	83	53	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing in	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	76	76	76	76	16	16	16	16
g / C, Green / Cycle	0.76	0.76	0.76	0.76	0.16	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.00	0.43	0.08	0.39	0.02	0.05	0.06	0.07
s, saturation flow rate [veh/h]	745	1807	705	1854	1260	1849	1313	1677
c, Capacity [veh/h]	512	1371	469	1407	167	294	190	267
d1, Uniform Delay [s]	8.38	5.11	10.38	4.75	43.63	37.29	44.22	37.89
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	1.71	0.52	1.33	0.43	0.65	1.58	1.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.57	0.12	0.51	0.16	0.33	0.44	0.42
d, Delay for Lane Group [s/veh]	8.40	6.81	10.90	6.08	44.06	37.94	45.80	38.96
Lane Group LOS	A	A	B	A	D	D	D	D
Critical Lane Group	No	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	6.20	0.65	5.29	0.63	2.17	2.09	2.58
50th-Percentile Queue Length [ft/ln]	0.73	154.89	16.15	132.20	15.76	54.24	52.16	64.61
95th-Percentile Queue Length [veh/ln]	0.05	10.28	1.16	9.06	1.14	3.91	3.76	4.65
95th-Percentile Queue Length [ft/ln]	1.31	256.95	29.07	226.48	28.38	97.64	93.89	116.29

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	8.40	6.81	6.81	10.90	6.08	6.08	44.06	37.94	37.94	45.80	38.96	38.96
Movement LOS	A	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	6.82			6.43			39.24			41.85		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	12.45											
Intersection LOS	B											
Intersection V/C	0.535											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.60			39.60			39.60			39.60		
I_p,int, Pedestrian LOS Score for Intersection	2.490			2.487			2.000			2.144		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.87			4.86			29.79			29.82		
I_b,int, Bicycle LOS Score for Intersection	2.848			2.838			1.763			1.883		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	30	240	245	372	112	294	123	439	189	277	502	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	1.10	0.00	1.70	0.00	2.40	1.10	0.50	2.30	6.40	0.00	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	120	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	30	240	125	372	112	0	123	439	189	277	502	15
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	63	33	98	29	0	32	116	50	73	132	4
Total Analysis Volume [veh/h]	32	253	132	392	118	0	129	462	199	292	528	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			6			12			6	
v_di, Inbound Pedestrian Volume crossing in		12			6			12			6	
v_co, Outbound Pedestrian Volume crossing		5			5			4			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			4			5			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		50			19			4			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	20	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	86	86	86	86	86	86	86	86	86	86	86	86	86
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	17	17	17	17	17	17	15	15	15	15	18	18	18
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.20	0.20	0.18	0.18	0.18	0.18	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.02	0.13	0.09	0.14	0.14	0.00	0.07	0.12	0.12	0.13	0.16	0.16	0.16
s, saturation flow rate [veh/h]	1778	1883	1454	1785	1850	1584	1794	1892	1887	1541	1718	1893	1703
c, Capacity [veh/h]	356	377	291	354	367	314	317	334	333	272	364	401	361
d1, Uniform Delay [s]	28.10	31.88	30.05	32.24	32.24	0.00	31.49	33.32	33.32	33.35	31.78	31.77	31.80
k, delay calibration	0.11	0.12	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	2.37	1.11	2.61	2.52	0.00	0.84	2.62	2.63	3.58	3.00	2.72	3.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.09	0.67	0.45	0.71	0.71	0.00	0.41	0.70	0.70	0.72	0.74	0.74	0.75
d, Delay for Lane Group [s/veh]	28.21	34.25	31.16	34.85	34.76	0.00	32.33	35.94	35.95	36.93	34.78	34.49	34.88
Lane Group LOS	C	C	C	C	C	A	C	D	D	D	C	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.54	4.99	2.42	5.06	5.23	0.00	2.41	4.69	4.68	4.02	5.41	5.92	5.39
50th-Percentile Queue Length [ft/ln]	13.48	124.68	60.51	126.49	130.81	0.00	60.13	117.3	117.1	100.5	135.19	148.04	134.80
95th-Percentile Queue Length [veh/ln]	0.97	8.65	4.36	8.75	8.98	0.00	4.33	8.25	8.23	7.24	9.22	9.91	9.20
95th-Percentile Queue Length [ft/ln]	24.26	216.24	108.91	218.71	224.60	0.00	108.2	206.1	205.8	181.0	230.54	247.81	230.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	28.21	34.25	31.16	34.82	34.76	0.00	32.33	35.94	36.93	34.76	34.68	34.88
Movement LOS	C	C	C	C	C	A	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	32.81			34.80			35.60			34.71		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	34.69											
Intersection LOS	C											
Intersection V/C	0.617											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.80	31.80	31.80	31.80
I_p,int, Pedestrian LOS Score for Intersection	2.493	4.247	4.353	2.750
Crosswalk LOS	B	D	E	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	668	961	635	798
d_b, Bicycle Delay [s]	19.54	11.70	20.04	15.62
I_b,int, Bicycle LOS Score for Intersection	2.446	4.051	3.036	2.249
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road/101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	16.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.886

**Intersection Setup**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	1855	0	0	1120	570	696
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1855	0	0	1120	570	696
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	468	0	0	283	144	176
Total Analysis Volume [veh/h]	1874	0	0	1131	576	703
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	0	5	0
Pedestrian Clearance [s]	12	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	51	51	25	25
g / C, Green / Cycle	0.63	0.63	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.54	0.32	0.17	0.27
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2217	2243	1041	798
d1, Uniform Delay [s]	11.48	7.82	23.00	26.19
k, delay calibration	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.18	0.81	0.17	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	0.50	0.55	0.88
d, Delay for Lane Group [s/veh]	15.66	8.64	23.17	27.50
Lane Group LOS	B	A	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.87	4.61	4.35	6.15
50th-Percentile Queue Length [ft/ln]	296.69	115.13	108.67	153.80
95th-Percentile Queue Length [veh/ln]	17.52	8.12	7.77	10.22
95th-Percentile Queue Length [ft/ln]	437.93	203.12	194.15	255.50

**Movement, Approach, & Intersection Results**

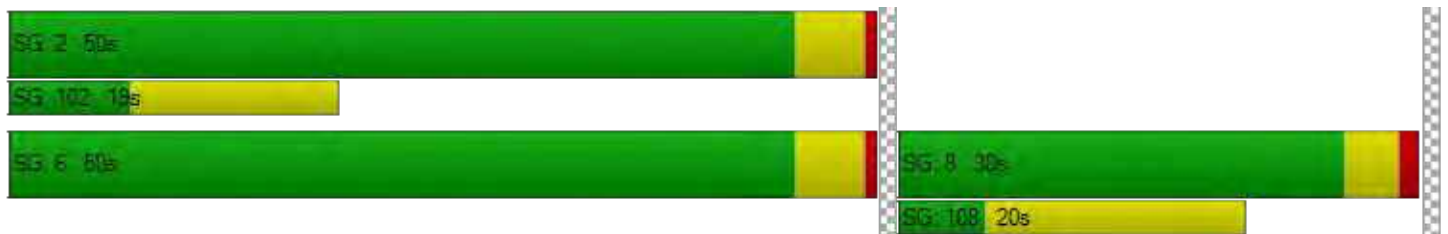
d_M, Delay for Movement [s/veh]	15.66	0.00	0.00	8.64	23.17	27.50
Movement LOS	B			A	C	C
d_A, Approach Delay [s/veh]	15.66		8.64		25.55	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	16.76					
Intersection LOS	B					
Intersection V/C	0.886					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.031	2.436
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.47	18.31
I_b,int, Bicycle LOS Score for Intersection	3.106	2.493	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	38.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	24	225	18	74	500	36	29	124	23	7	16	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	225	18	74	500	36	29	124	23	7	16	61
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	61	5	20	135	10	8	35	7	2	4	17
Total Analysis Volume [veh/h]	26	243	19	80	541	39	33	140	26	8	17	66
Pedestrian Volume [ped/h]	3			4			2			5		



**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	594	660	531	530
Degree of Utilization, x	0.48	1.00	0.37	0.17

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	2.64	15.90	1.73	0.61
95th-Percentile Queue Length [ft]	65.99	397.48	43.19	15.37
Approach Delay [s/veh]	14.62	59.14	13.79	11.19
Approach LOS	B	F	B	B
Intersection Delay [s/veh]	37.97			
Intersection LOS	E			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	38.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.949

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	179	40	1761	12	31	5	9	609	208	2225	477	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	40	1761	12	31	5	9	609	208	2225	477	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	10	459	3	8	1	2	159	54	579	124	4
Total Analysis Volume [veh/h]	186	42	1834	13	32	5	9	634	217	2318	497	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			4			4			0	
v_di, Inbound Pedestrian Volume crossing in		0			4			4			0	
v_co, Outbound Pedestrian Volume crossing		0			13			0			13	
v_ci, Inbound Pedestrian Volume crossing mi		0			13			0			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			13			8			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	6	4	6	4	1	4	1	2	8
Auxiliary Signal Groups			2,3									
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	10	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	10	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	58	11	11	25	32	25	32	59	32	59	58	0
Vehicle Extension [s]	4.5	2.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0	4.5	0.0
Walk [s]	5	0	0	10	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	10	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.1	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	33	123	10	10	31	31	31	76	76
g / C, Green / Cycle	0.21	0.77	0.06	0.06	0.19	0.19	0.19	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.12	0.44	0.02	0.01	0.18	0.18	0.14	0.45	0.31
s, saturation flow rate [veh/h]	1826	4190	1707	1588	1891	1724	1553	5150	1674
c, Capacity [veh/h]	381	3131	137	97	368	335	302	2449	796
d1, Uniform Delay [s]	57.20	9.09	71.59	71.56	63.12	63.12	60.11	40.02	31.71
k, delay calibration	0.18	0.50	0.04	0.04	0.04	0.04	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.48	0.81	0.27	0.45	3.79	4.13	1.20	9.36	3.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.60	0.59	0.20	0.23	0.91	0.91	0.72	0.95	0.64
d, Delay for Lane Group [s/veh]	59.69	9.90	71.86	72.01	66.91	67.25	61.31	49.38	35.68
Lane Group LOS	E	A	E	E	E	E	E	D	D
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.68	9.31	1.10	0.89	13.86	12.66	8.37	30.79	15.93
50th-Percentile Queue Length [ft/ln]	216.95	232.85	27.52	22.30	346.38	316.40	209.34	769.75	398.25
95th-Percentile Queue Length [veh/ln]	13.51	14.32	1.98	1.61	19.96	18.49	13.12	39.89	22.48
95th-Percentile Queue Length [ft/ln]	337.72	357.98	49.54	40.15	498.99	462.26	327.98	997.25	561.90

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	59.69	59.69	9.90	71.86	71.94	72.01	66.91	67.07	61.31	49.38	35.68	35.68
Movement LOS	E	E	A	E	E	E	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	15.40			71.92			65.62			46.90		
Approach LOS	B			E			E			D		
d_I, Intersection Delay [s/veh]	38.70											
Intersection LOS	D											
Intersection V/C	0.949											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	71.25	71.25	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.006	2.537	0.000
Crosswalk LOS	F	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	80	349	693	654
d_b, Bicycle Delay [s]	73.73	54.89	34.33	36.27
I_b,int, Bicycle LOS Score for Intersection	4.962	1.601	2.269	6.229
Bicycle LOS	E	A	B	F

**Sequence**

Ring 1	-	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	96.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.692

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	947	199	0	933	674	0	0	0	0	726	352
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	4.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	947	199	0	933	674	0	0	0	0	726	352
Peak Hour Factor	1.0000	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	255	50	0	251	181	0	0	0	0	182	98
Total Analysis Volume [veh/h]	0	1018	199	0	1003	725	0	0	0	0	726	391
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	0	30	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	21	0	0	0	0	0	59	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		Yes			Yes						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	43	43	43		29	29
g / C, Green / Cycle	0.54	0.54	0.54		0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	1.05		0.21	0.31
s, saturation flow rate [veh/h]	5094	5012	693		3514	1271
c, Capacity [veh/h]	2763	2719	376		1256	454
d1, Uniform Delay [s]	10.44	10.44	17.69		20.77	23.80
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.38	0.39	427.04		0.42	4.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.37	0.37	1.93		0.58	0.86
d, Delay for Lane Group [s/veh]	10.82	10.83	444.74		21.20	28.71
Lane Group LOS	B	B	F		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	3.19	3.14	50.43		5.27	3.52
50th-Percentile Queue Length [ft/ln]	79.67	78.56	1260.64		131.81	87.94
95th-Percentile Queue Length [veh/ln]	5.74	5.66	85.55		9.04	6.33
95th-Percentile Queue Length [ft/ln]	143.41	141.41	2138.67		225.95	158.29

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	10.82	0.00	0.00	10.83	444.74	0.00	0.00	0.00	0.00	21.20	28.71
Movement LOS		B			B	F					C	C
d_A, Approach Delay [s/veh]	10.82		192.88				0.00			23.83		
Approach LOS	B		F				A			C		
d_I, Intersection Delay [s/veh]	96.02											
Intersection LOS	F											
Intersection V/C	1.692											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.925	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	426	426	0	1377
d_b, Bicycle Delay [s]	24.77	24.88	39.95	3.88
I_b,int, Bicycle LOS Score for Intersection	2.120	2.510	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	148.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.120

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1244	423	0	1320	729	0	0	0	283	0	859
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1244	423	0	1320	729	0	0	0	283	0	859
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	317	108	0	337	182	0	0	0	71	0	239
Total Analysis Volume [veh/h]	0	1269	432	0	1347	729	0	0	0	283	0	954
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing in		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			4			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	20	0	0	20	0	0	0	0	60	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	L	R
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	24	48	48
g / C, Green / Cycle	0.30	0.30	0.30	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.42	0.27	0.44	0.08	0.57
s, saturation flow rate [veh/h]	3051	1579	3051	3514	1685
c, Capacity [veh/h]	916	474	916	2107	1010
d1, Uniform Delay [s]	27.95	26.70	27.95	6.96	14.76
k, delay calibration	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	180.19	24.27	217.68	0.03	5.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.39	0.91	1.47	0.13	0.94
d, Delay for Lane Group [s/veh]	208.14	50.98	245.64	6.99	20.13
Lane Group LOS	F	D	F	A	C
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	20.81	10.66	23.99	0.93	7.35
50th-Percentile Queue Length [ft/ln]	520.19	266.56	599.70	23.30	183.80
95th-Percentile Queue Length [veh/ln]	33.37	16.02	38.66	1.68	11.80
95th-Percentile Queue Length [ft/ln]	834.15	400.44	966.56	41.94	294.97

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	208.14	50.98	0.00	245.64	0.00	0.00	0.00	0.00	6.99	0.00	20.13
Movement LOS		F	D		F					A		C
d_A, Approach Delay [s/veh]	168.23		245.64		0.00		17.12					
Approach LOS	F		F		A		B					
d_I, Intersection Delay [s/veh]	148.94											
Intersection LOS	F											
Intersection V/C	1.120											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	31.48	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.087	1.419	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400	0	1401
d_b, Bicycle Delay [s]	25.60	25.63	39.97	3.59
I_b,int, Bicycle LOS Score for Intersection	2.495	2.300	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.987

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←↔→		↑↑↑↔		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	572	428	2517	232	183	1513
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	572	428	2517	232	183	1513
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	154	115	677	62	49	407
Total Analysis Volume [veh/h]	615	460	2706	249	197	1627
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	10	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	92	92	92	92	92	92
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	62	62
g / C, Green / Cycle	0.22	0.22	0.54	0.54	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.18	0.30	0.54	0.16	0.61	0.33
s, saturation flow rate [veh/h]	3361	1544	5049	1579	323	4979
c, Capacity [veh/h]	730	335	2740	857	281	3363
d1, Uniform Delay [s]	34.56	35.87	20.76	11.41	25.64	7.21
k, delay calibration	0.04	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.04	185.63	2.79	0.07	13.58	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.84	1.37	0.99	0.29	0.70	0.48
d, Delay for Lane Group [s/veh]	35.60	221.50	23.55	11.48	39.22	7.25
Lane Group LOS	D	F	C	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.56	24.57	17.83	2.61	2.29	4.38
50th-Percentile Queue Length [ft/ln]	163.93	614.35	445.75	65.36	57.24	109.49
95th-Percentile Queue Length [veh/ln]	10.76	37.98	24.75	4.71	4.12	7.81
95th-Percentile Queue Length [ft/ln]	268.91	949.38	618.87	117.65	103.03	195.29

**Movement, Approach, & Intersection Results**

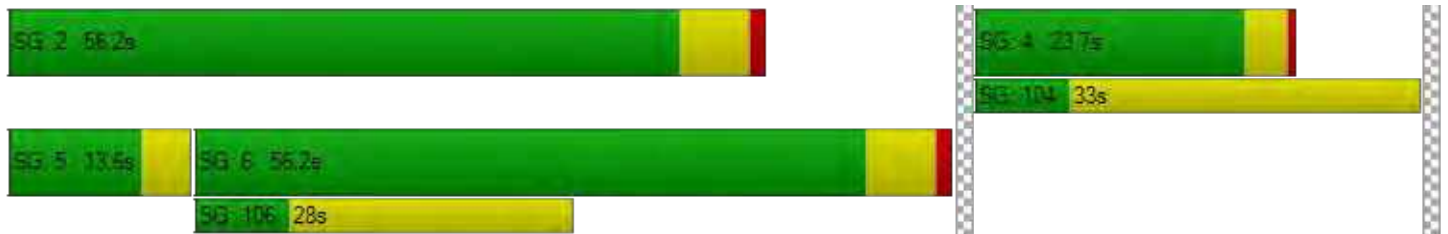
d_M, Delay for Movement [s/veh]	35.60	221.50	23.55	11.48	39.22	7.25
Movement LOS	D	F	C	B	D	A
d_A, Approach Delay [s/veh]	115.15		22.54		10.70	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	35.86					
Intersection LOS	D					
Intersection V/C	0.987					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	35.70	35.70	35.70
I_p,int, Pedestrian LOS Score for Intersection	2.859	3.318	3.290
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	434	1086	1086
d_b, Bicycle Delay [s]	28.33	9.62	9.62
I_b,int, Bicycle LOS Score for Intersection	1.560	3.185	2.563
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	730	107	2591	53	57	1886
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	730	107	2591	53	57	1886
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	186	27	661	14	15	481
Total Analysis Volume [veh/h]	745	109	2644	54	58	1924
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	89	89	89	89	89	89
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	21	21	50	50	4	58
g / C, Green / Cycle	0.23	0.23	0.56	0.56	0.04	0.65
(v / s)_i Volume / Saturation Flow Rate	0.22	0.07	0.52	0.03	0.03	0.39
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	812	378	2812	891	79	3209
d1, Uniform Delay [s]	33.41	28.13	18.50	9.14	42.27	9.19
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.89	0.15	0.78	0.01	4.86	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.92	0.29	0.94	0.06	0.74	0.60
d, Delay for Lane Group [s/veh]	35.30	28.28	19.29	9.15	47.14	9.26
Lane Group LOS	D	C	B	A	D	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.97	1.93	13.94	0.42	1.31	5.49
50th-Percentile Queue Length [ft/ln]	199.24	48.17	348.48	10.46	32.87	137.28
95th-Percentile Queue Length [veh/ln]	12.60	3.47	20.06	0.75	2.37	9.33
95th-Percentile Queue Length [ft/ln]	314.99	86.71	501.55	18.83	59.17	233.36

**Movement, Approach, & Intersection Results**

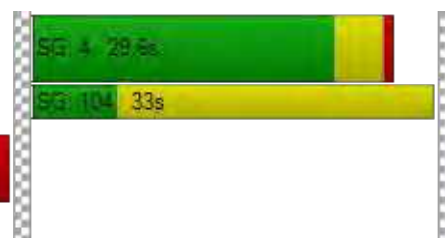
d_M, Delay for Movement [s/veh]	35.30	28.28	19.29	9.15	47.14	9.26
Movement LOS	D	C	B	A	D	A
d_A, Approach Delay [s/veh]	34.40		19.08		10.37	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	18.33					
Intersection LOS	B					
Intersection V/C	0.856					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.32	34.32	34.32
I_p,int, Pedestrian LOS Score for Intersection	2.326	3.706	3.582
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	560	1120	1120
d_b, Bicycle Delay [s]	23.14	8.64	8.64
I_b,int, Bicycle LOS Score for Intersection	1.560	3.044	2.650
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bafront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

**Intersection Setup**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑↑		⇐⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	422	119	2224	43	35	1173
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.80	14.80	4.10	4.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	422	119	2224	43	35	1173
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	30	567	11	9	299
Total Analysis Volume [veh/h]	431	121	2269	44	36	1197
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	10	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	62	62	62	62	62	62
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	14	14	32	32	38	38
g / C, Green / Cycle	0.22	0.22	0.52	0.52	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.20	0.20	0.50	0.03	0.06	0.27
s, saturation flow rate [veh/h]	1438	1364	4507	1406	564	4470
c, Capacity [veh/h]	322	305	2347	732	425	2755
d1, Uniform Delay [s]	23.23	23.24	14.33	7.35	13.01	6.23
k, delay calibration	0.10	0.10	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.01	7.42	1.61	0.01	0.03	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.88	0.88	0.97	0.06	0.08	0.43
d, Delay for Lane Group [s/veh]	30.24	30.66	15.94	7.36	13.04	6.27
Lane Group LOS	C	C	B	A	B	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.31	4.13	8.50	0.25	0.07	2.03
50th-Percentile Queue Length [ft/ln]	107.77	103.20	212.57	6.14	1.74	50.79
95th-Percentile Queue Length [veh/ln]	7.72	7.43	13.28	0.44	0.12	3.66
95th-Percentile Queue Length [ft/ln]	192.89	185.76	332.12	11.06	3.12	91.42

**Movement, Approach, & Intersection Results**

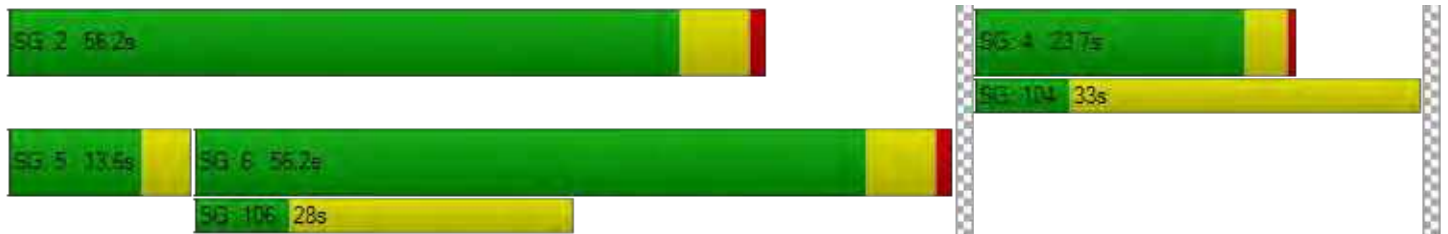
d_M, Delay for Movement [s/veh]	30.38	30.66	15.94	7.36	13.04	6.27
Movement LOS	C	C	B	A	B	A
d_A, Approach Delay [s/veh]	30.44		15.78		6.47	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	14.95					
Intersection LOS	B					
Intersection V/C	0.826					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.90	20.90	20.90
I_p,int, Pedestrian LOS Score for Intersection	2.293	3.122	3.146
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	647	1617	1617
d_b, Bicycle Delay [s]	14.15	1.13	1.13
I_b,int, Bicycle LOS Score for Intersection	2.470	2.832	2.238
Bicycle LOS	B	C	B

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	73.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.206

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	389	236	134	185	45	345
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	389	236	134	185	45	345
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	112	68	39	53	13	99
Total Analysis Volume [veh/h]	447	271	154	213	52	397
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	718	542	584
Degree of Utilization, x	1.21	0.68	0.77

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	25.79	5.09	7.06
95th-Percentile Queue Length [ft]	644.69	127.37	176.45
Approach Delay [s/veh]	129.19	22.41	26.79
Approach LOS	F	C	D
Intersection Delay [s/veh]	73.67		
Intersection LOS	F		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	9.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

**Intersection Setup**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	0	130	2275	17	36	1241
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	19.20	3.80	3.80	8.60	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	130	2275	17	36	1241
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	36	625	5	10	341
Total Analysis Volume [veh/h]	0	143	2500	19	40	1364
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	10	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	0.5	0.5	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	77	77	77	77	77
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	10	50	50	57	57
g / C, Green / Cycle	0.13	0.65	0.65	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.12	0.55	0.01	0.18	0.31
s, saturation flow rate [veh/h]	1233	4518	1410	225	4342
c, Capacity [veh/h]	166	2941	918	248	3196
d1, Uniform Delay [s]	32.51	10.48	4.75	14.85	3.90
k, delay calibration	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.91	0.28	0.00	0.11	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.85	0.02	0.16	0.43
d, Delay for Lane Group [s/veh]	37.42	10.76	4.75	14.97	3.93
Lane Group LOS	D	B	A	B	A
Critical Lane Group	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.74	8.53	0.09	0.12	1.82
50th-Percentile Queue Length [ft/ln]	68.60	213.26	2.20	2.99	45.39
95th-Percentile Queue Length [veh/ln]	4.94	13.32	0.16	0.22	3.27
95th-Percentile Queue Length [ft/ln]	123.48	333.01	3.97	5.38	81.70

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	37.42	10.76	4.75	14.97	3.93
Movement LOS		D	B	A	B	A
d_A, Approach Delay [s/veh]	37.42		10.71		4.25	
Approach LOS	D		B		A	
d_I, Intersection Delay [s/veh]	9.42					
Intersection LOS	A					
Intersection V/C	0.768					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	-6.2	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.80	28.13	28.13
I_p,int, Pedestrian LOS Score for Intersection	1.862	3.126	3.149
Crosswalk LOS	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	522	1304	1304
d_b, Bicycle Delay [s]	20.95	4.64	4.64
I_b,int, Bicycle LOS Score for Intersection	1.560	2.945	2.332
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	54.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

**Intersection Setup**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Base Volume Input [veh/h]	31	382	19	95	327	36	249	15	330	196	13	492
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	382	19	95	327	36	249	15	330	196	13	492
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	109	5	27	93	10	71	4	94	56	4	140
Total Analysis Volume [veh/h]	35	434	22	108	372	41	283	17	375	223	15	559
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing in	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing mi	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	17	44	0	9	36	0	0	39	39	0	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	20	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	104	104	104	104	104	104	104	104
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	28	5	30	27	27	28	28
g / C, Green / Cycle	0.03	0.27	0.05	0.29	0.26	0.26	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.03	0.23	0.17	0.26	0.24	0.25
s, saturation flow rate [veh/h]	1767	1839	3431	1790	1771	1462	1685	1577
c, Capacity [veh/h]	54	490	173	512	461	380	454	424
d1, Uniform Delay [s]	49.84	37.22	48.40	34.46	34.27	37.34	36.61	36.91
k, delay calibration	0.11	0.35	0.11	0.30	0.15	0.37	0.33	0.35
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.05	20.70	3.63	8.16	2.12	36.40	16.76	21.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.64	0.93	0.62	0.81	0.65	0.99	0.90	0.92
d, Delay for Lane Group [s/veh]	61.90	57.92	52.03	42.62	36.39	73.75	53.38	58.11
Lane Group LOS	E	E	D	D	D	E	D	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.08	13.90	1.45	10.67	6.93	12.92	11.86	11.93
50th-Percentile Queue Length [ft/ln]	26.92	347.39	36.32	266.64	173.31	323.00	296.61	298.25
95th-Percentile Queue Length [veh/ln]	1.94	20.01	2.61	16.02	11.25	18.81	17.51	17.59
95th-Percentile Queue Length [ft/ln]	48.45	500.22	65.37	400.53	281.26	470.37	437.84	439.86

**Movement, Approach, & Intersection Results**

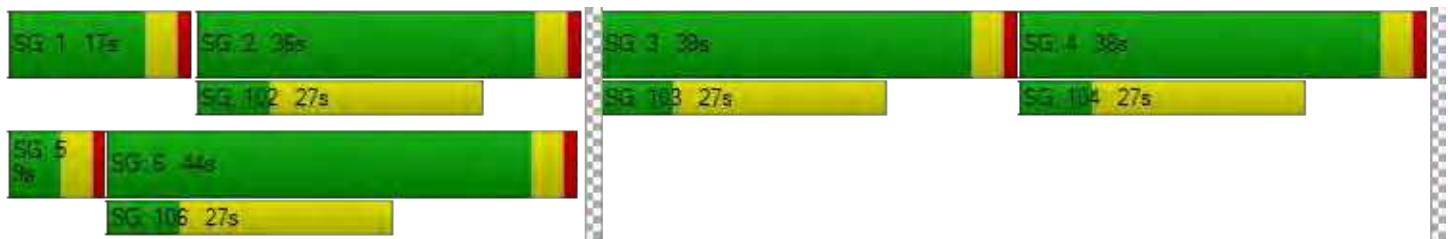
d_M, Delay for Movement [s/veh]	61.90	57.92	57.92	52.03	42.62	42.62	36.39	36.39	73.75	53.38	53.38	56.71
Movement LOS	E	E	E	D	D	D	D	D	E	D	D	E
d_A, Approach Delay [s/veh]	58.21			44.57			57.14			55.69		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	54.25											
Intersection LOS	D											
Intersection V/C	0.783											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	41.47	41.47	41.47	41.47
I_p,int, Pedestrian LOS Score for Intersection	2.422	2.657	2.196	2.368
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	771	617	674	655
d_b, Bicycle Delay [s]	19.60	24.82	22.79	23.46
I_b,int, Bicycle LOS Score for Intersection	2.370	2.419	2.673	2.875
Bicycle LOS	B	B	B	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.549

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
Base Volume Input [veh/h]	39	35	26	335	37	3	27	5	135	0	490	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	35	26	335	37	3	27	5	135	0	490	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	9	7	84	9	1	7	1	34	0	123	4
Total Analysis Volume [veh/h]	39	35	26	335	37	3	27	5	135	0	490	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			8			7		
v_di, Inbound Pedestrian Volume crossing in	0			0			7			8		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	41	0	0	27	0	0	22	0	0	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	21	21	18	39	39
g / C, Green / Cycle	0.43	0.23	0.23	0.20	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.11	0.21	0.02	0.19	0.15	0.16
s, saturation flow rate [veh/h]	933	1609	1664	899	1710	1538
c, Capacity [veh/h]	457	378	391	181	776	662
d1, Uniform Delay [s]	16.43	33.33	27.05	35.30	17.31	17.33
k, delay calibration	0.50	0.11	0.11	0.13	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	7.04	0.11	19.07	1.20	1.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.22	0.89	0.10	0.92	0.34	0.36
d, Delay for Lane Group [s/veh]	17.53	40.37	27.16	54.37	18.51	18.86
Lane Group LOS	B	D	C	D	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.35	7.63	0.68	4.47	3.81	3.49
50th-Percentile Queue Length [ft/ln]	33.68	190.67	16.99	111.78	95.28	87.28
95th-Percentile Queue Length [veh/ln]	2.42	12.16	1.22	7.94	6.86	6.28
95th-Percentile Queue Length [ft/ln]	60.62	303.90	30.58	198.47	171.50	157.10

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	17.53	17.53	17.53	40.37	27.16	27.16	54.37	54.37	54.37	18.51	18.67	18.86
Movement LOS	B	B	B	D	C	C	D	D	D	B	B	B
d_A, Approach Delay [s/veh]	17.53			38.96			54.37			18.67		
Approach LOS	B			D			D			B		
d_I, Intersection Delay [s/veh]	30.42											
Intersection LOS	C											
Intersection V/C	0.549											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.72			34.72			34.72			34.72		
l_p,int, Pedestrian LOS Score for Intersection	2.284			2.072			1.895			2.125		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	821			511			400			821		
d_b, Bicycle Delay [s]	15.64			24.98			28.85			15.64		
l_b,int, Bicycle LOS Score for Intersection	1.725			2.178			1.835			1.975		
Bicycle LOS	A			B			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	304.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.288

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	73	63	226	726	153	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	63	226	726	153	15
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	19	68	219	46	5
Total Analysis Volume [veh/h]	88	76	272	875	184	18
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	1.29	0.09	0.20	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	304.25	255.84	8.34	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	11.15	11.15	0.75	0.75	0.00	0.00
95th-Percentile Queue Length [ft/ln]	278.69	278.69	18.84	18.84	0.00	0.00
d_A, Approach Delay [s/veh]	281.82		1.98		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	32.05					
Intersection LOS	F					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/ Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.065

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	30	209	35	15	31	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.90	7.90	14.00	14.00	12.70	17.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	209	35	15	31	48
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	65	11	5	10	15
Total Analysis Volume [veh/h]	37	258	43	19	38	59
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.00	0.07	0.06
d_M, Delay for Movement [s/veh]	7.45	0.00	0.00	0.00	11.87	9.38
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.08	0.08	0.00	0.00	0.43	0.43
95th-Percentile Queue Length [ft/ln]	1.89	1.89	0.00	0.00	10.77	10.77
d_A, Approach Delay [s/veh]	0.93		0.00		10.35	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.82					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 267: Willow Road(SR114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↔↑↑		↔↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	1188	338	150	906	521	199
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1188	338	150	906	521	199
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	297	85	38	227	130	50
Total Analysis Volume [veh/h]	1188	338	150	906	521	199
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	8	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	57	0	16	73	67	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	74	0	13	87	53	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	11	0	0	11	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C
C, Cycle Length [s]	68	68	68	68	68	68
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	5	43	18	18
g / C, Green / Cycle	0.50	0.50	0.07	0.63	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.41	0.44	0.04	0.25	0.21	0.21
s, saturation flow rate [veh/h]	1870	1734	3459	3560	1781	1667
c, Capacity [veh/h]	929	862	246	2231	457	428
d1, Uniform Delay [s]	14.63	15.46	30.86	6.40	23.86	23.95
k, delay calibration	0.11	0.12	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.88	3.51	2.43	0.12	3.45	3.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	0.89	0.61	0.41	0.81	0.82
d, Delay for Lane Group [s/veh]	16.51	18.97	33.29	6.52	27.31	27.90
Lane Group LOS	B	B	C	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.49	9.30	1.20	2.31	5.67	5.45
50th-Percentile Queue Length [ft/ln]	212.19	232.44	30.07	57.86	141.66	136.31
95th-Percentile Queue Length [veh/ln]	13.27	14.30	2.17	4.17	9.57	9.28
95th-Percentile Queue Length [ft/ln]	331.64	357.46	54.13	104.16	239.26	232.04



**Movement, Approach, & Intersection Results**

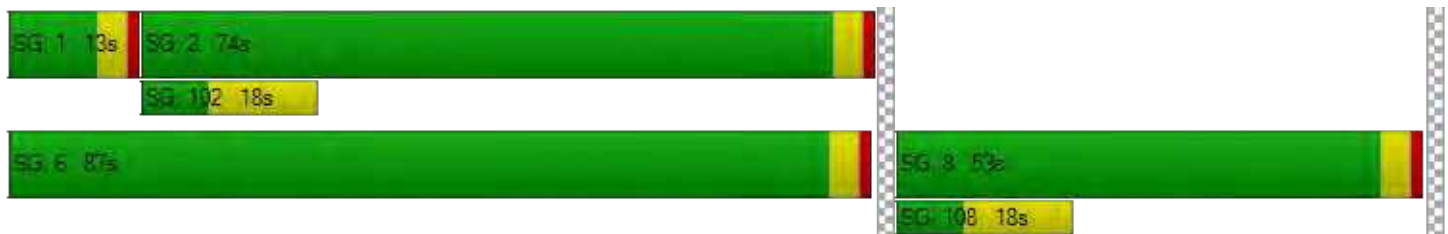
d_M, Delay for Movement [s/veh]	17.39	18.97	33.29	6.52	27.48	27.90
Movement LOS	B	B	C	A	C	C
d_A, Approach Delay [s/veh]	17.74		10.32		27.60	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	17.52					
Intersection LOS	B					
Intersection V/C	0.694					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.03	24.03	24.03
I_p,int, Pedestrian LOS Score for Intersection	3.076	2.967	2.410
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2050	2431	1435
d_b, Bicycle Delay [s]	0.02	1.58	2.72
I_b,int, Bicycle LOS Score for Intersection	2.819	2.431	2.748
Bicycle LOS	C	B	B

**Sequence**

Ring 1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 269: O'Brien Drive/Loop Road**

Control Type:  
 Analysis Method:  
 Analysis Period:

Roundabout  
 HCM 6th Edition  
 15 minutes

Delay (sec / veh):  
 Level Of Service:

9.2  
 A

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	50	91	34	267	306	119	39	57	103	57	88	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	91	34	267	306	119	39	57	103	57	88	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	23	9	67	77	30	10	14	26	14	22	20
Total Analysis Volume [veh/h]	50	91	34	267	306	119	39	57	103	57	88	80
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	370			199			643			184		
Exiting Flow Rate [veh/h]	475			214			262			365		
Demand Flow Rate [veh/h]	50	91	34	267	306	119	39	57	103	57	88	80
Adjusted Demand Flow Rate [veh/h]	50	91	34	267	306	119	39	57	103	57	88	80

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.98			0.98		
Entry Flow Rate [veh/h]	179			706			203			230		
Capacity of Entry and Bypass Lanes [veh/h]	946			1127			717			1145		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	928			1105			703			1122		
X, volume / capacity	0.19			0.63			0.28			0.20		

**Movement, Approach, & Intersection Results**

Lane LOS	A			B			A			A		
95th-Percentile Queue Length [veh]	0.69			4.62			1.16			0.75		
95th-Percentile Queue Length [ft]	17.32			115.47			29.11			18.69		
Approach Delay [s/veh]	5.73			11.69			8.55			5.01		
Approach LOS	A			B			A			A		
Intersection Delay [s/veh]	9.24											
Intersection LOS	A											

Vistro File: P:\...\Vistro\_AllScenarios\_PM\_2021-12-29\_ChilconConstitution\_OZ.vistro

Scenario 18 Near-Term PM (2025 vols)+Project

Report File: P:\...\Near-Term + P PM.pdf

12/30/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	959		1034		1263	349	3605

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	40	1327	7	55	896	200	15	5	388	272	6	4	3215

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	208	675	39	13	825	384	445	20	178	109	54	40	2990

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	2	745	58	167	701	97	71	16	2	65	15	295	2234

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	137	525	424	577	445	104	2212

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	34	32	32	70	0	227	2	696	112	315	636	2	2158

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	3481	20	359	970	72	1814	6716

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	189	101	1112	159	315	133	131	1972	223	559	811	34	5739

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	44	1292	23	284	946	54	94	9	35	75	16	334	3206

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	83	945	1389	51	71	114	2653

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1110	414	57	1102	274	45	3002

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	268	1442	292	78	1275	26	27	183	373	261	255	115	4595

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	20	1349	716	190	301	40	2616

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	9	1046	4	29	537	18	133	2	31	21	7	33	1870

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	14	693	5	2	702	100	107	2	37	15	4	6	1687

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	3	656	91	54	681	10	25	88	5	80	51	58	1802

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	30	240	245	372	112	294	123	439	189	277	502	15	2838

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road/101 NB Ramps	1855		1120		570	696	4241

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	24	225	18	74	500	36	29	124	23	7	16	61	1137

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	179	40	1761	12	31	5	9	609	208	2225	477	14	5570

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	947	199	933	674	726	352	3831

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1244	423	1320	729	283	859	4858

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	572	428	2517	232	183	1513	5445

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	730	107	2591	53	57	1886	5424

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	422	119	2224	43	35	1173	4016

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	389	236	134	185	45	345	1334

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	130		2275	17	36	1241	3699

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	31	382	19	95	327	36	249	15	330	196	13	492	2185

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	39	35	26	335	37	3	27	5	135	0	490	14	1146

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	73	63	226	726	153	15	1256

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	30	209	35	15	31	48	368

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
267	Willow Road(SR114)/Park Street	1188	338	150	906	521	199	3302

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	O'Brien Drive/Loop Road	50	91	34	267	306	119	39	57	103	57	88	80	1291



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Scenario 18 Near-Term PM (2025 vols)+Project

Report File: P:\...\Near-Term + P PM.pdf

12/30/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	959		1034		1263	349	3605
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>959</b>		<b>1034</b>		<b>1263</b>	<b>349</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	40	1327	7	55	896	200	15	5	388	272	6	4	3215	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>40</b>	<b>1327</b>	<b>7</b>	<b>55</b>	<b>896</b>	<b>200</b>	<b>15</b>	<b>5</b>	<b>388</b>	<b>272</b>	<b>6</b>	<b>4</b>	<b>3215</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	208	675	39	13	825	384	445	20	178	109	54	40	2990	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>208</b>	<b>675</b>	<b>39</b>	<b>13</b>	<b>825</b>	<b>384</b>	<b>445</b>	<b>20</b>	<b>178</b>	<b>109</b>	<b>54</b>	<b>40</b>	<b>2990</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	2	745	58	167	701	97	71	16	2	65	15	295	2234	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>2</b>	<b>745</b>	<b>58</b>	<b>167</b>	<b>701</b>	<b>97</b>	<b>71</b>	<b>16</b>	<b>2</b>	<b>65</b>	<b>15</b>	<b>295</b>	<b>2234</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	137	525	424	577	445	104	2212
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>137</b>	<b>525</b>	<b>424</b>	<b>577</b>	<b>445</b>	<b>104</b>	<b>2212</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	Final Base	34	32	32	70	0	227	2	696	112	315	636	2	2158
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>34</b>	<b>32</b>	<b>32</b>	<b>70</b>	<b>0</b>	<b>227</b>	<b>2</b>	<b>696</b>	<b>112</b>	<b>315</b>	<b>636</b>	<b>2</b>	<b>2158</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	3481	20	359	970	72	1814	6716
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3481</b>	<b>20</b>	<b>359</b>	<b>970</b>	<b>72</b>	<b>1814</b>	<b>6716</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	189	101	1112	159	315	133	131	1972	223	559	811	34	5739
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>189</b>	<b>101</b>	<b>1112</b>	<b>159</b>	<b>315</b>	<b>133</b>	<b>131</b>	<b>1972</b>	<b>223</b>	<b>559</b>	<b>811</b>	<b>34</b>	<b>5739</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	44	1292	23	284	946	54	94	9	35	75	16	334	3206
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>44</b>	<b>1292</b>	<b>23</b>	<b>284</b>	<b>946</b>	<b>54</b>	<b>94</b>	<b>9</b>	<b>35</b>	<b>75</b>	<b>16</b>	<b>334</b>	<b>3206</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	83	945	1389	51	71	114	2653
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>83</b>	<b>945</b>	<b>1389</b>	<b>51</b>	<b>71</b>	<b>114</b>	<b>2653</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1110	414	57	1102	274	45	3002
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1110</b>	<b>414</b>	<b>57</b>	<b>1102</b>	<b>274</b>	<b>45</b>	<b>3002</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	268	1442	292	78	1275	26	27	183	373	261	255	115	4595
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>268</b>	<b>1442</b>	<b>292</b>	<b>78</b>	<b>1275</b>	<b>26</b>	<b>27</b>	<b>183</b>	<b>373</b>	<b>261</b>	<b>255</b>	<b>115</b>	<b>4595</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	20	1349	716	190	301	40	2616
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>20</b>	<b>1349</b>	<b>716</b>	<b>190</b>	<b>301</b>	<b>40</b>	<b>2616</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	9	1046	4	29	537	18	133	2	31	21	7	33	1870
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>1046</b>	<b>4</b>	<b>29</b>	<b>537</b>	<b>18</b>	<b>133</b>	<b>2</b>	<b>31</b>	<b>21</b>	<b>7</b>	<b>33</b>	<b>1870</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	14	693	5	2	702	100	107	2	37	15	4	6	1687
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>14</b>	<b>693</b>	<b>5</b>	<b>2</b>	<b>702</b>	<b>100</b>	<b>107</b>	<b>2</b>	<b>37</b>	<b>15</b>	<b>4</b>	<b>6</b>	<b>1687</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	3	656	91	54	681	10	25	88	5	80	51	58	1802
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3</b>	<b>656</b>	<b>91</b>	<b>54</b>	<b>681</b>	<b>10</b>	<b>25</b>	<b>88</b>	<b>5</b>	<b>80</b>	<b>51</b>	<b>58</b>	<b>1802</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	Final Base	30	240	245	372	112	294	123	439	189	277	502	15	2838
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>30</b>	<b>240</b>	<b>245</b>	<b>372</b>	<b>112</b>	<b>294</b>	<b>123</b>	<b>439</b>	<b>189</b>	<b>277</b>	<b>502</b>	<b>15</b>	<b>2838</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road/101 NB Ramps	Final Base	1855		1120		570	696	4241
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1855</b>		<b>1120</b>		<b>570</b>	<b>696</b>	<b>4241</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	24	225	18	74	500	36	29	124	23	7	16	61	1137
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>24</b>	<b>225</b>	<b>18</b>	<b>74</b>	<b>500</b>	<b>36</b>	<b>29</b>	<b>124</b>	<b>23</b>	<b>7</b>	<b>16</b>	<b>61</b>	<b>1137</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	179	40	1761	12	31	5	9	609	208	2225	477	14	5570
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>179</b>	<b>40</b>	<b>1761</b>	<b>12</b>	<b>31</b>	<b>5</b>	<b>9</b>	<b>609</b>	<b>208</b>	<b>2225</b>	<b>477</b>	<b>14</b>	<b>5570</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	947	199	933	674	726	352	3831
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>947</b>	<b>199</b>	<b>933</b>	<b>674</b>	<b>726</b>	<b>352</b>	<b>3831</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1244	423	1320	729	283	859	4858
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1244</b>	<b>423</b>	<b>1320</b>	<b>729</b>	<b>283</b>	<b>859</b>	<b>4858</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	572	428	2517	232	183	1513	5445
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>572</b>	<b>428</b>	<b>2517</b>	<b>232</b>	<b>183</b>	<b>1513</b>	<b>5445</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	730	107	2591	53	57	1886	5424
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>730</b>	<b>107</b>	<b>2591</b>	<b>53</b>	<b>57</b>	<b>1886</b>	<b>5424</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	Final Base	422	119	2224	43	35	1173	4016
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>422</b>	<b>119</b>	<b>2224</b>	<b>43</b>	<b>35</b>	<b>1173</b>	<b>4016</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	389	236	134	185	45	345	1334
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>389</b>	<b>236</b>	<b>134</b>	<b>185</b>	<b>45</b>	<b>345</b>	<b>1334</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	130	2275	17	36	1241	3699	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>130</b>	<b>2275</b>	<b>17</b>	<b>36</b>	<b>1241</b>	<b>3699</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	31	382	19	95	327	36	249	15	330	196	13	492	2185
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>31</b>	<b>382</b>	<b>19</b>	<b>95</b>	<b>327</b>	<b>36</b>	<b>249</b>	<b>15</b>	<b>330</b>	<b>196</b>	<b>13</b>	<b>492</b>	<b>2185</b>

ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	39	35	26	335	37	3	27	5	135	0	490	14	1146
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>39</b>	<b>35</b>	<b>26</b>	<b>335</b>	<b>37</b>	<b>3</b>	<b>27</b>	<b>5</b>	<b>135</b>	<b>0</b>	<b>490</b>	<b>14</b>	<b>1146</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	73	63	226	726	153	15	1256
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>73</b>	<b>63</b>	<b>226</b>	<b>726</b>	<b>153</b>	<b>15</b>	<b>1256</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	Final Base	30	209	35	15	31	48	368
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>30</b>	<b>209</b>	<b>35</b>	<b>15</b>	<b>31</b>	<b>48</b>	<b>368</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
267	Willow Road (SR114)/Park Street	Final Base	1188	338	150	906	521	199	3302
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1188</b>	<b>338</b>	<b>150</b>	<b>906</b>	<b>521</b>	<b>199</b>	<b>3302</b>



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ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
269	O'Brien Drive/Loop Road	Final Base	50	91	34	267	306	119	39	57	103	57	88	80	1291	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>50</b>	<b>91</b>	<b>34</b>	<b>267</b>	<b>306</b>	<b>119</b>	<b>39</b>	<b>57</b>	<b>103</b>	<b>57</b>	<b>88</b>	<b>80</b>	<b>1291</b>	

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## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	80%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	267	610	84	176
2	259	592	81	171
3	254	580	80	167
4	238	543	75	157
5	211	482	66	139
6	208	476	66	137
7	206	470	65	136
8	187	427	59	123
9	184	421	58	121
10	182	415	57	120
11	158	360	50	104
12	147	336	46	97
13	144	329	45	95
14	107	244	34	70
15	107	244	34	70
16	75	171	24	49
17	43	98	13	28
18	43	98	13	28
19	24	55	8	16
20	13	31	4	9
21	8	18	3	5
22	3	6	1	2
23	3	6	1	2
24	3	6	1	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	877	1	176	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	851	1	171	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	834	1	167	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	781	1	157	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	693	1	139	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	684	1	137	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	676	1	136	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	614	1	123	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
9	1	605	1	121	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
10	1	597	1	120	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
11	1	518	1	104	No	No	No	Yes	No	No	No	Yes	No	No
12	1	483	1	97	No	No	No	Yes	No	No	No	Yes	No	No
13	1	473	1	95	No	No	No	Yes	No	No	No	Yes	No	No
14	1	351	1	70	No	No	No	No	No	No	No	No	No	No
15	1	351	1	70	No	No	No	No	No	No	No	No	No	No
16	1	246	1	49	No	No	No	No	No	No	No	No	No	No
17	1	141	1	28	No	No	No	No	No	No	No	No	No	No
18	1	141	1	28	No	No	No	No	No	No	No	No	No	No
19	1	79	1	16	No	No	No	No	No	No	No	No	No	No
20	1	44	1	9	No	No	No	No	No	No	No	No	No	No
21	1	26	1	5	No	No	No	No	No	No	No	No	No	No
22	1	9	1	2	No	No	No	No	No	No	No	No	No	No
23	1	9	1	2	No	No	No	No	No	No	No	No	No	No
24	1	9	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	10	13	4	9	10	13	4	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.2	13.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:15	0:40
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	84	176
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1137	1137
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	319	625	390
2	309	606	378
3	303	594	371
4	284	556	347
5	252	494	308
6	249	488	304
7	246	481	300
8	223	438	273
9	220	431	269
10	217	425	265
11	188	369	230
12	175	344	215
13	172	338	211
14	128	250	156
15	128	250	156
16	89	175	109
17	51	100	62
18	51	100	62
19	29	56	35
20	16	31	20
21	10	19	12
22	3	6	4
23	3	6	4
24	3	6	4

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	944	1	390	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	915	1	378	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	897	1	371	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	840	1	347	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	746	1	308	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	1	737	1	304	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	1	727	1	300	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
8	1	661	1	273	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
9	1	651	1	269	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
10	1	642	1	265	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
11	1	557	1	230	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
12	1	519	1	215	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
13	1	510	1	211	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
14	1	378	1	156	No	No	Yes	Yes	No	No	No	No	No	No
15	1	378	1	156	No	No	Yes	Yes	No	No	No	No	No	No
16	1	264	1	109	No	No	No	No	No	No	No	No	No	No
17	1	151	1	62	No	No	No	No	No	No	No	No	No	No
18	1	151	1	62	No	No	No	No	No	No	No	No	No	No
19	1	85	1	35	No	No	No	No	No	No	No	No	No	No
20	1	47	1	20	No	No	No	No	No	No	No	No	No	No
21	1	29	1	12	No	No	No	No	No	No	No	No	No	No
22	1	9	1	4	No	No	No	No	No	No	No	No	No	No
23	1	9	1	4	No	No	No	No	No	No	No	No	No	No
24	1	9	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	13	15	15	4	10	11	13	10	3

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	26.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	2:54
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	390
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1334
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	168	952	136
2	163	923	132
3	160	904	129
4	150	847	121
5	133	752	107
6	131	743	106
7	129	733	105
8	118	666	95
9	116	657	94
10	114	647	92
11	99	562	80
12	92	524	75
13	91	514	73
14	67	381	54
15	67	381	54
16	47	267	38
17	27	152	22
18	27	152	22
19	15	86	12
20	8	48	7
21	5	29	4
22	2	10	1
23	2	10	1
24	2	10	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1120	1	136	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1086	1	132	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1064	1	129	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	997	1	121	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	885	1	107	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
6	1	874	1	106	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
7	1	862	1	105	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
8	1	784	1	95	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
9	1	773	1	94	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
10	1	761	1	92	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
11	1	661	1	80	No	No	No	No	No	Yes	Yes	Yes	No	No
12	1	616	1	75	No	No	No	No	No	Yes	Yes	Yes	No	No
13	1	605	1	73	No	No	No	No	No	Yes	Yes	Yes	No	No
14	1	448	1	54	No	No	No	No	No	No	No	Yes	No	No
15	1	448	1	54	No	No	No	No	No	No	No	Yes	No	No
16	1	314	1	38	No	No	No	No	No	No	No	No	No	No
17	1	179	1	22	No	No	No	No	No	No	No	No	No	No
18	1	179	1	22	No	No	No	No	No	No	No	No	No	No
19	1	101	1	12	No	No	No	No	No	No	No	No	No	No
20	1	56	1	7	No	No	No	No	No	No	No	No	No	No
21	1	34	1	4	No	No	No	No	No	No	No	No	No	No
22	1	12	1	1	No	No	No	No	No	No	No	No	No	No
23	1	12	1	1	No	No	No	No	No	No	No	No	No	No
24	1	12	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	10	13	13	15	4	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	281.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	10:38
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	136
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1256
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>

## Signal Warrants Report For Intersection 265: Adam Court/ Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	239	50	79
2	232	49	77
3	227	48	75
4	213	45	70
5	189	40	62
6	186	39	62
7	184	39	61
8	167	35	55
9	165	35	55
10	163	34	54
11	141	30	47
12	131	28	43
13	129	27	43
14	96	20	32
15	96	20	32
16	67	14	22
17	38	8	13
18	38	8	13
19	22	5	7
20	12	3	4
21	7	2	2
22	2	1	1
23	2	1	1
24	2	1	1



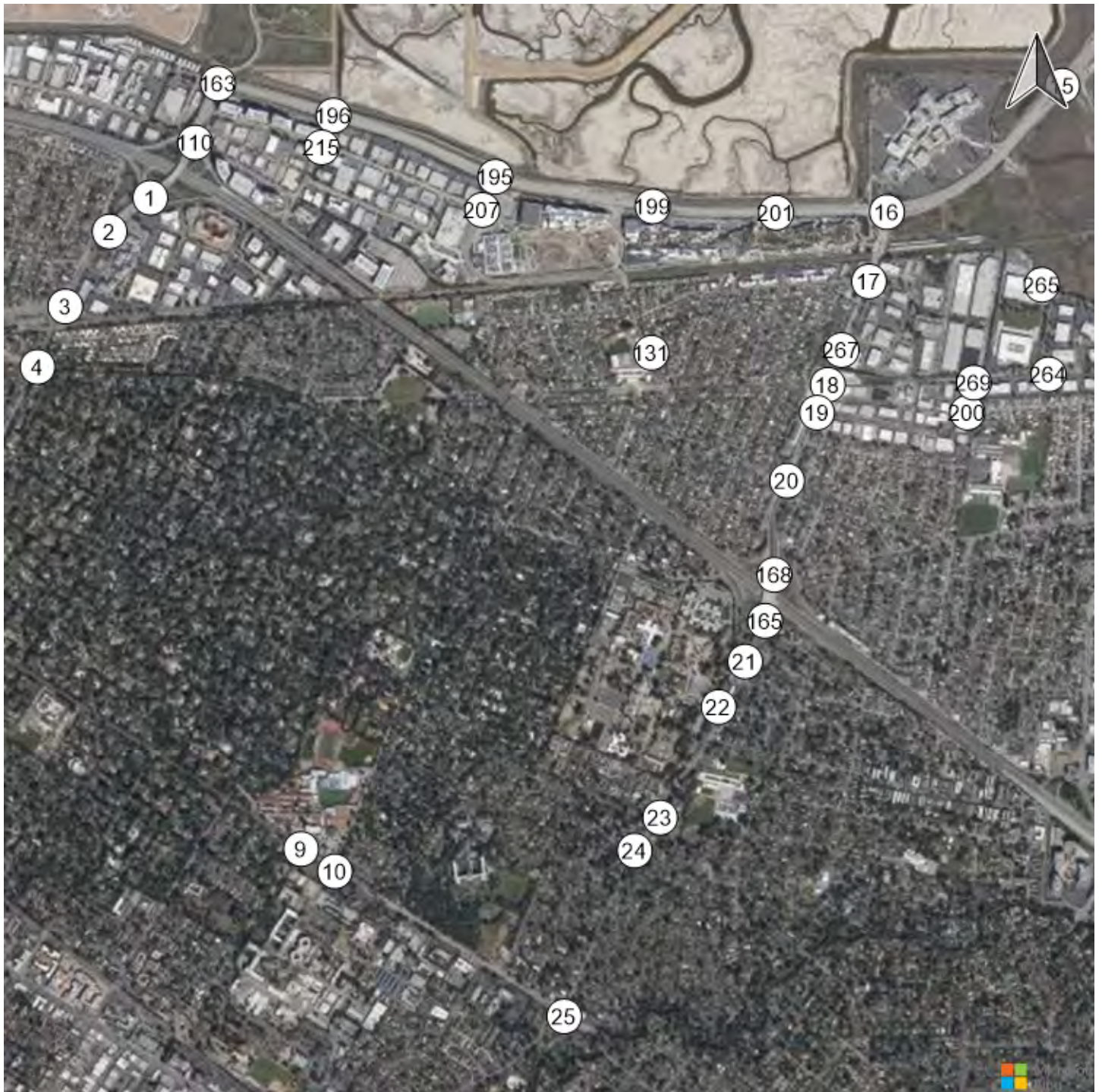
## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	289	1	79	No	No	No	No	No	No	No	No	No	No
2	1	281	1	77	No	No	No	No	No	No	No	No	No	No
3	1	275	1	75	No	No	No	No	No	No	No	No	No	No
4	1	258	1	70	No	No	No	No	No	No	No	No	No	No
5	1	229	1	62	No	No	No	No	No	No	No	No	No	No
6	1	225	1	62	No	No	No	No	No	No	No	No	No	No
7	1	223	1	61	No	No	No	No	No	No	No	No	No	No
8	1	202	1	55	No	No	No	No	No	No	No	No	No	No
9	1	200	1	55	No	No	No	No	No	No	No	No	No	No
10	1	197	1	54	No	No	No	No	No	No	No	No	No	No
11	1	171	1	47	No	No	No	No	No	No	No	No	No	No
12	1	159	1	43	No	No	No	No	No	No	No	No	No	No
13	1	156	1	43	No	No	No	No	No	No	No	No	No	No
14	1	116	1	32	No	No	No	No	No	No	No	No	No	No
15	1	116	1	32	No	No	No	No	No	No	No	No	No	No
16	1	81	1	22	No	No	No	No	No	No	No	No	No	No
17	1	46	1	13	No	No	No	No	No	No	No	No	No	No
18	1	46	1	13	No	No	No	No	No	No	No	No	No	No
19	1	27	1	7	No	No	No	No	No	No	No	No	No	No
20	1	15	1	4	No	No	No	No	No	No	No	No	No	No
21	1	9	1	2	No	No	No	No	No	No	No	No	No	No
22	1	3	1	1	No	No	No	No	No	No	No	No	No	No
23	1	3	1	1	No	No	No	No	No	No	No	No	No	No
24	1	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:13
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	79
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	368
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections

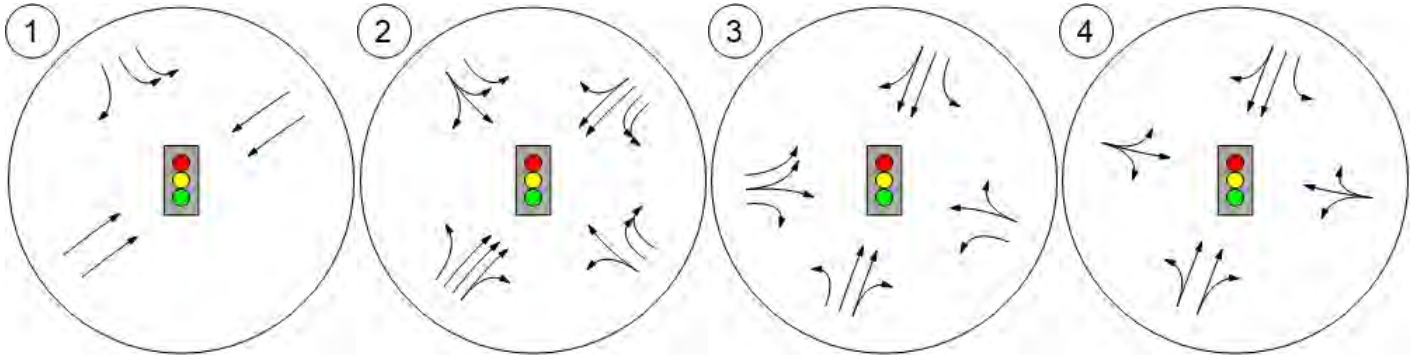


Lane Configuration and Traffic Control

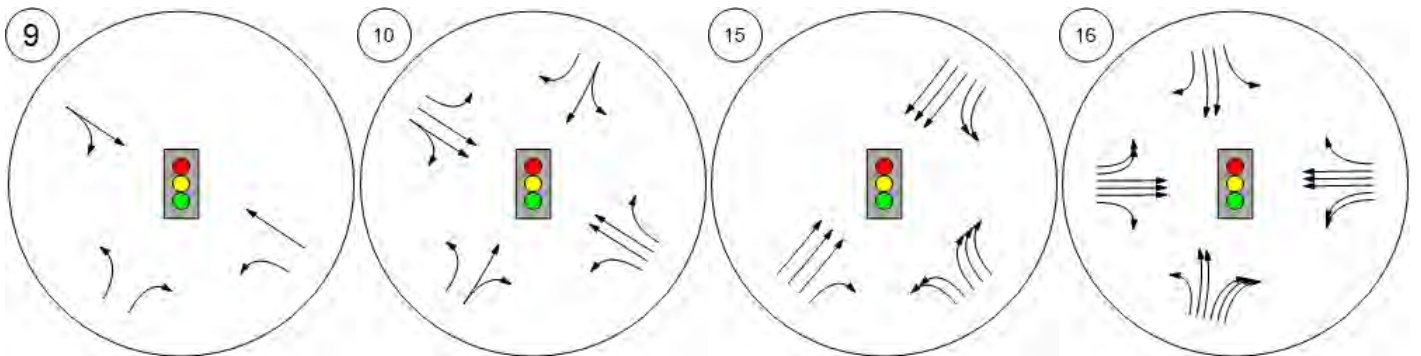


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



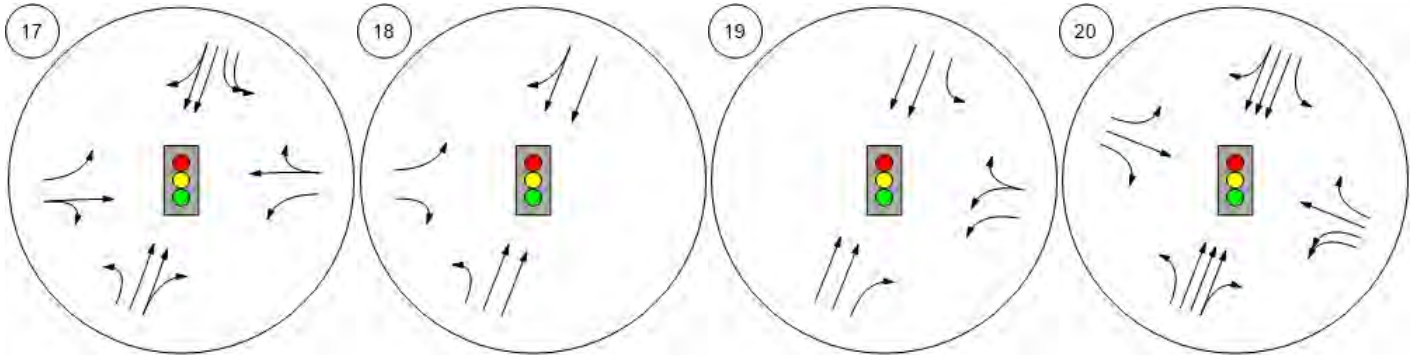
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



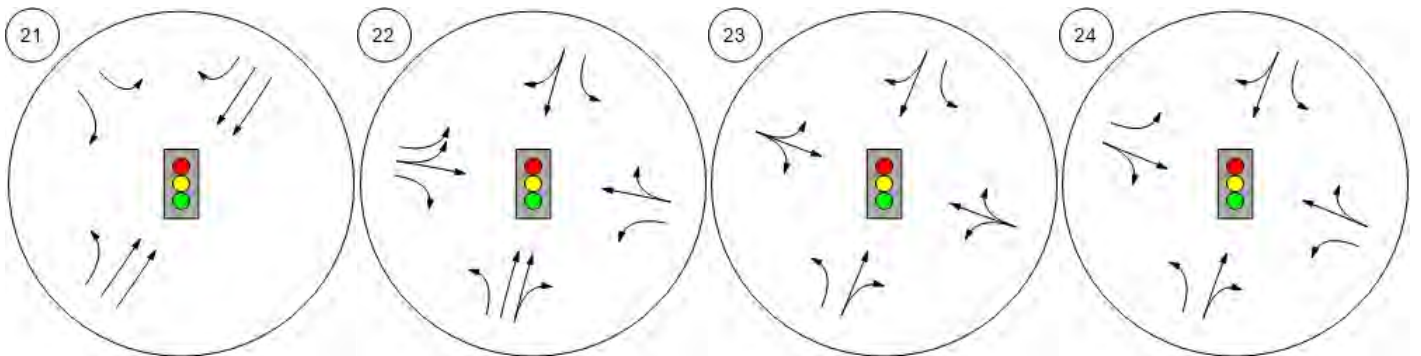
Lane Configuration and Traffic Control



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



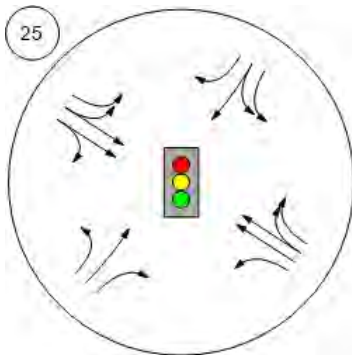
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



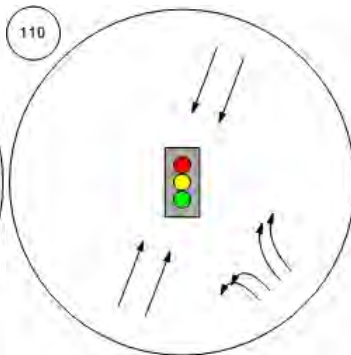
Lane Configuration and Traffic Control



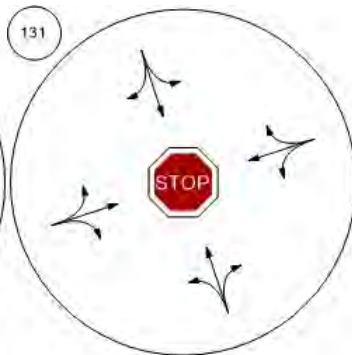
Middlefield Rd-Willow Rd



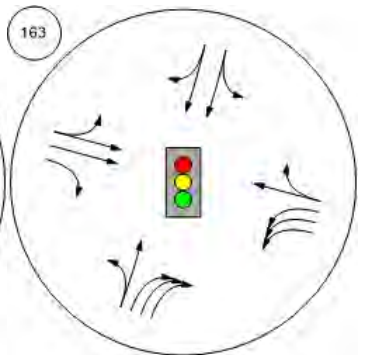
Marsh Road/101 NB Ramps



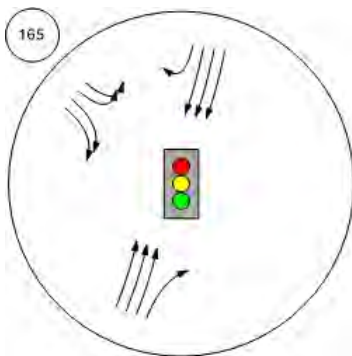
Chilco Street/Hamilton Avenue



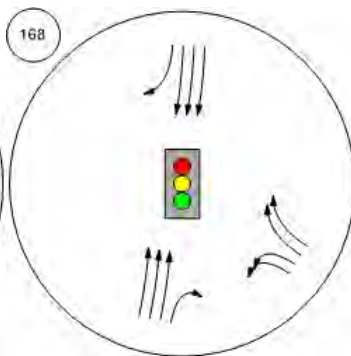
Bayfront Expy/Marsh Rd



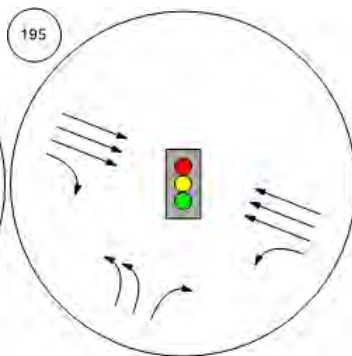
Willow Rd/US-101 SB Ramps



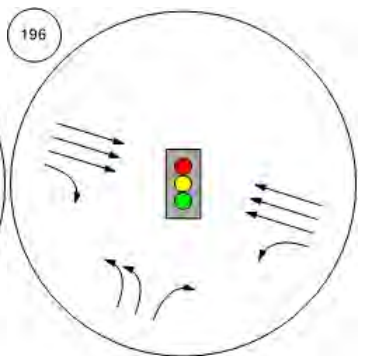
Willow Rd/US-101 NB Ramp



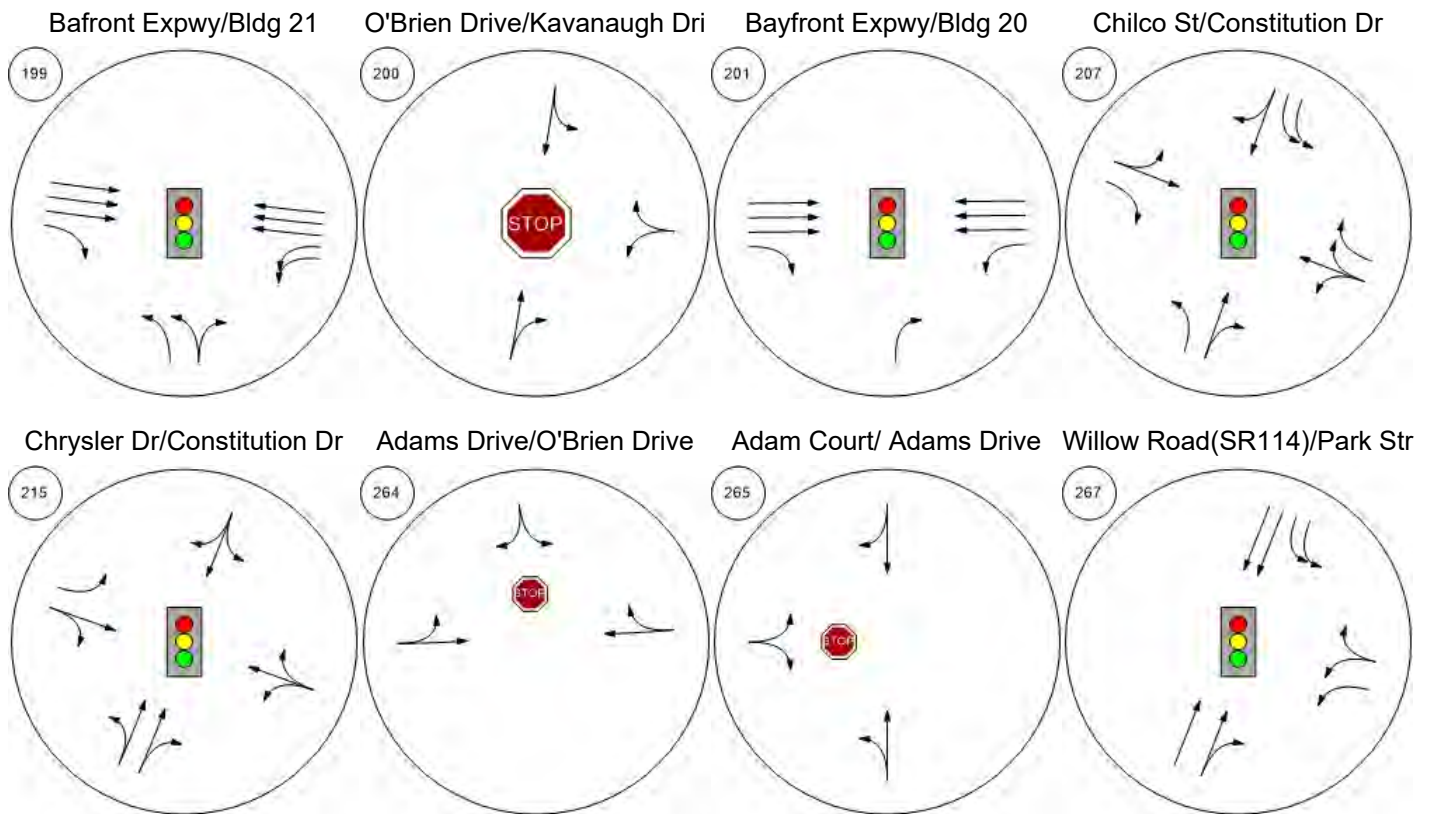
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



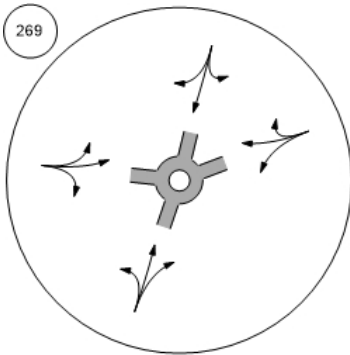
Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



O'Brien Drive/Loop Road

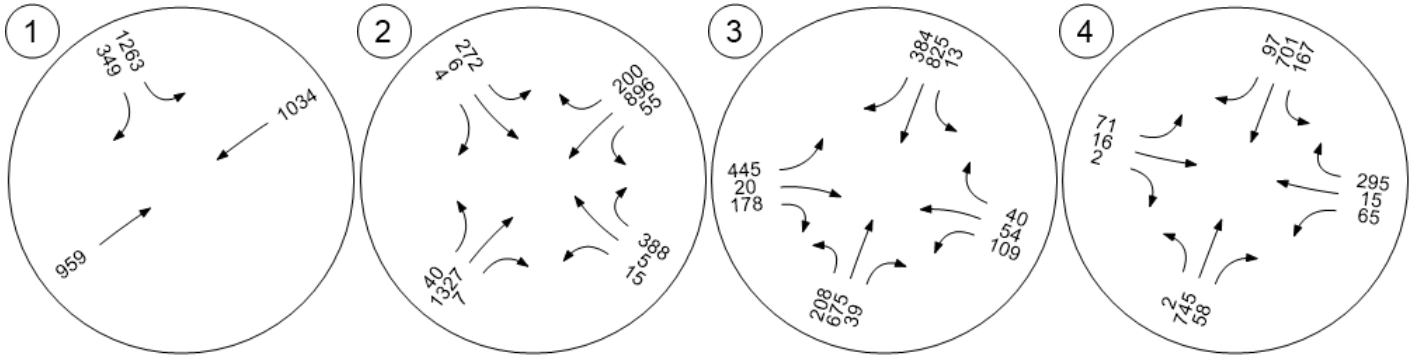


Traffic Volume - Base Volume

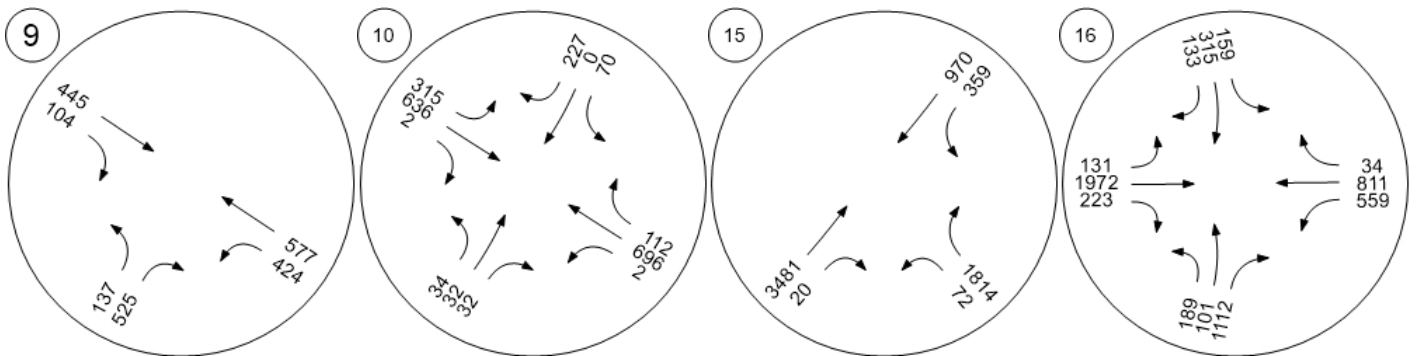


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow

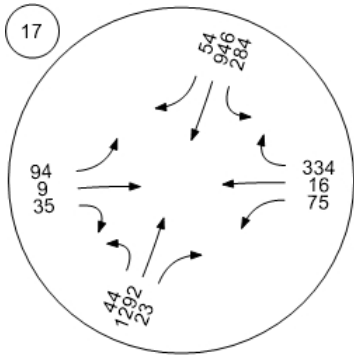




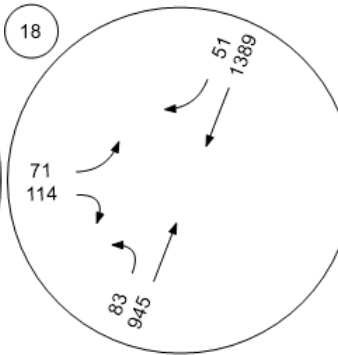
Traffic Volume - Base Volume



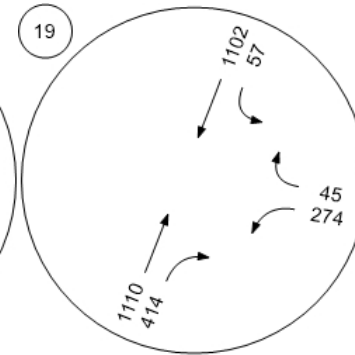
Willow Rd (SR 114)/Hamilton



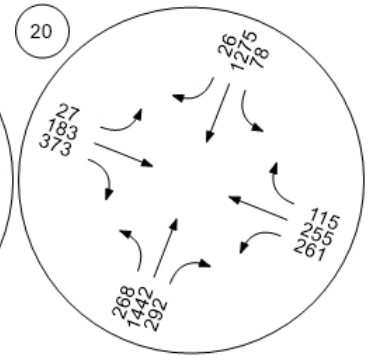
Willow Rd (SR 114)/Ivy Dr



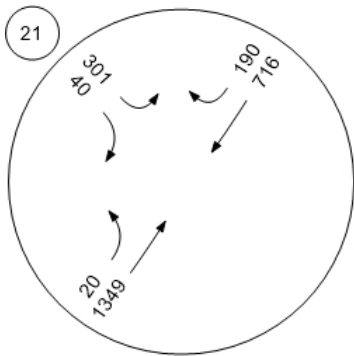
Willow Rd (SR 114)/O'Brien



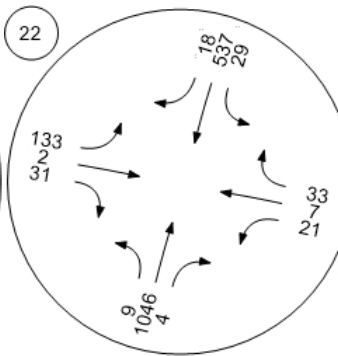
Willow Rd (SR 114)/Newbrid



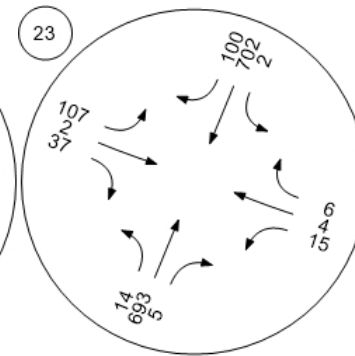
Willow Rd/Bay Rd



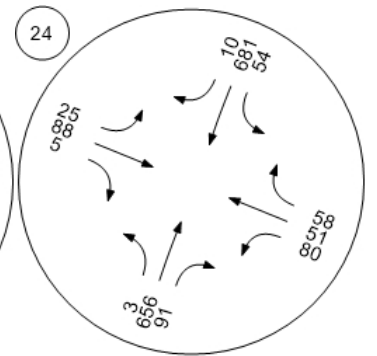
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



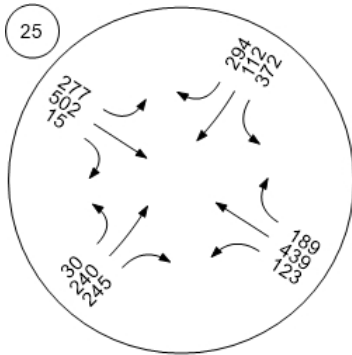
Willow Rd/Gilbert Ave



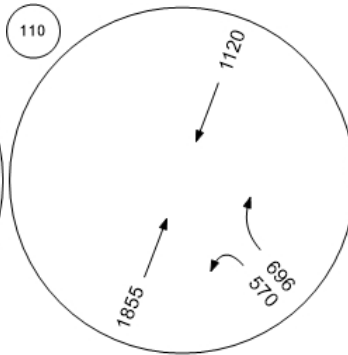
Traffic Volume - Base Volume



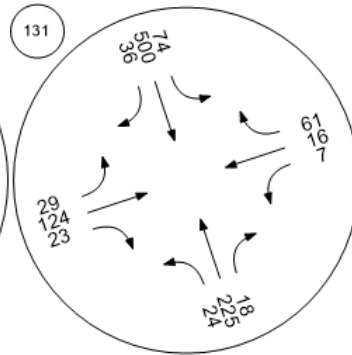
Middlefield Rd-Willow Rd



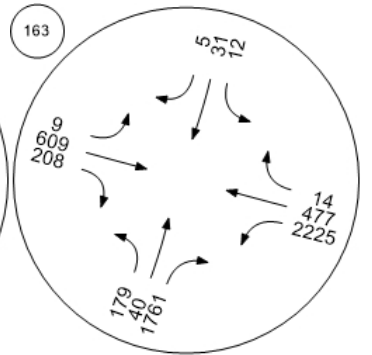
Marsh Road/101 NB Ramps



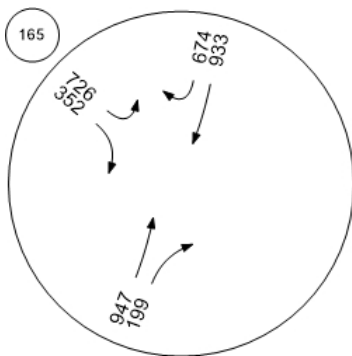
Chilco Street/Hamilton Avenue



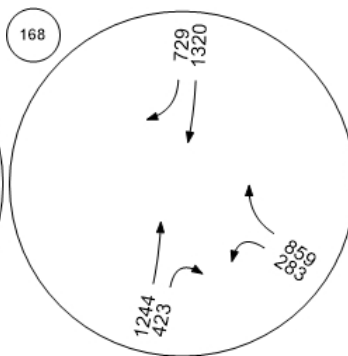
Bayfront Expy/Marsh Rd



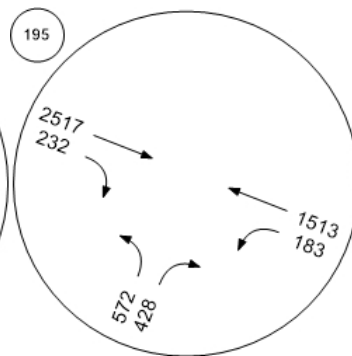
Willow Rd/US-101 SB Ramps



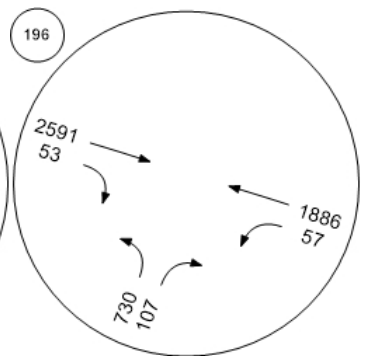
Willow Rd/US-101 NB Ramp



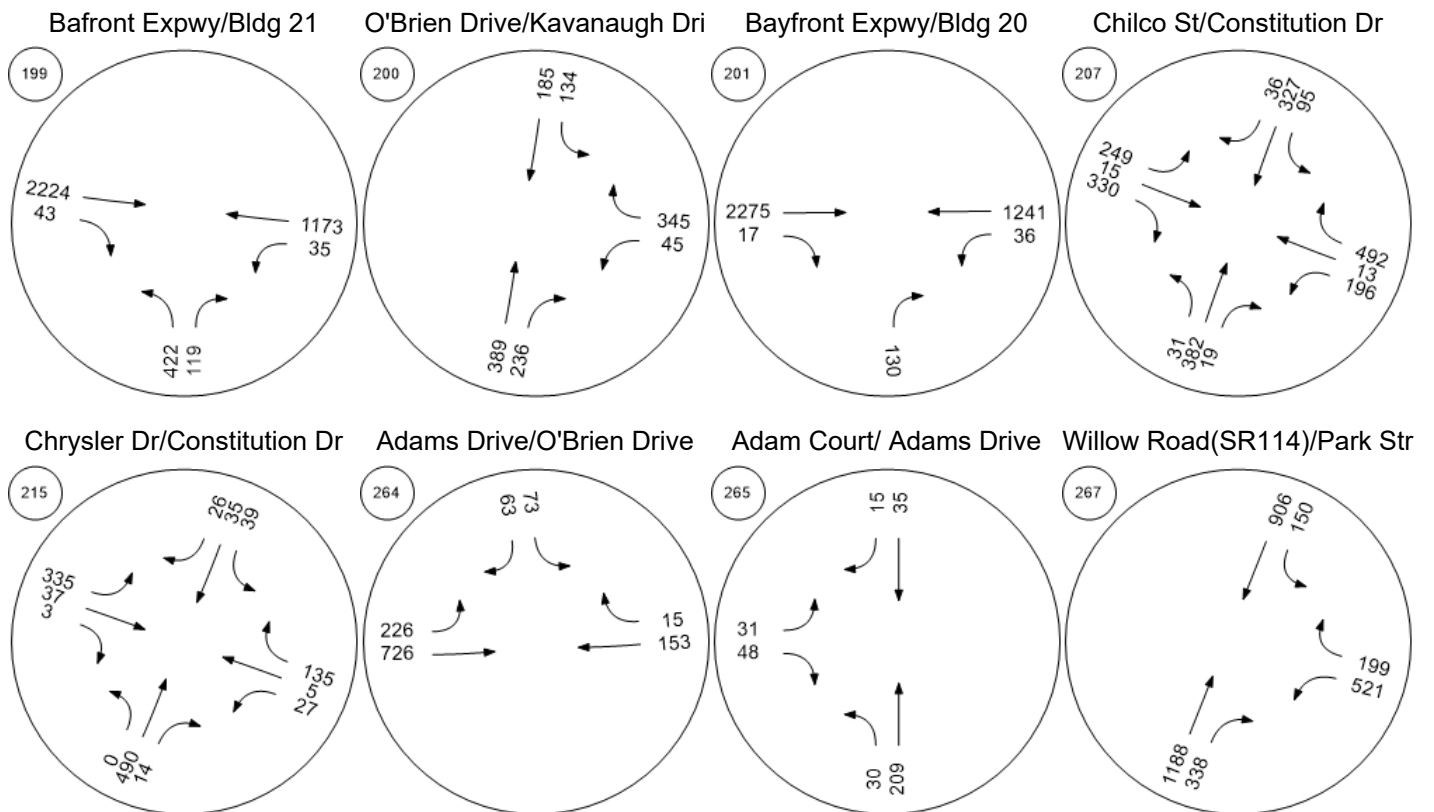
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



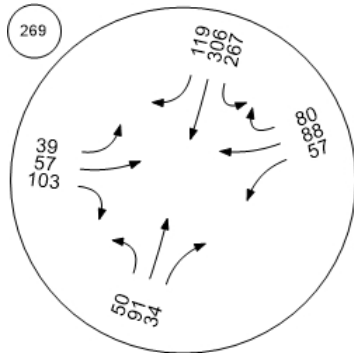
Traffic Volume - Base Volume



Traffic Volume - Base Volume



O'Brien Drive/Loop Road

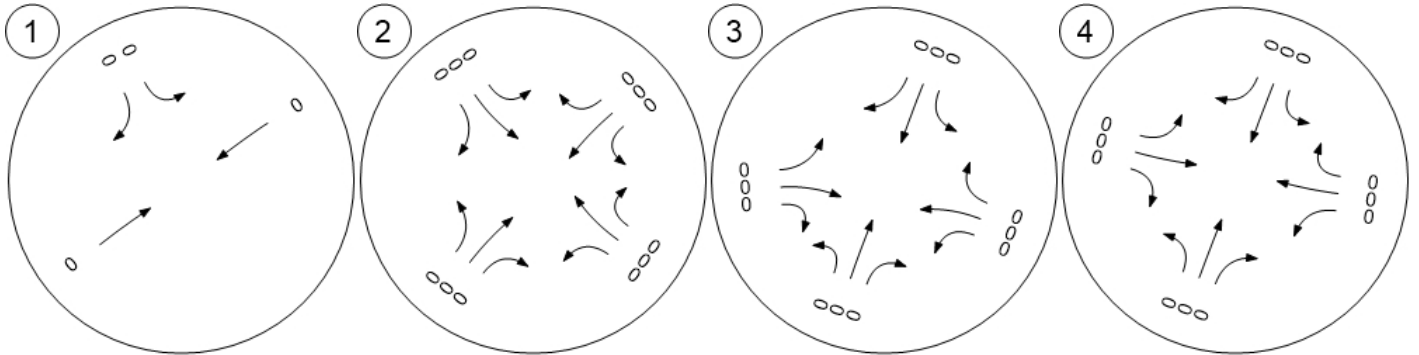


Traffic Volume - In-Process Volume

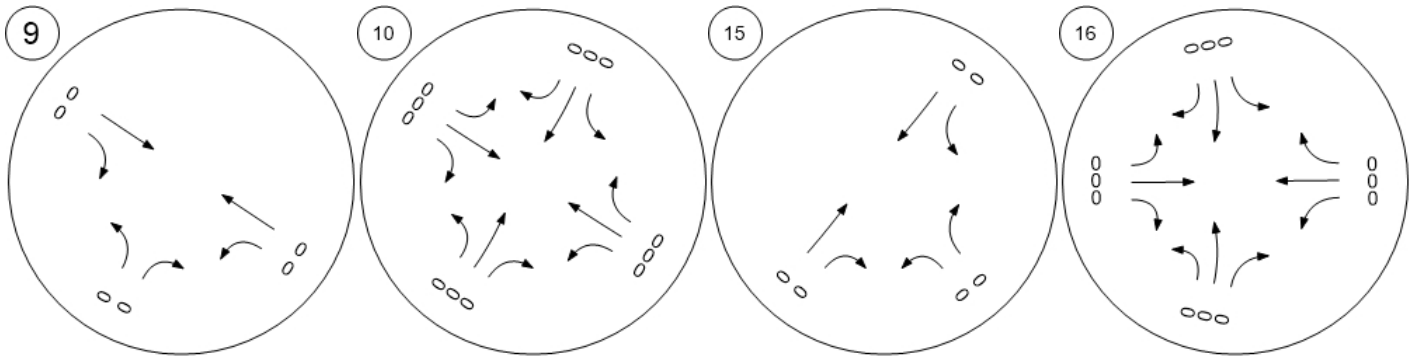


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



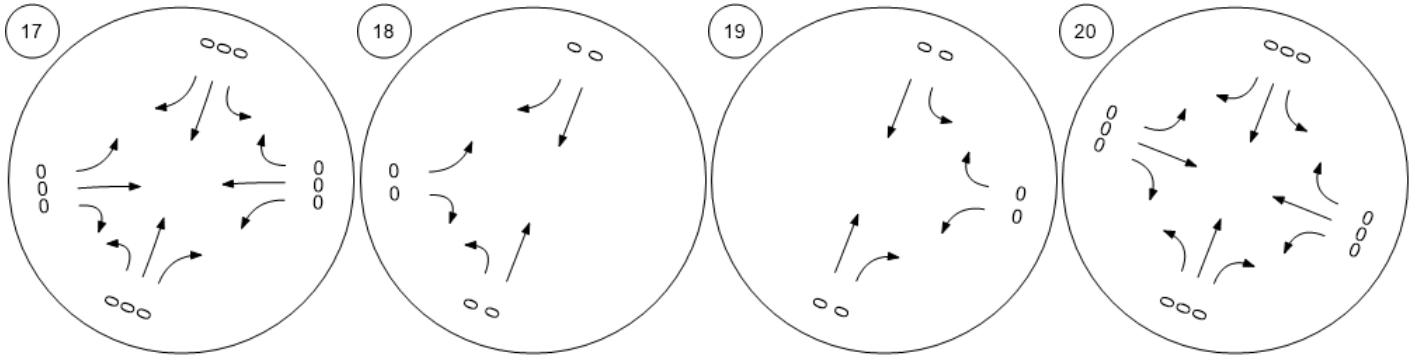
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



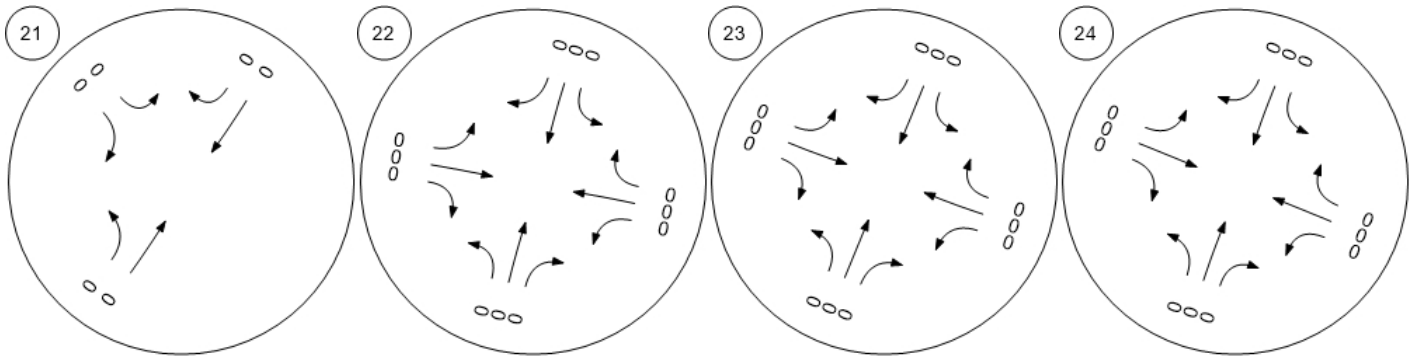
Traffic Volume - In-Process Volume



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



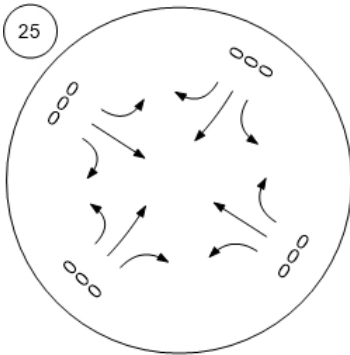
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



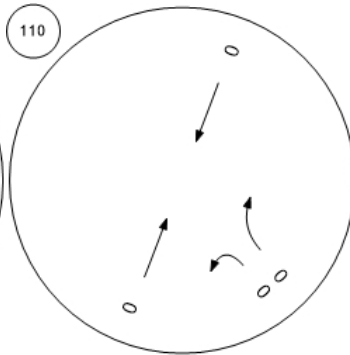
Traffic Volume - In-Process Volume



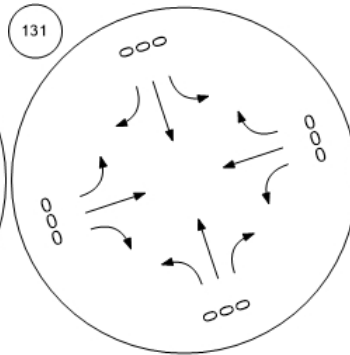
Middlefield Rd-Willow Rd



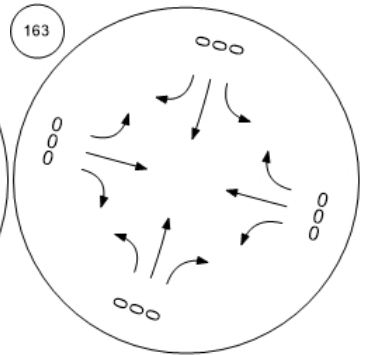
Marsh Road/101 NB Ramps



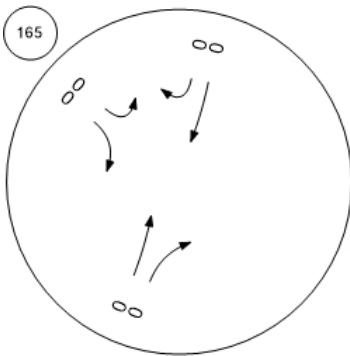
Chilco Street/Hamilton Avenue



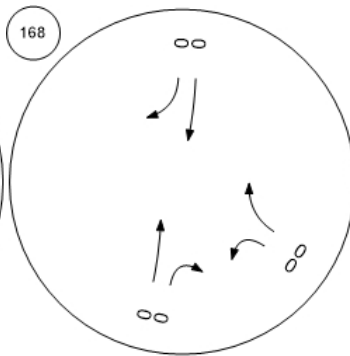
Bayfront Expy/Marsh Rd



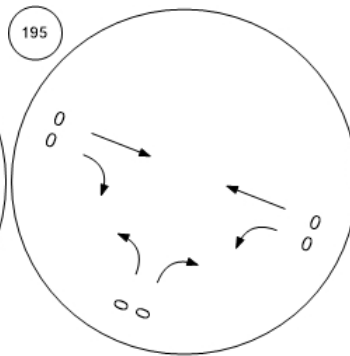
Willow Rd/US-101 SB Ramps



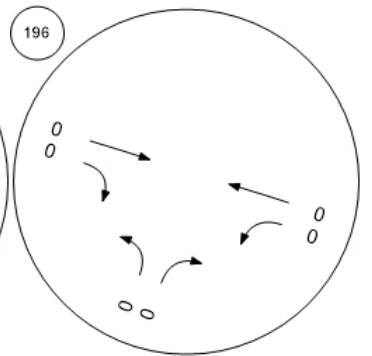
Willow Rd/US-101 NB Ramp



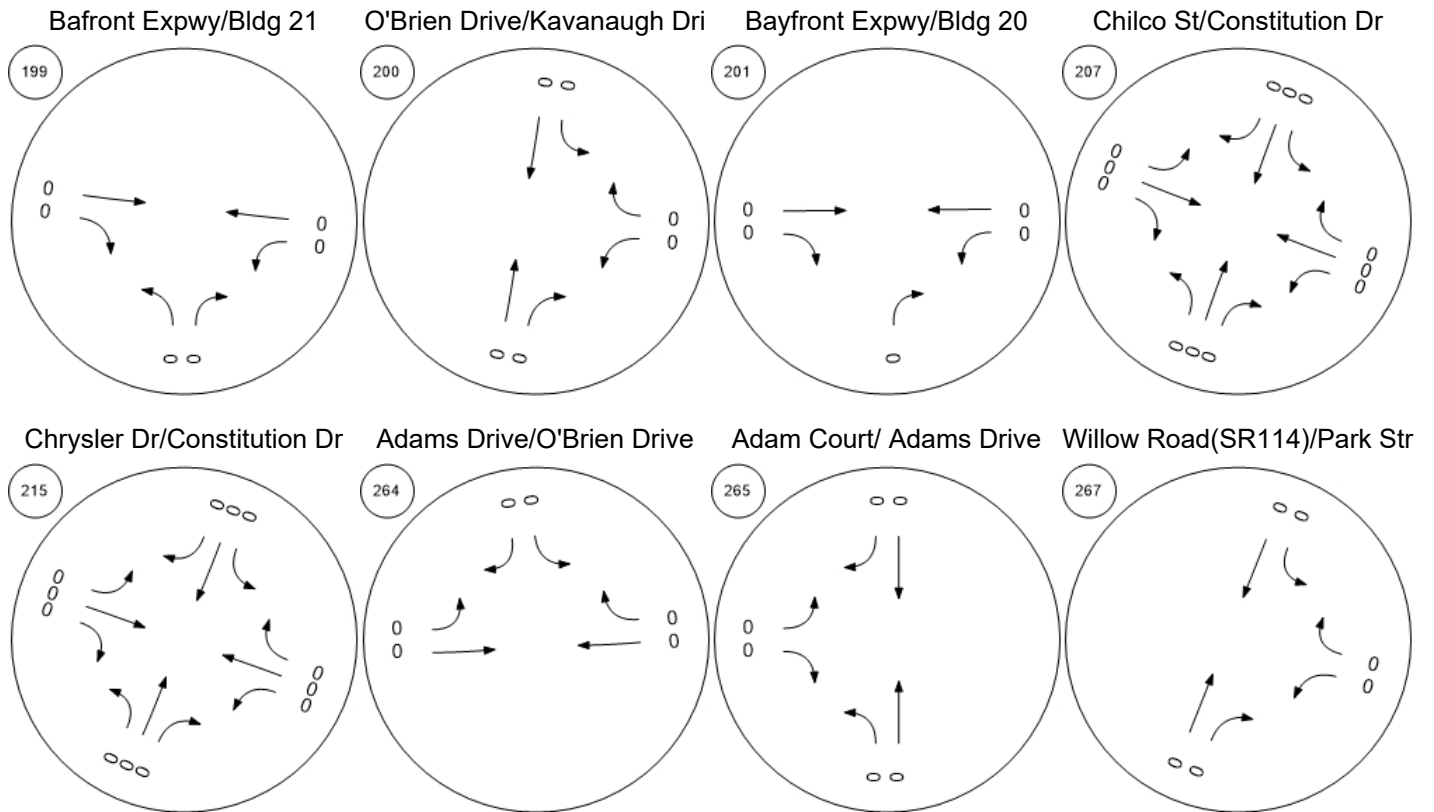
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive

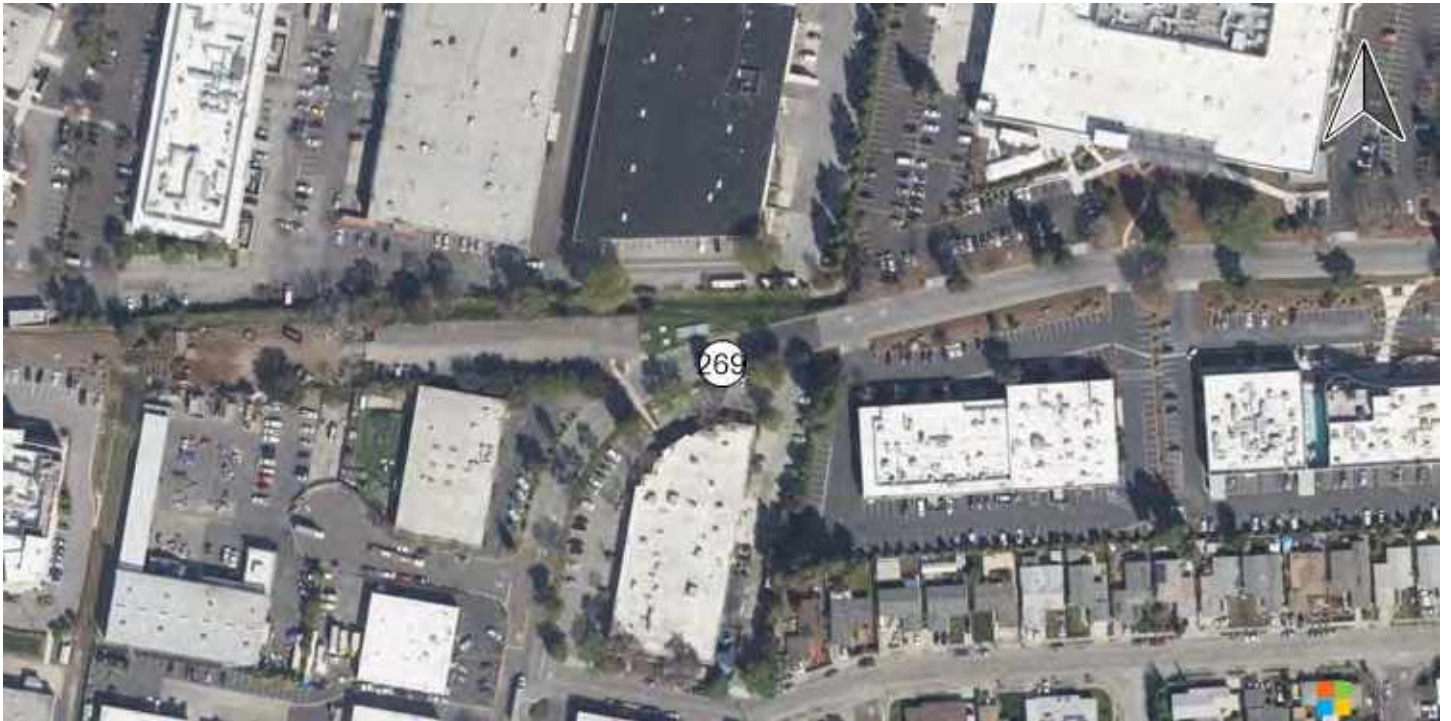


Traffic Volume - In-Process Volume

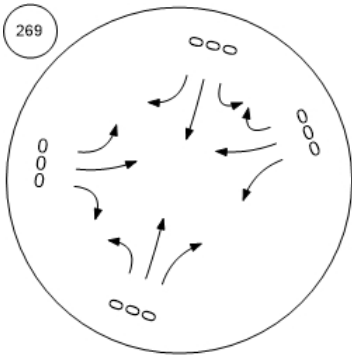




Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

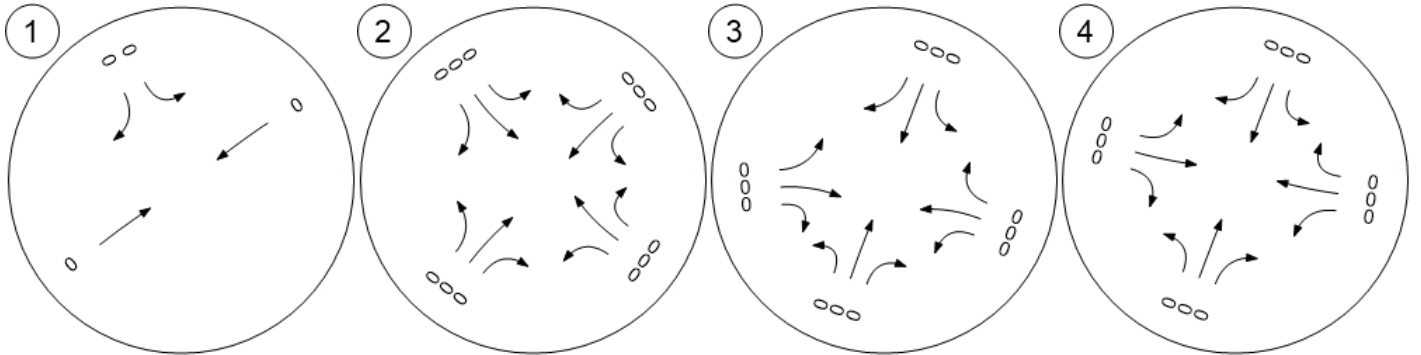


Traffic Volume - Net New Site Trips

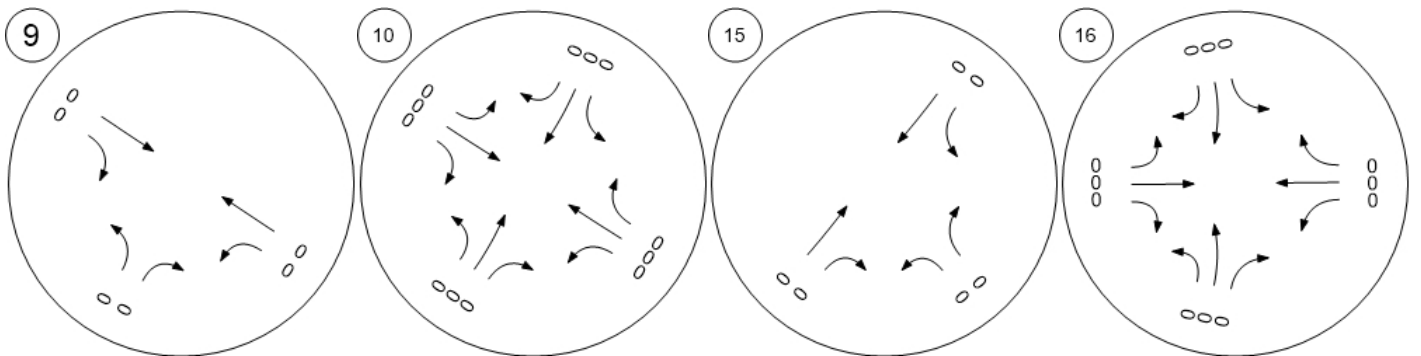


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



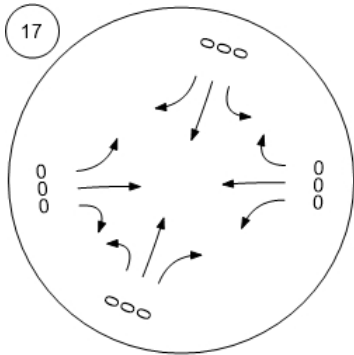
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



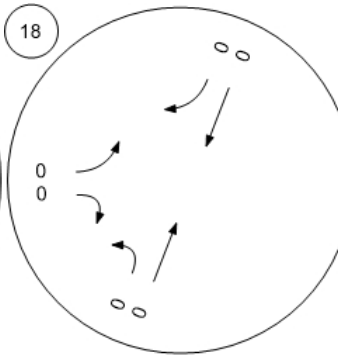
Traffic Volume - Net New Site Trips



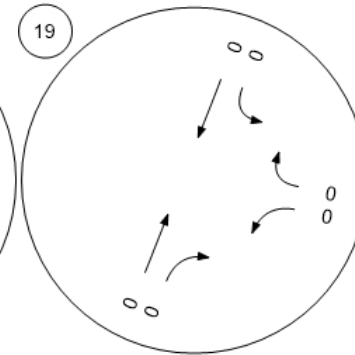
Willow Rd (SR 114)/Hamilton



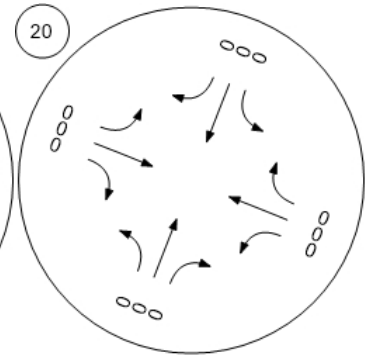
Willow Rd (SR 114)/Ivy Dr



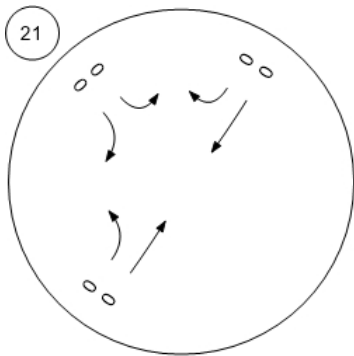
Willow Rd (SR 114)/O'Brien



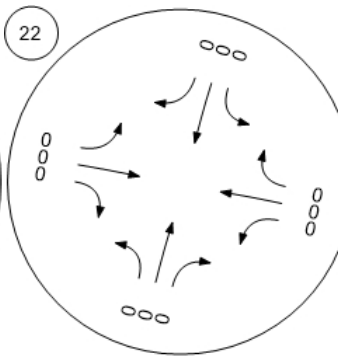
Willow Rd (SR 114)/Newbrid



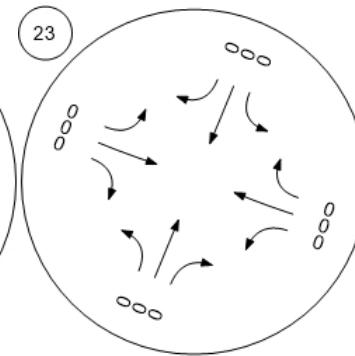
Willow Rd/Bay Rd



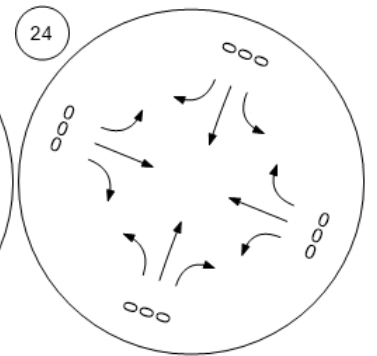
Willow Rd/Durham St-VA Me



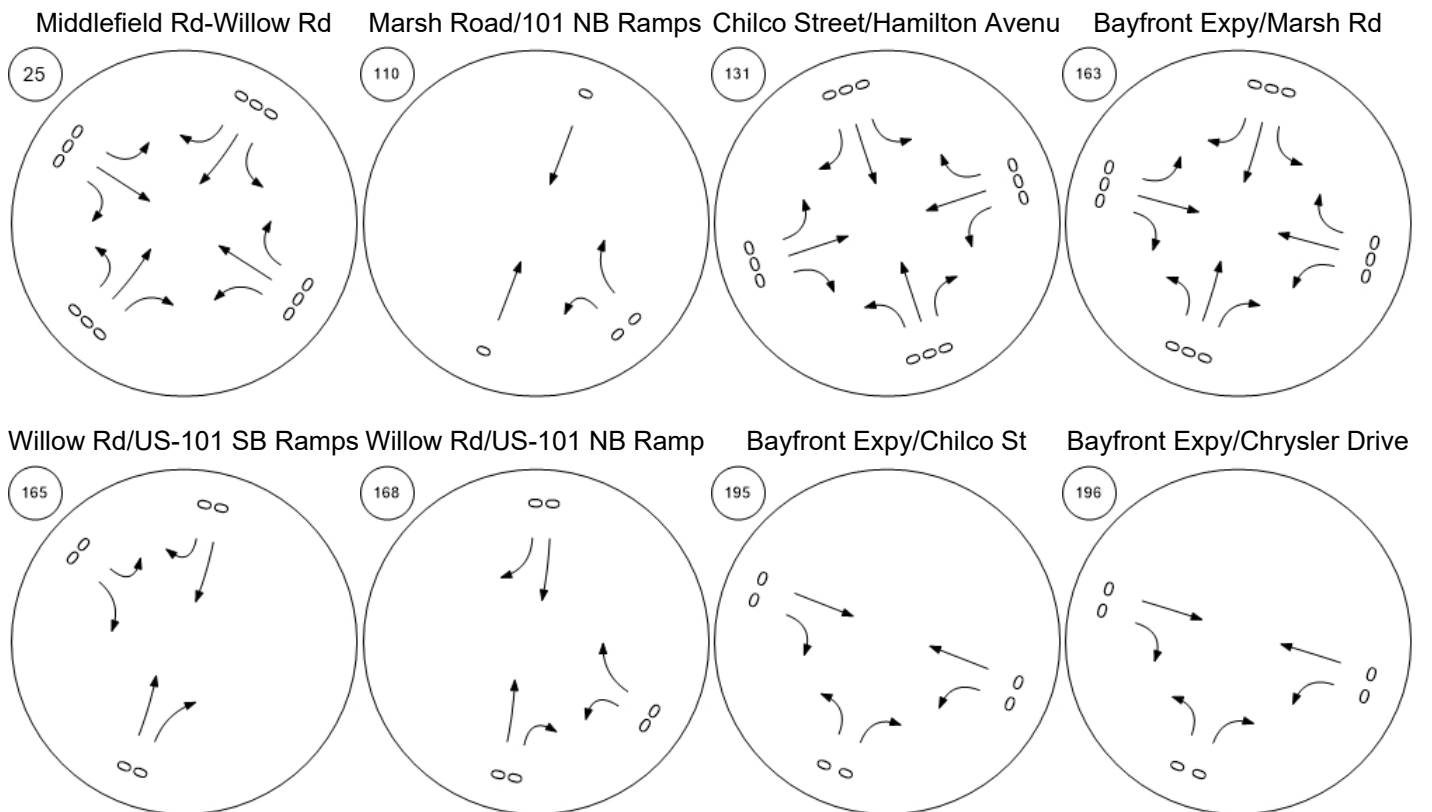
Willow Rd/Coleman Ave



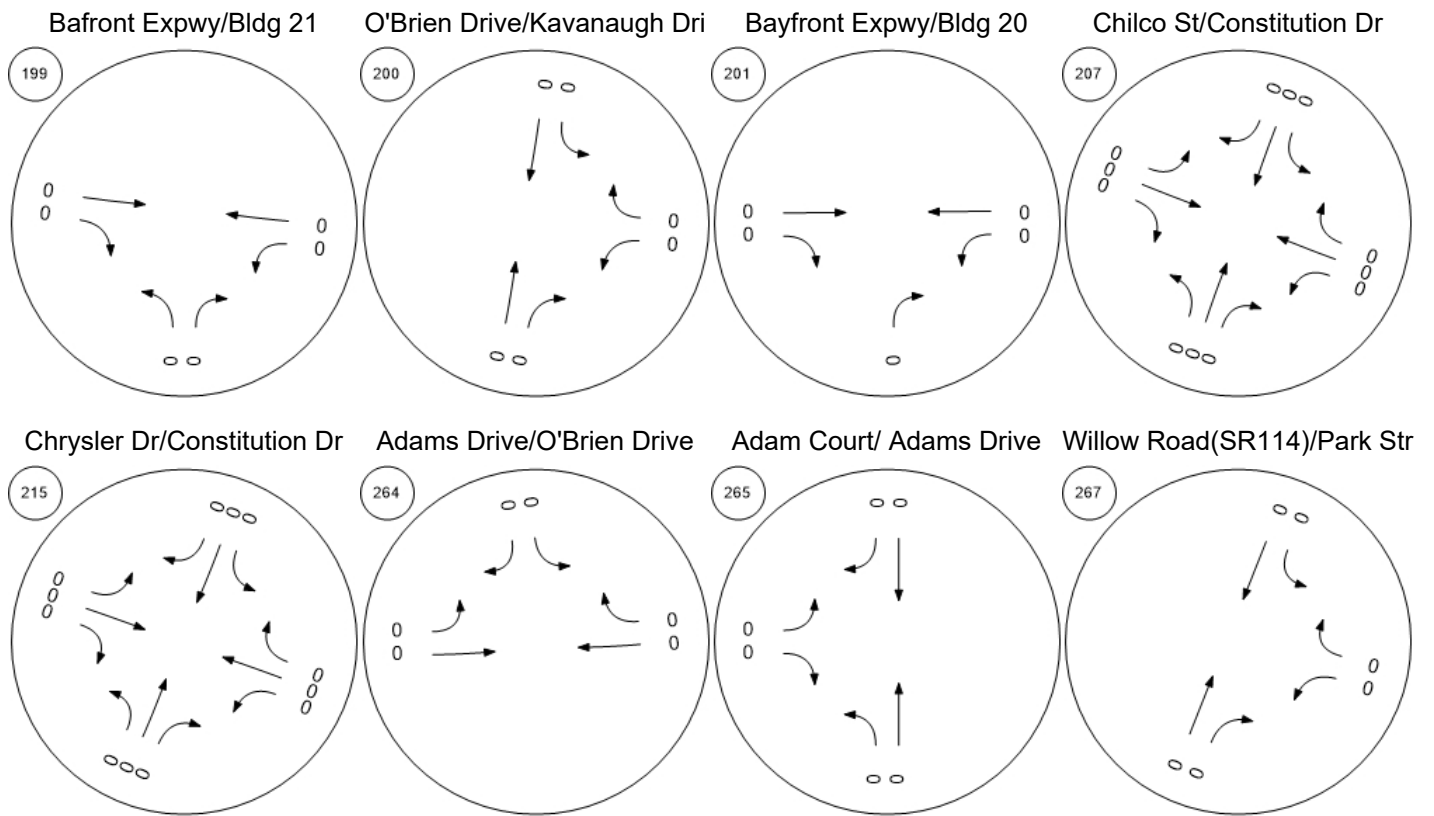
Willow Rd/Gilbert Ave



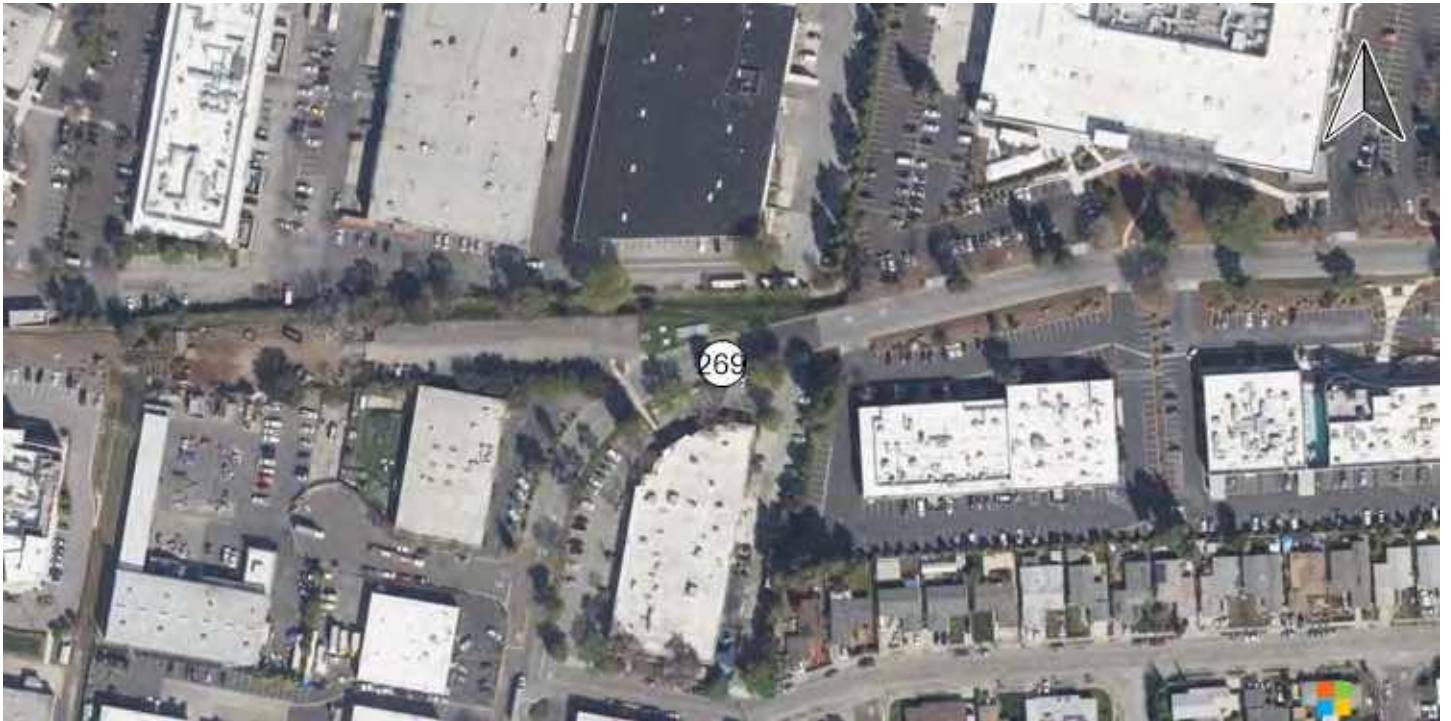
Traffic Volume - Net New Site Trips



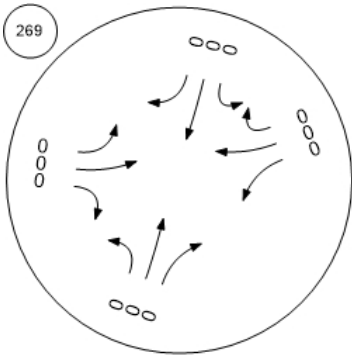
Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road

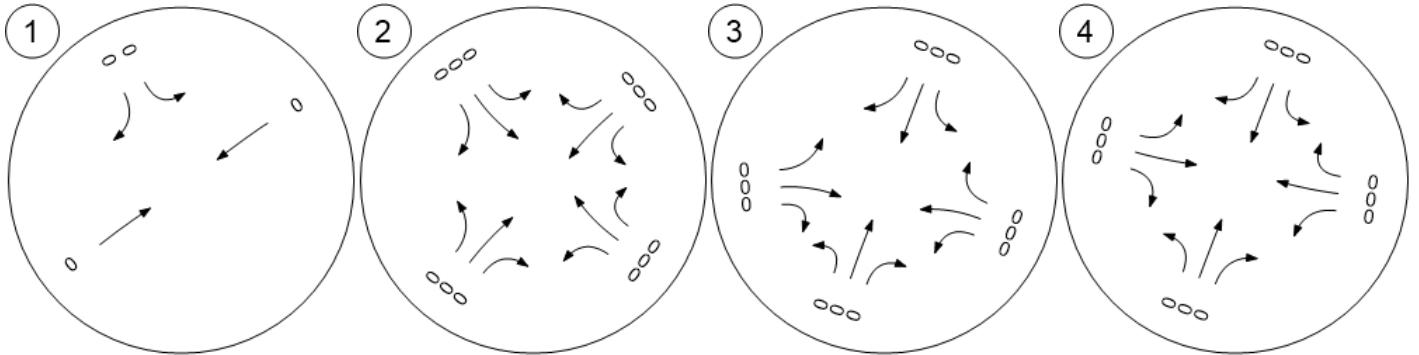


Traffic Volume - Other Volume

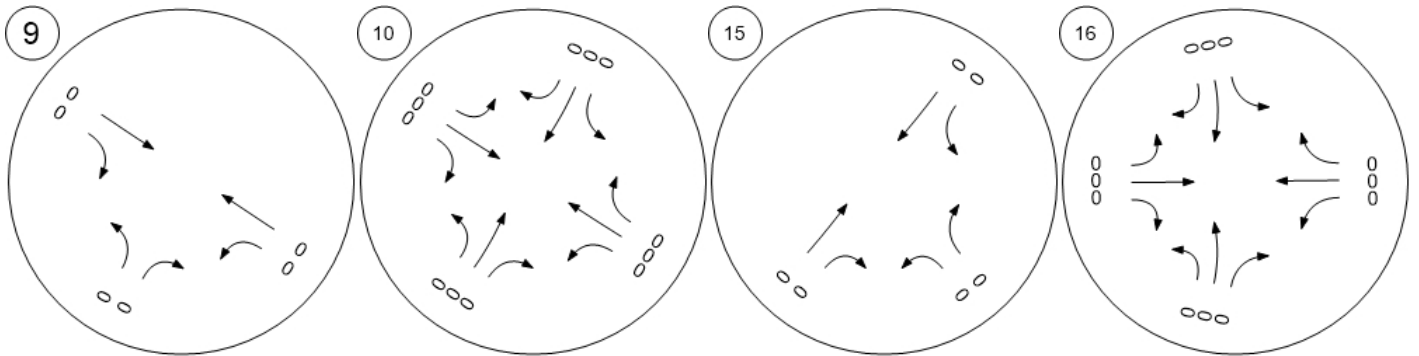


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



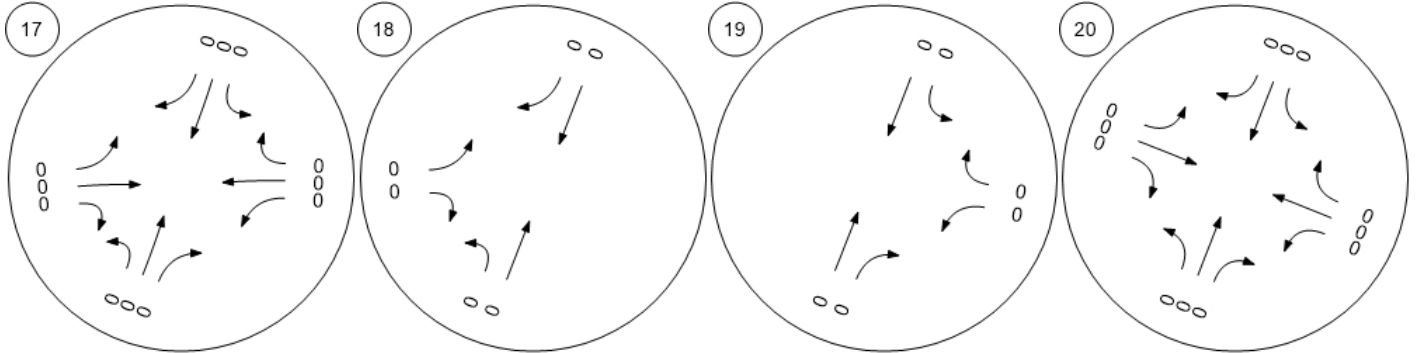
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



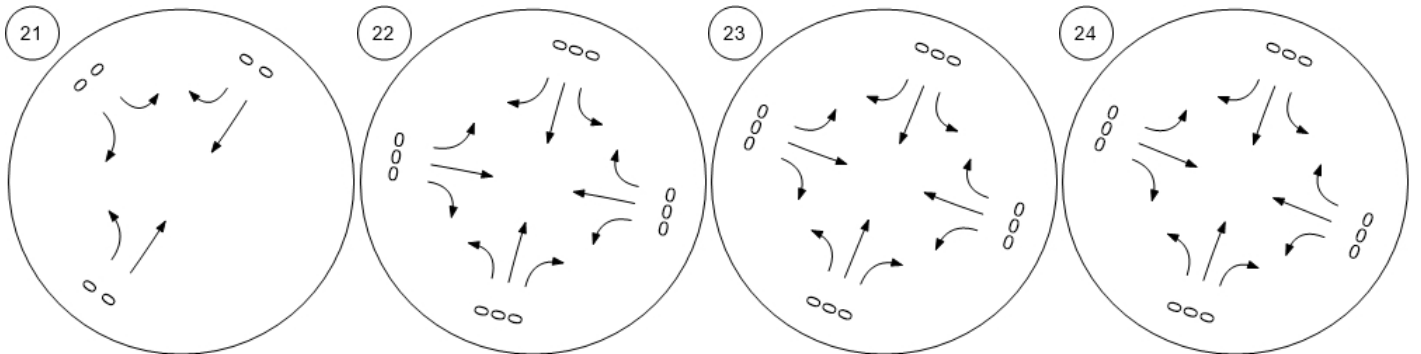
Traffic Volume - Other Volume



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave

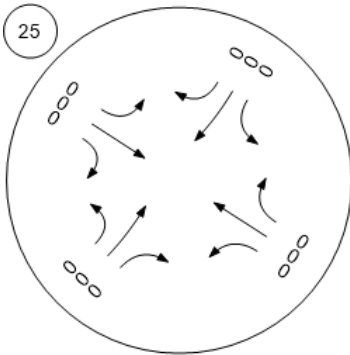




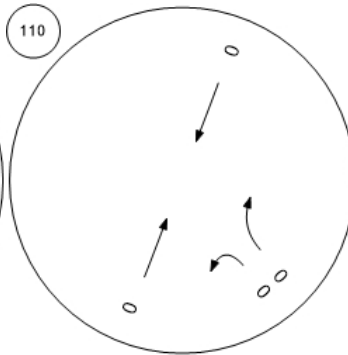
Traffic Volume - Other Volume



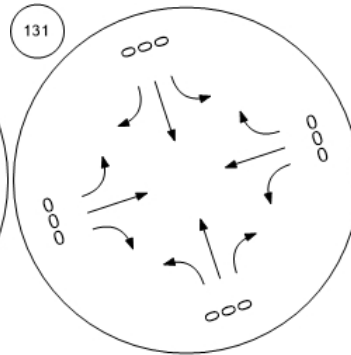
Middlefield Rd-Willow Rd



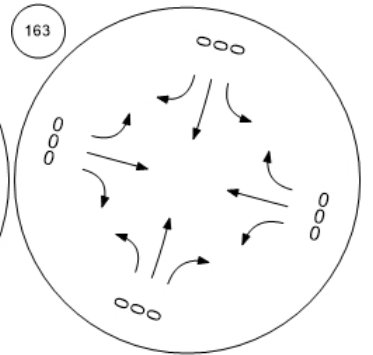
Marsh Road/101 NB Ramps



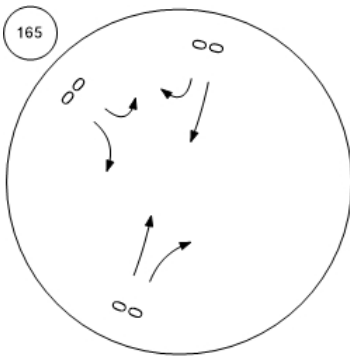
Chilco Street/Hamilton Avenue



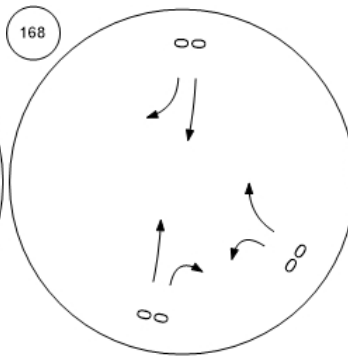
Bayfront Expy/Marsh Rd



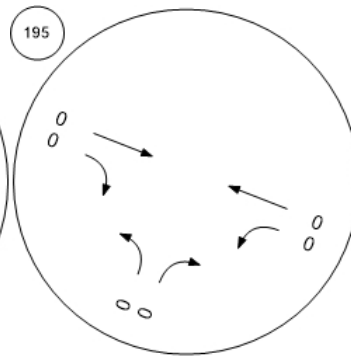
Willow Rd/US-101 SB Ramps



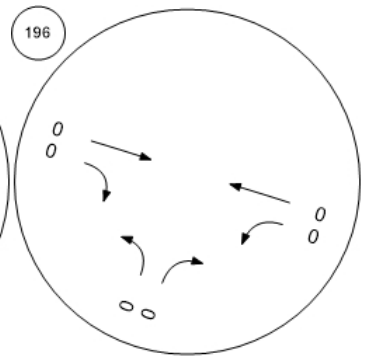
Willow Rd/US-101 NB Ramp



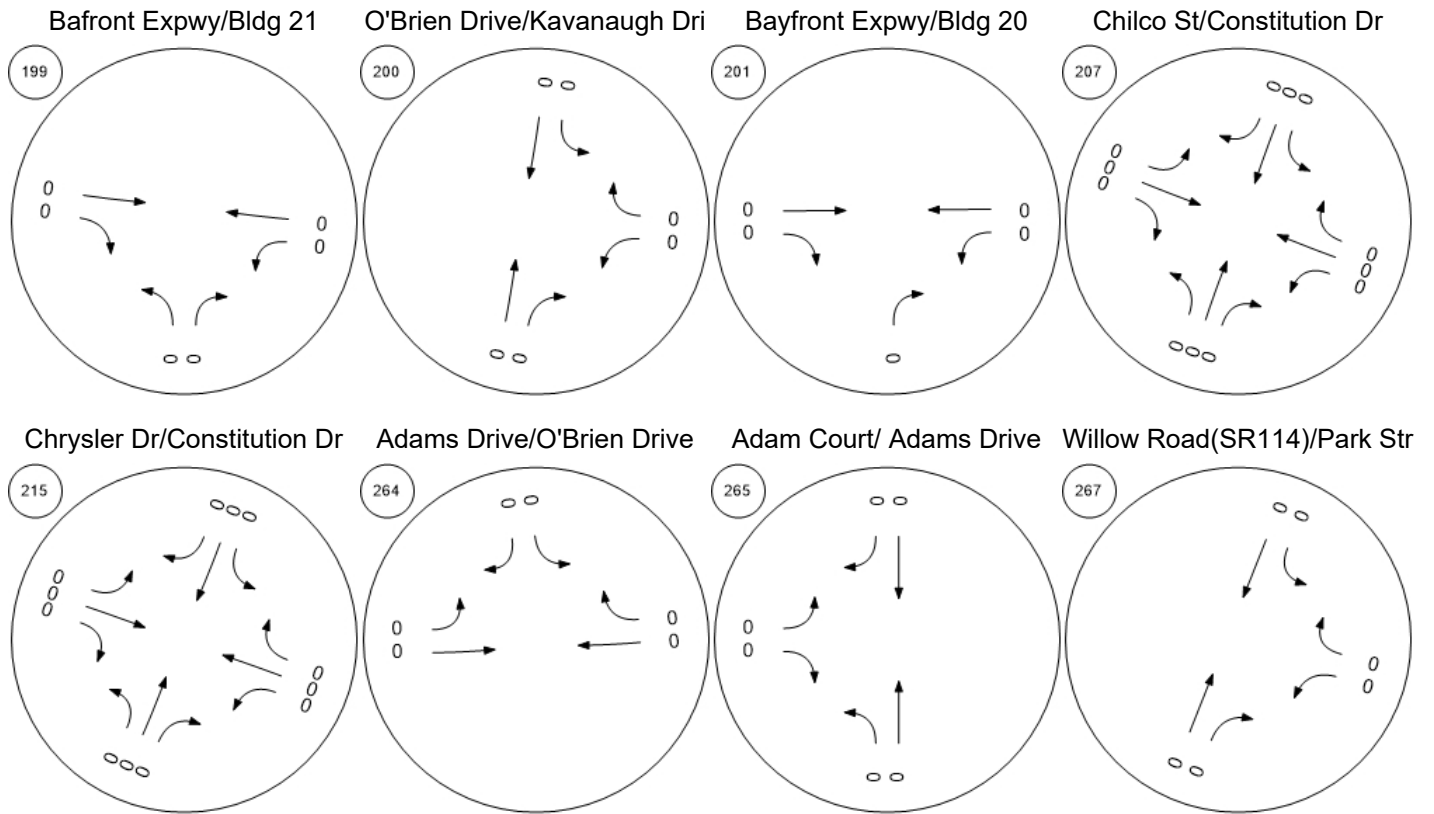
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



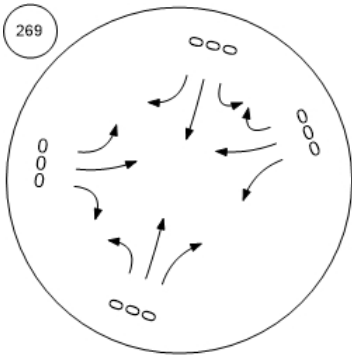
Traffic Volume - Other Volume



Traffic Volume - Other Volume



O'Brien Drive/Loop Road

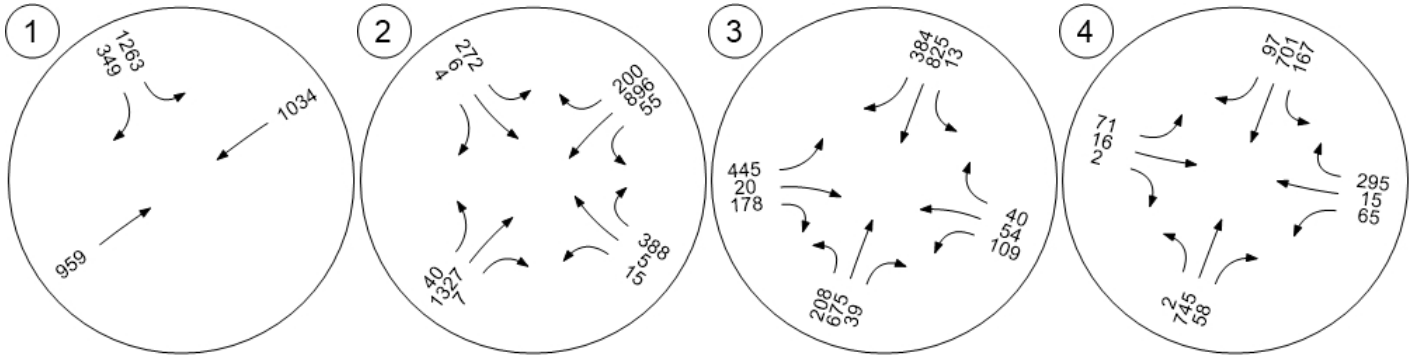


Traffic Volume - Future Total Volume

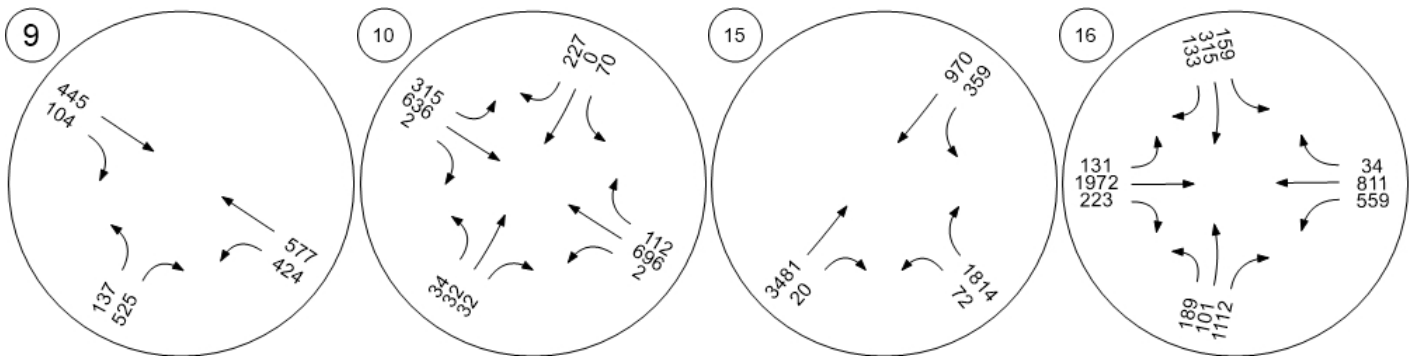


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



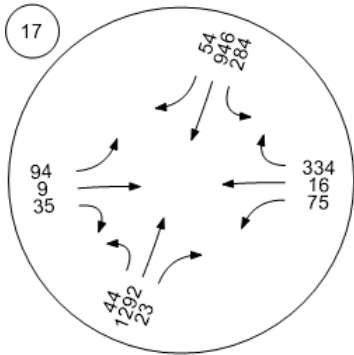
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



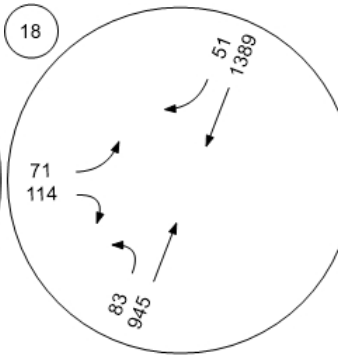
Traffic Volume - Future Total Volume



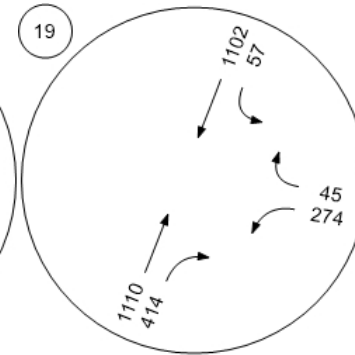
Willow Rd (SR 114)/Hamilton



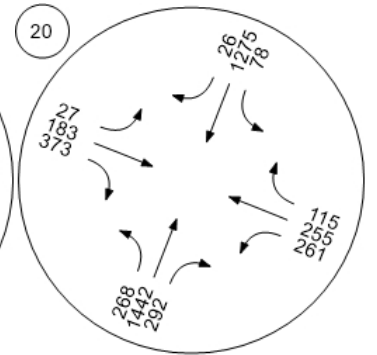
Willow Rd (SR 114)/Ivy Dr



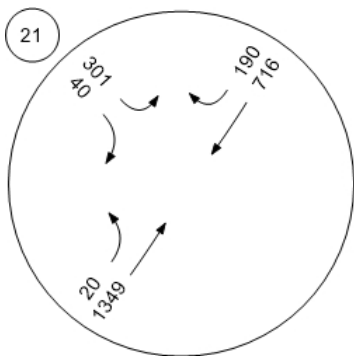
Willow Rd (SR 114)/O'Brien



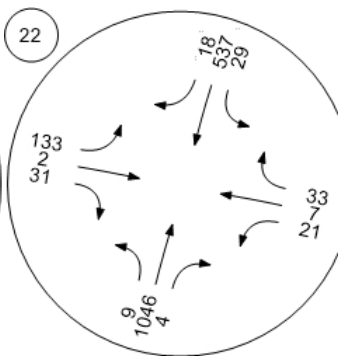
Willow Rd (SR 114)/Newbrid



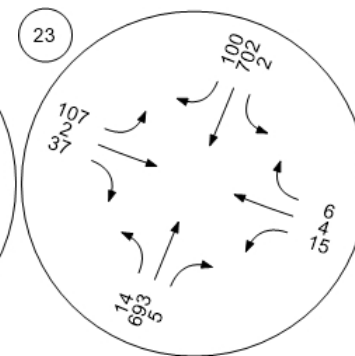
Willow Rd/Bay Rd



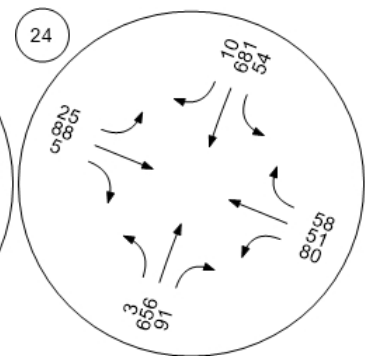
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



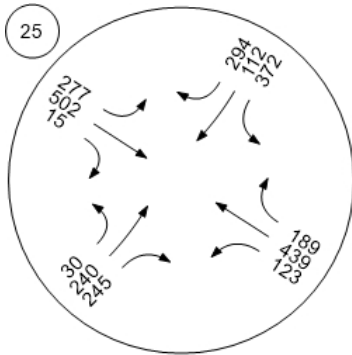
Willow Rd/Gilbert Ave



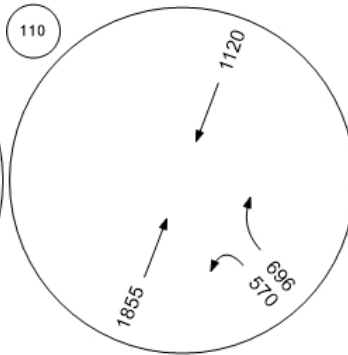
Traffic Volume - Future Total Volume



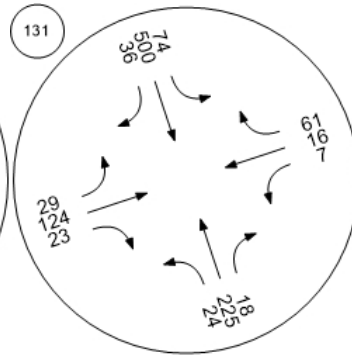
Middlefield Rd-Willow Rd



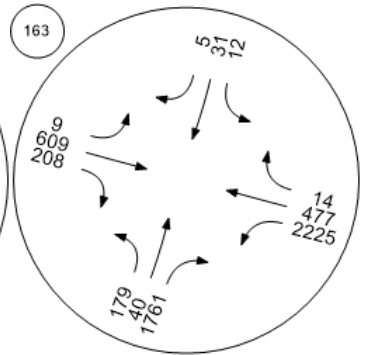
Marsh Road/101 NB Ramps



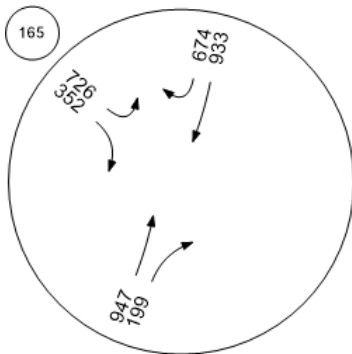
Chilco Street/Hamilton Avenue



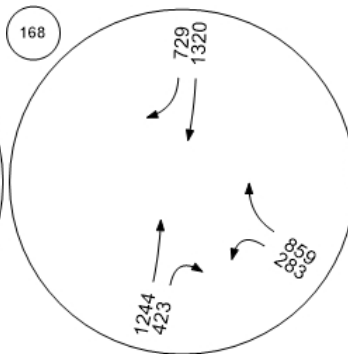
Bayfront Expy/Marsh Rd



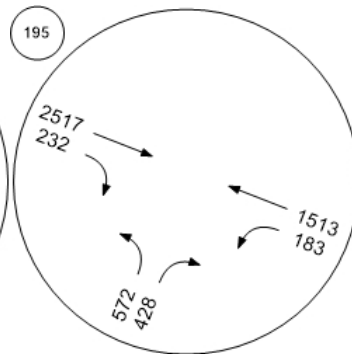
Willow Rd/US-101 SB Ramps



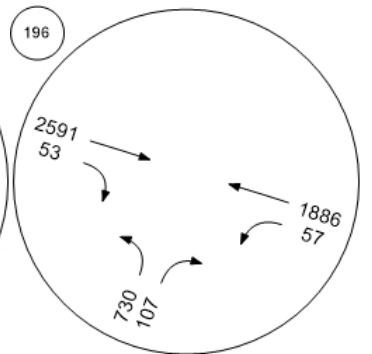
Willow Rd/US-101 NB Ramp



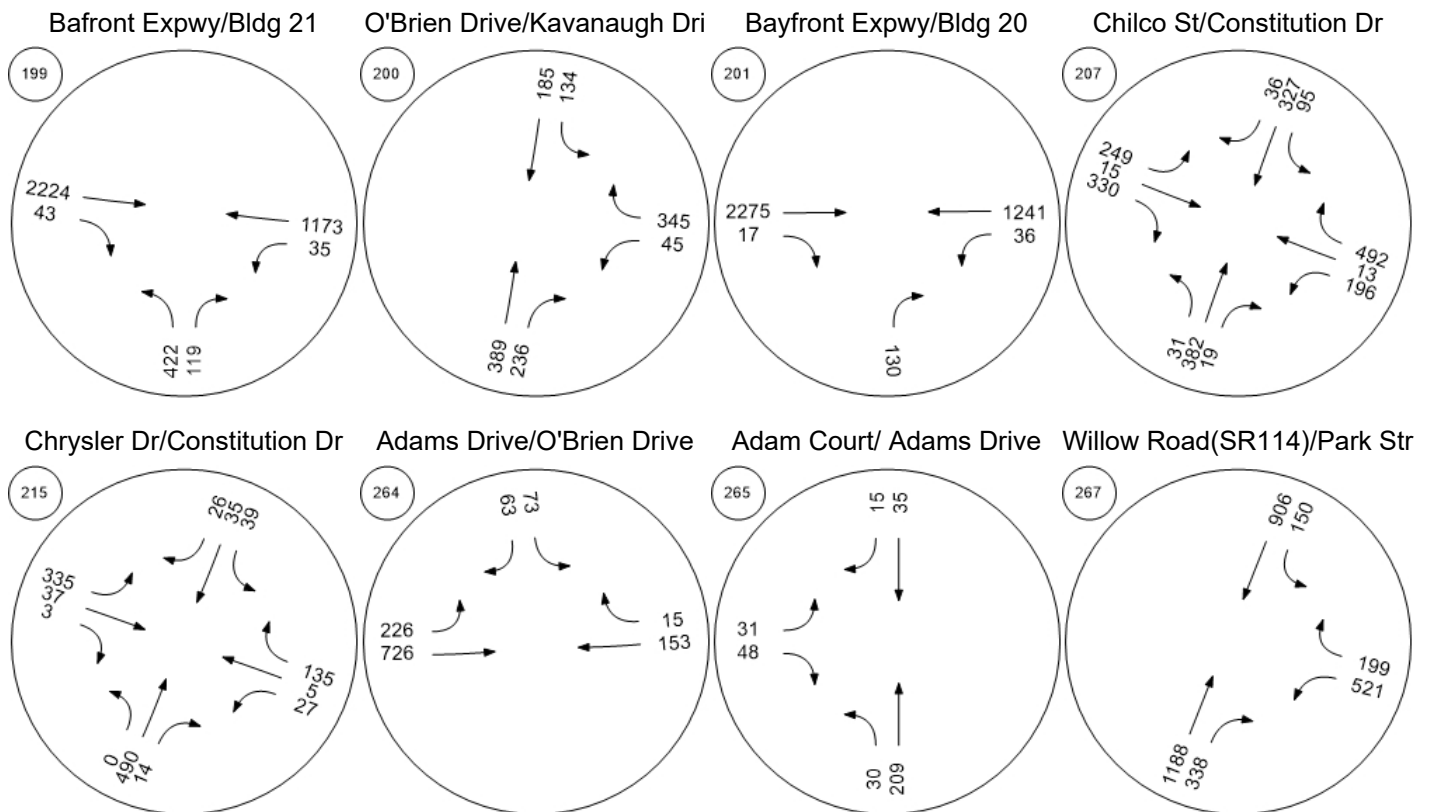
Bayfront Expy/Chilco St



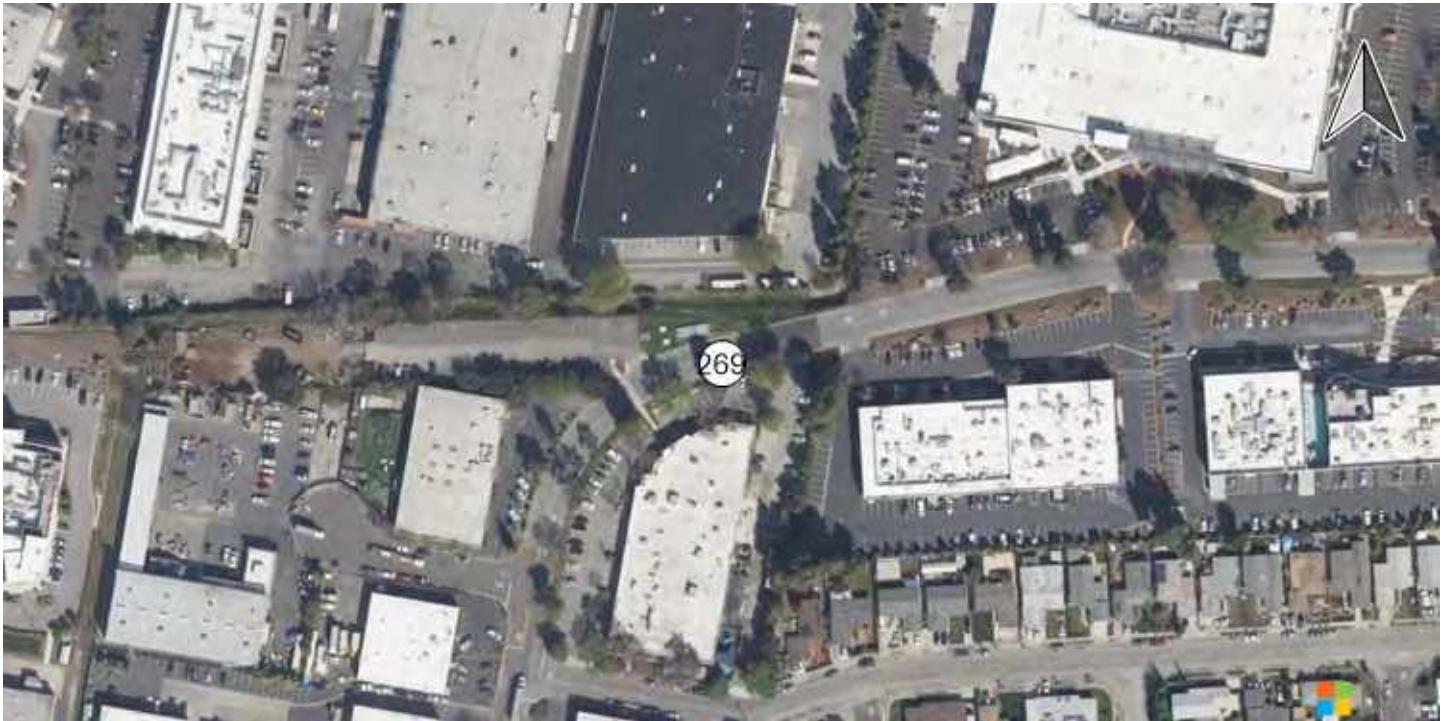
Bayfront Expy/Chrysler Drive



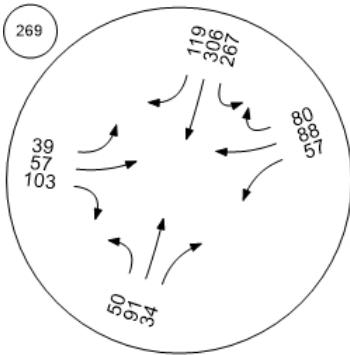
Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road



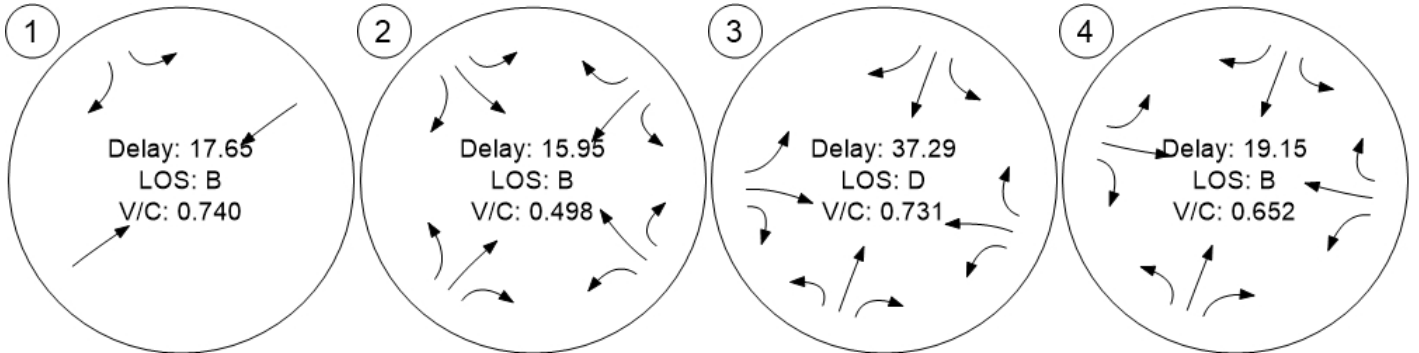


Traffic Conditions

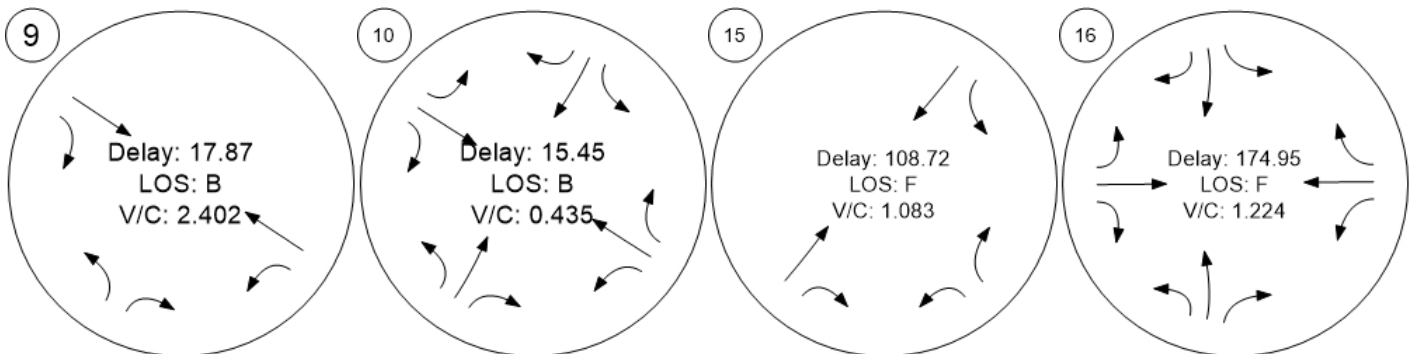


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



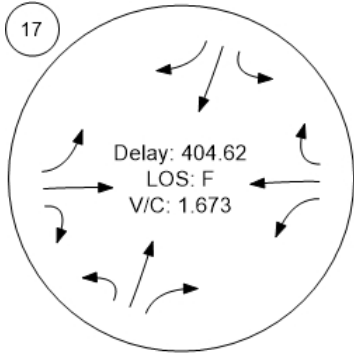
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



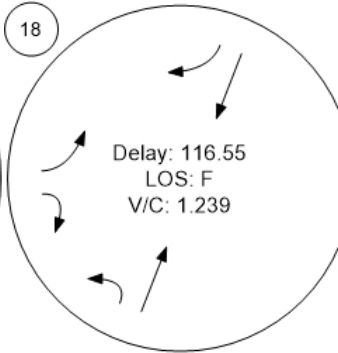
Traffic Conditions



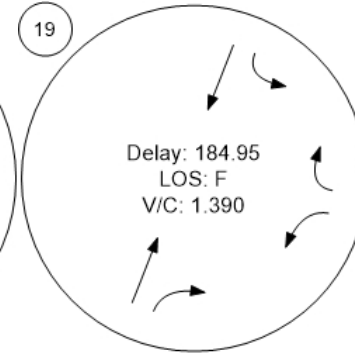
Willow Rd (SR 114)/Hamilton



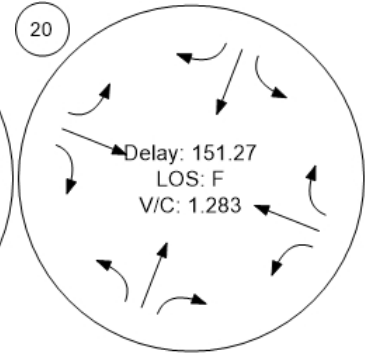
Willow Rd (SR 114)/Ivy Dr



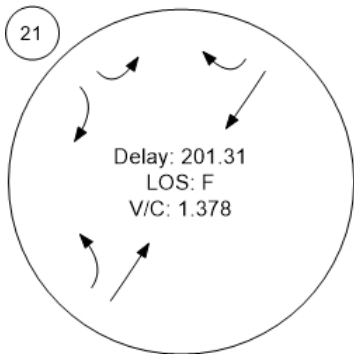
Willow Rd (SR 114)/O'Brien



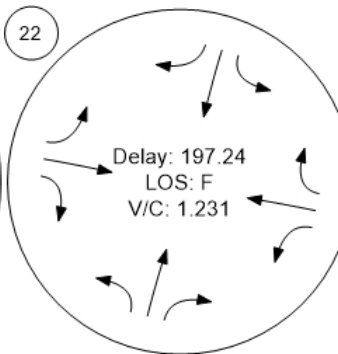
Willow Rd (SR 114)/Newbrid



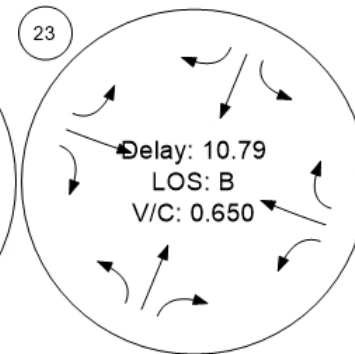
Willow Rd/Bay Rd



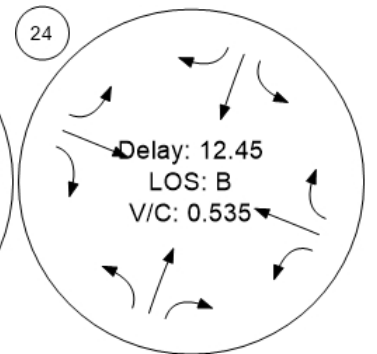
Willow Rd/Durham St-VA Me



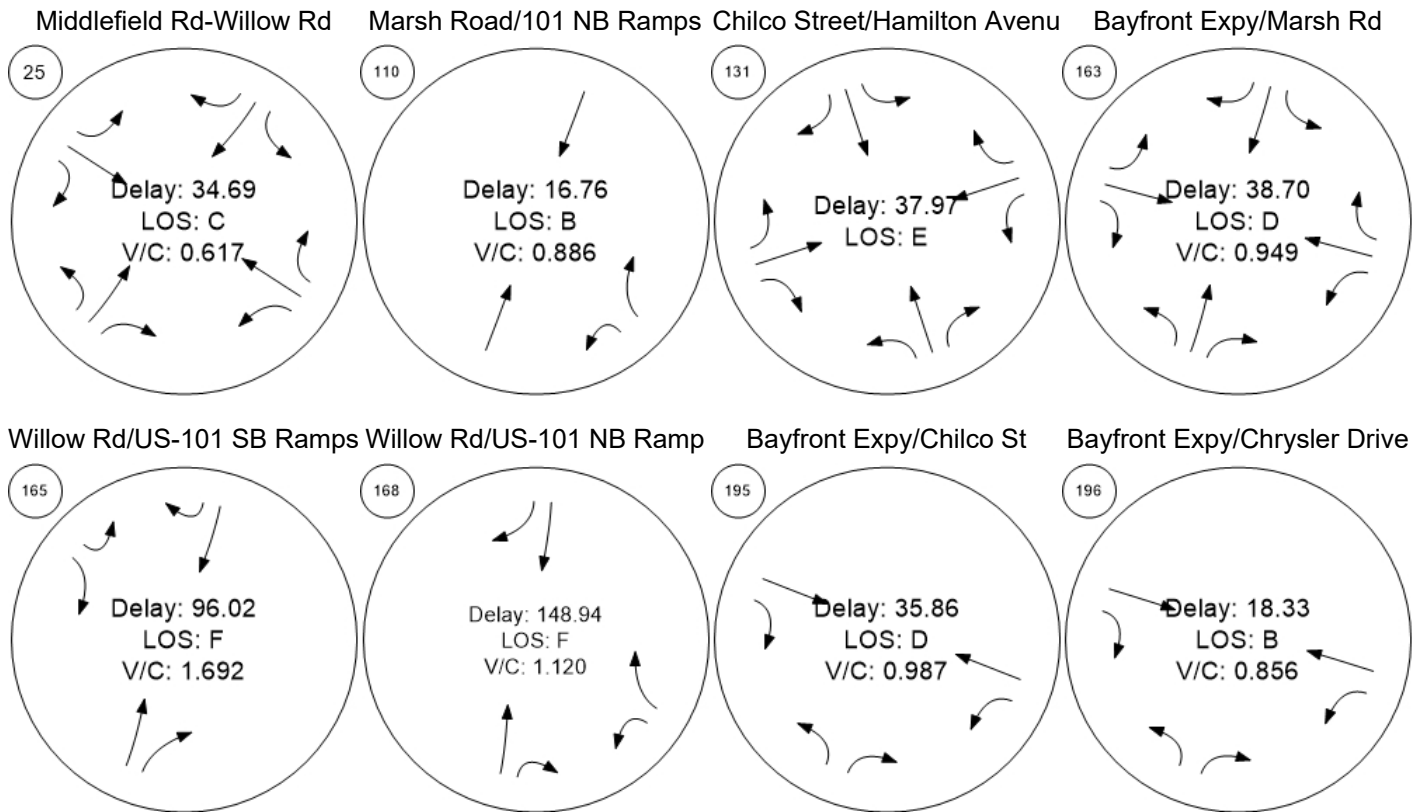
Willow Rd/Coleman Ave



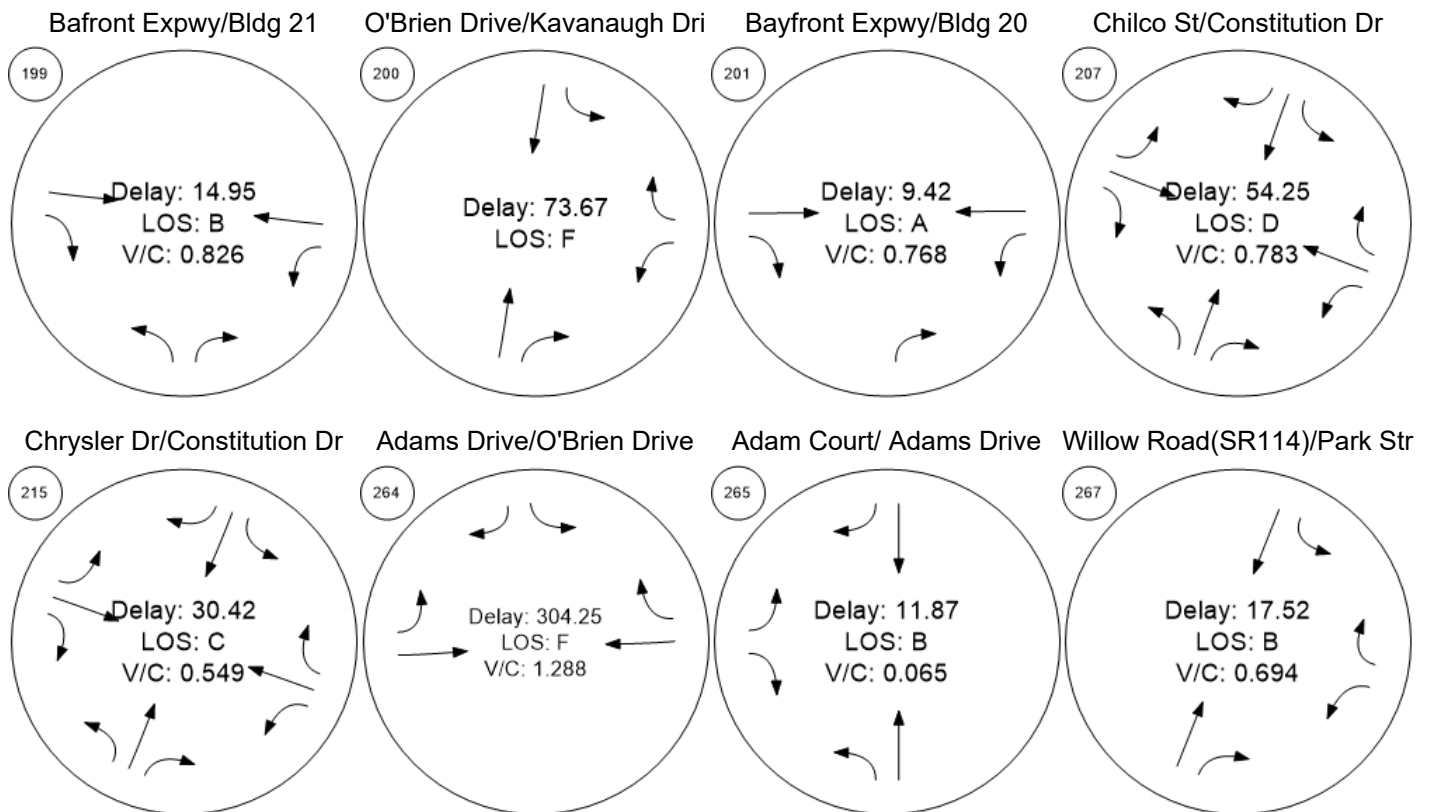
Willow Rd/Gilbert Ave



Traffic Conditions



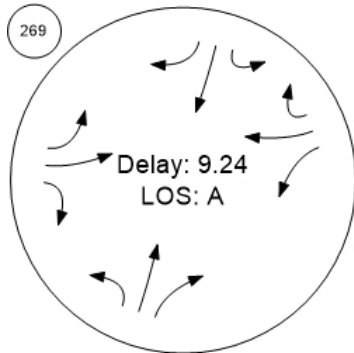
Traffic Conditions



Traffic Conditions

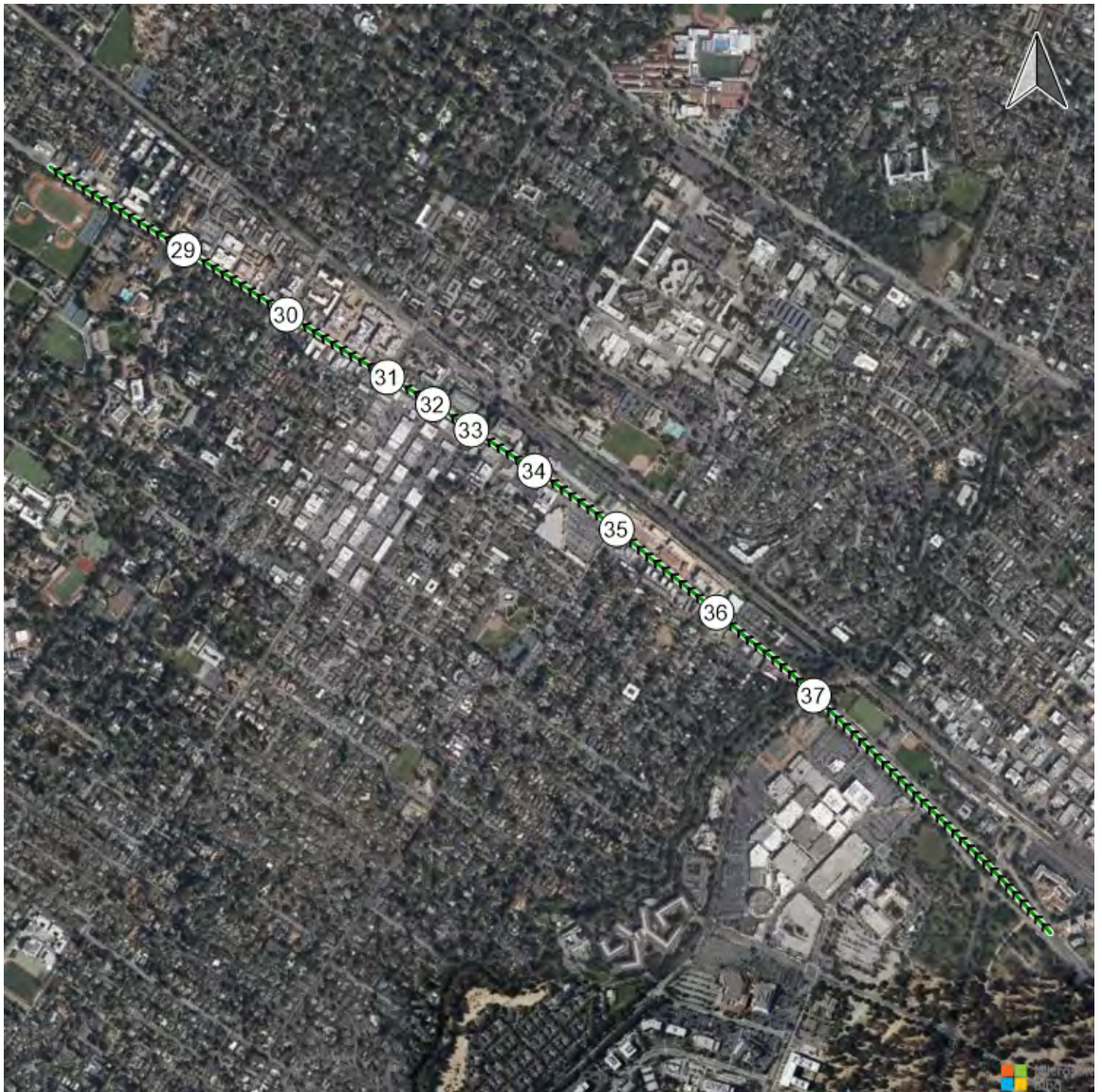


O'Brien Drive/Loop Road

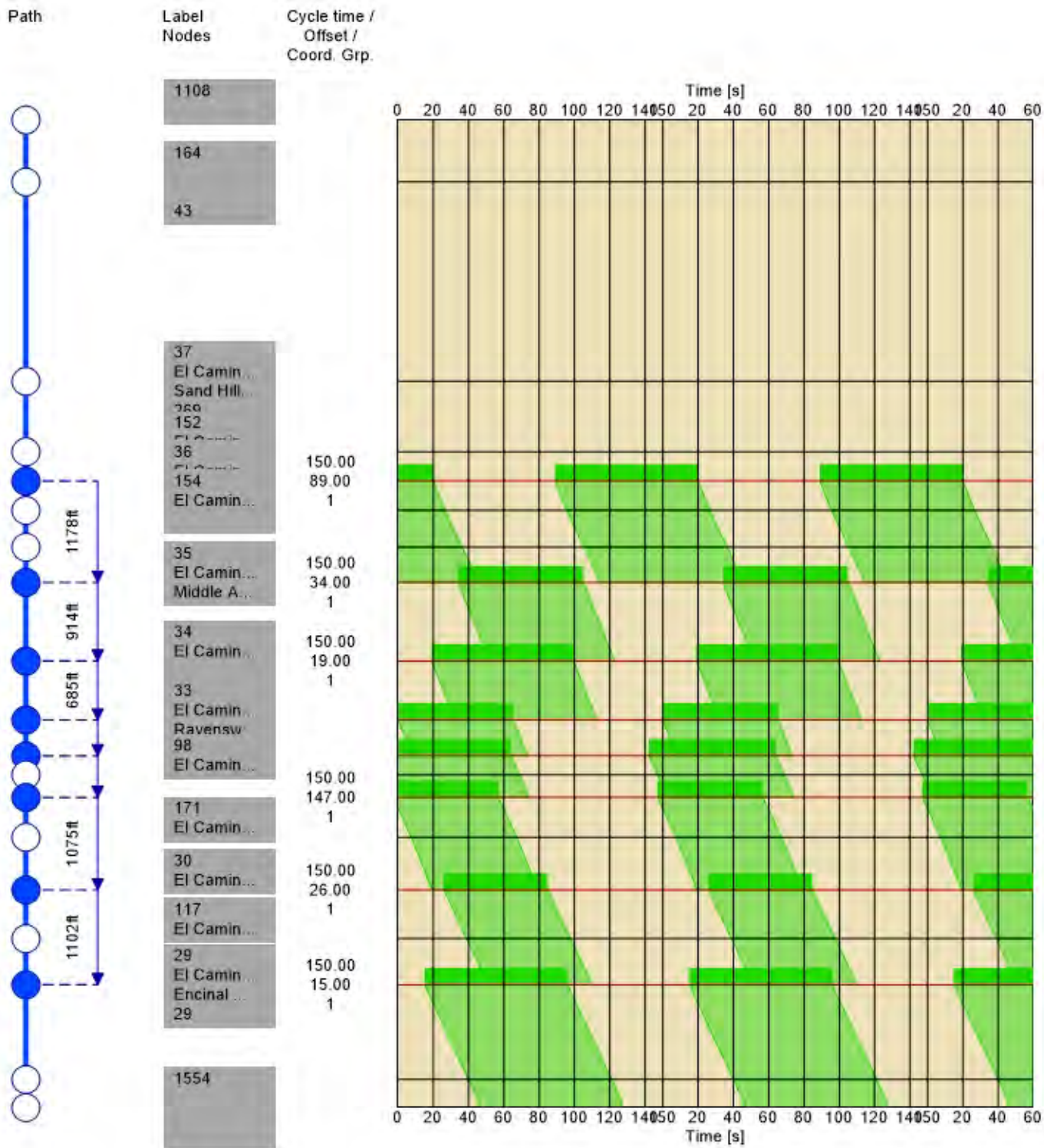


Time Space Diagram - Flowing Off

Route 1: ECR NB

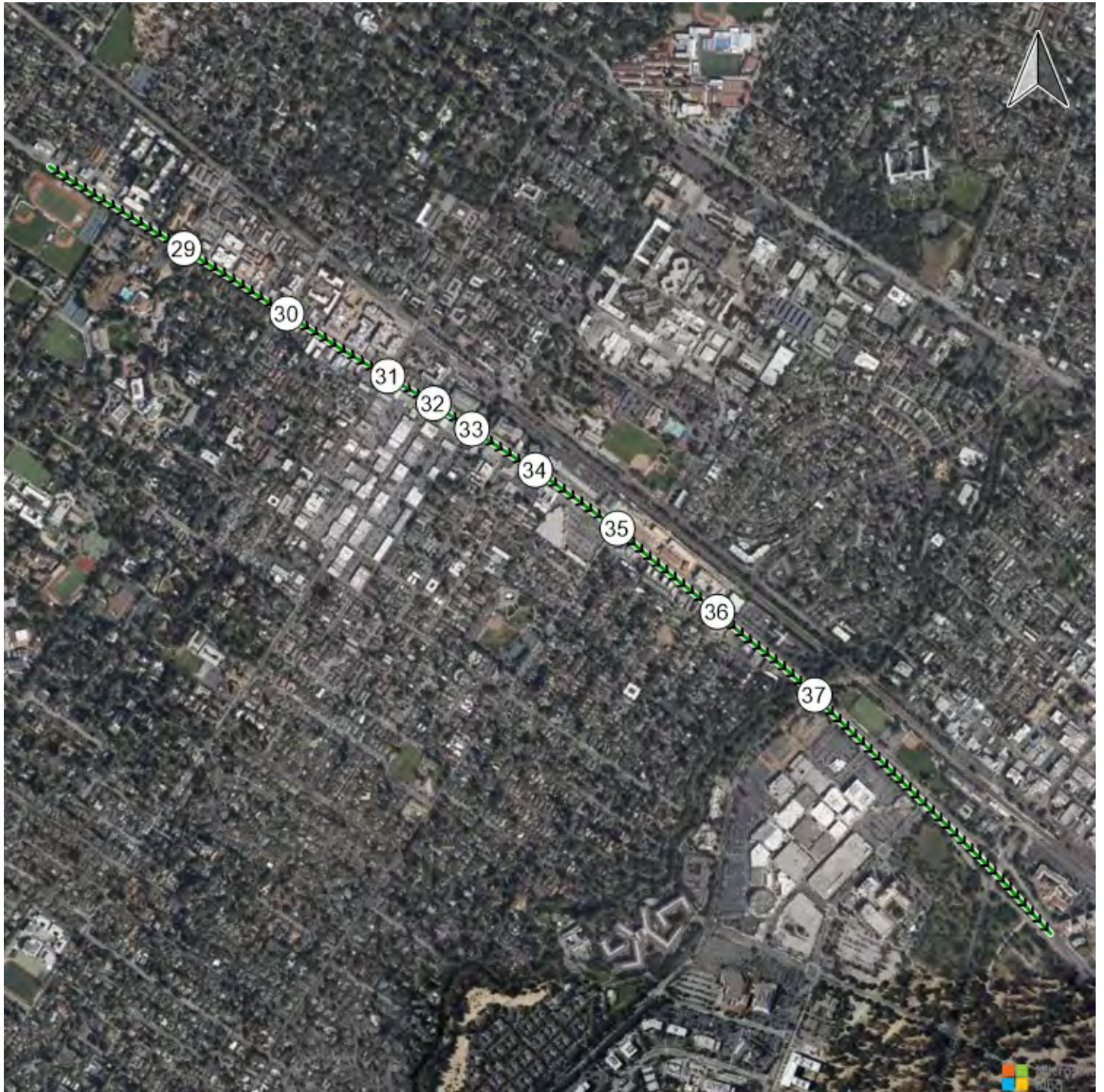


Route 1: ECR NB



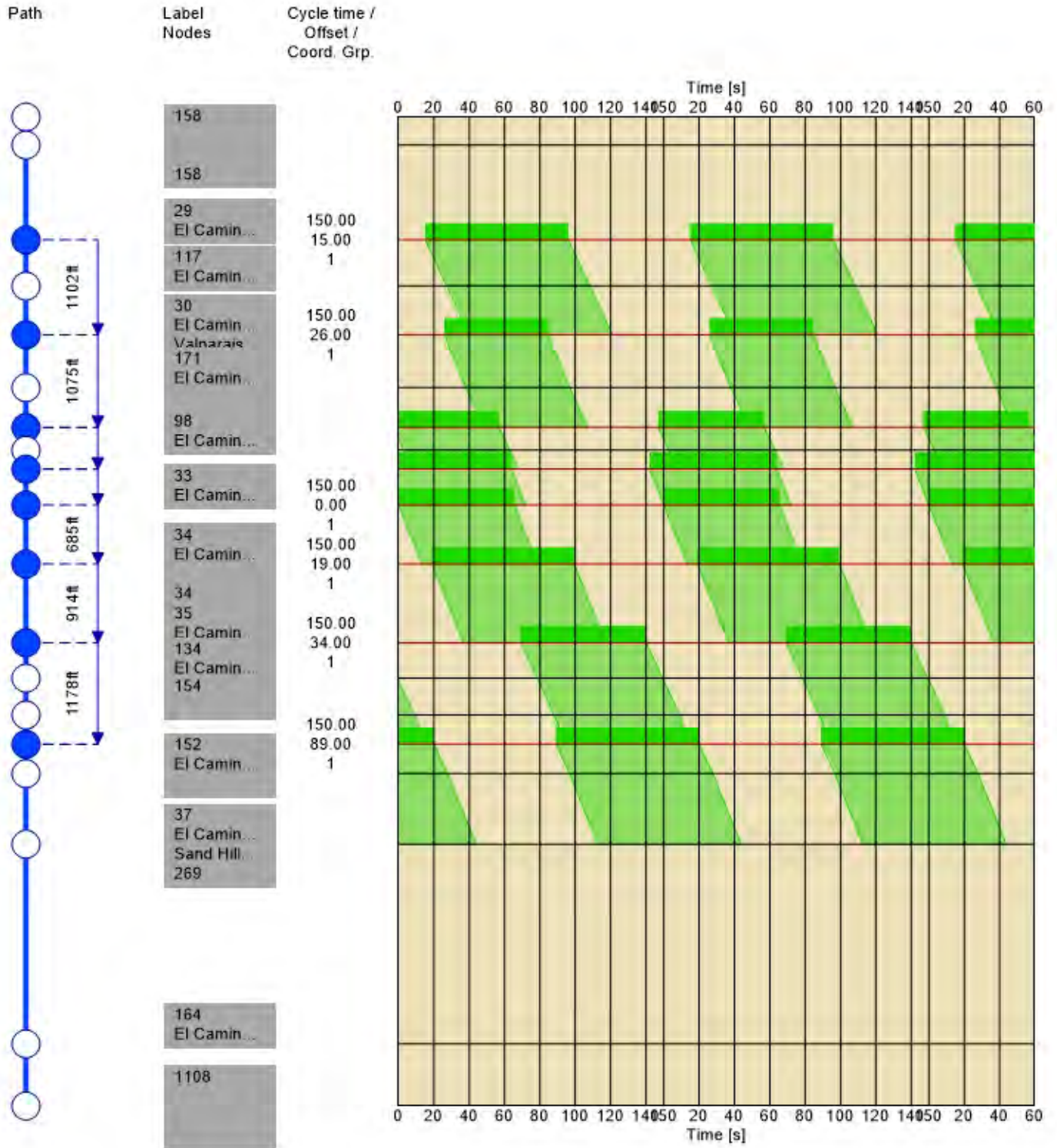
Time Space Diagram - Flowing Off

Route 2: ECR SB



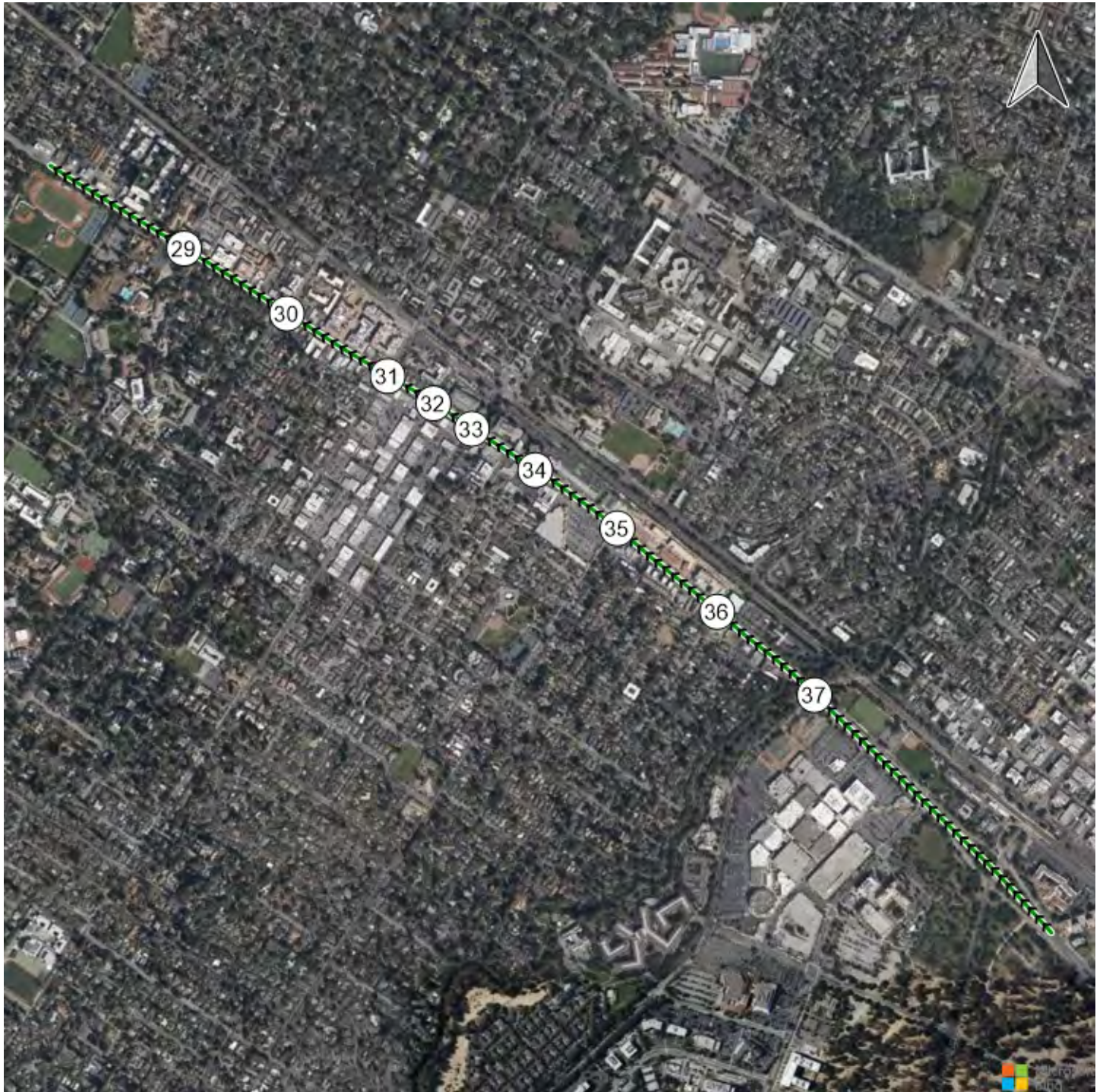


Route 2: ECR SB

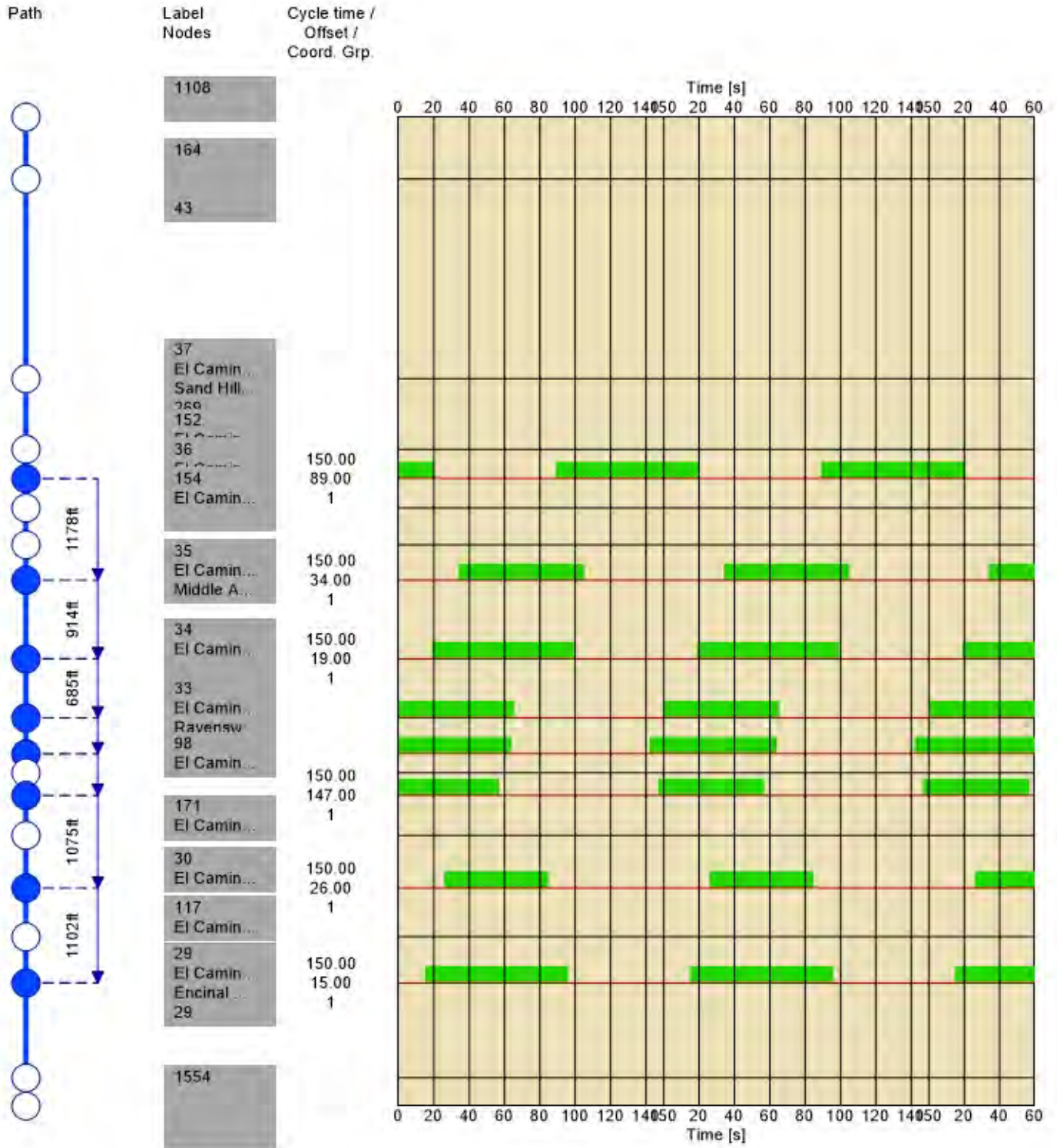


Time Space Diagram - Arterial Band

Route 1: ECR NB

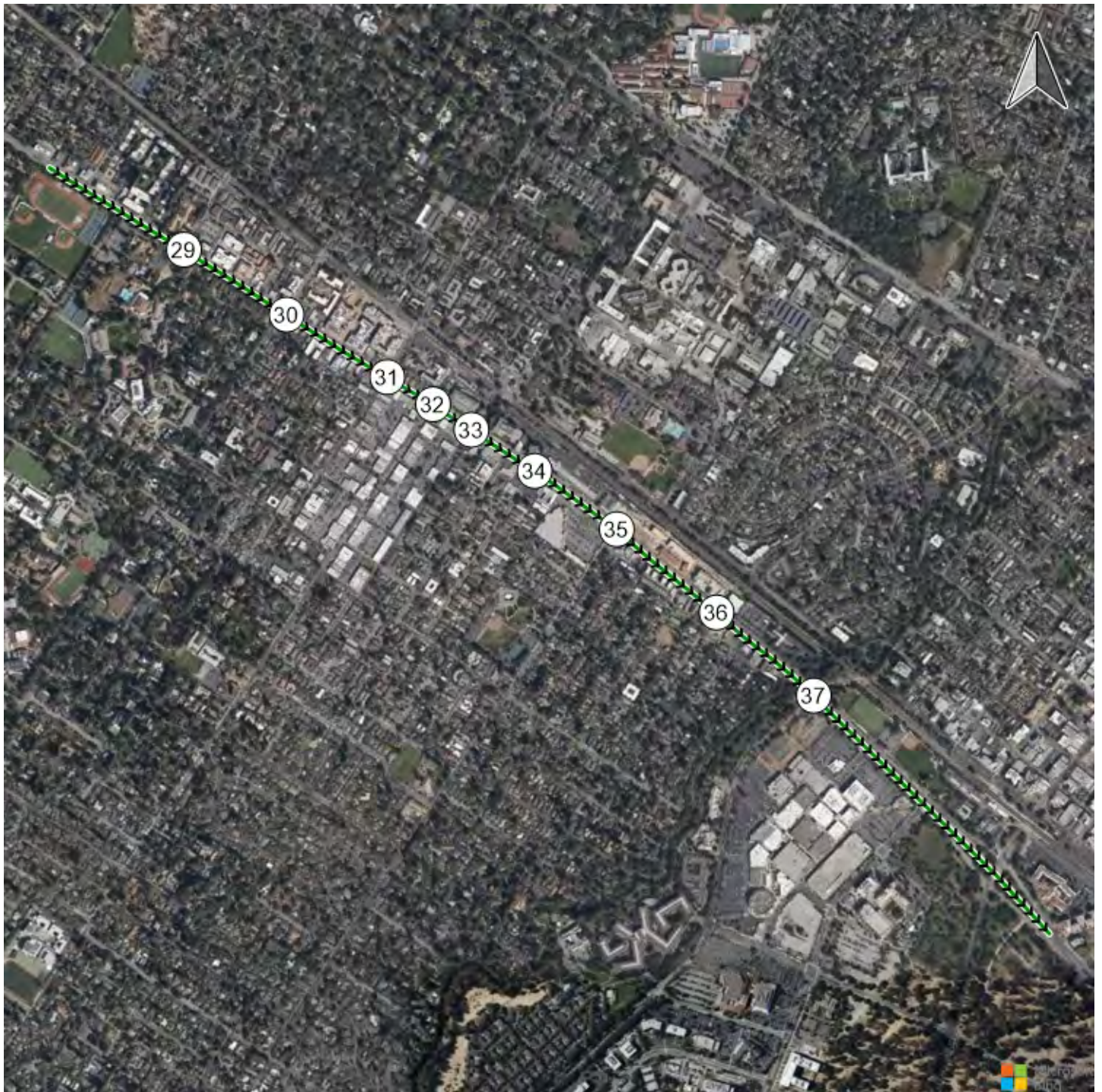


Route 1: ECR NB

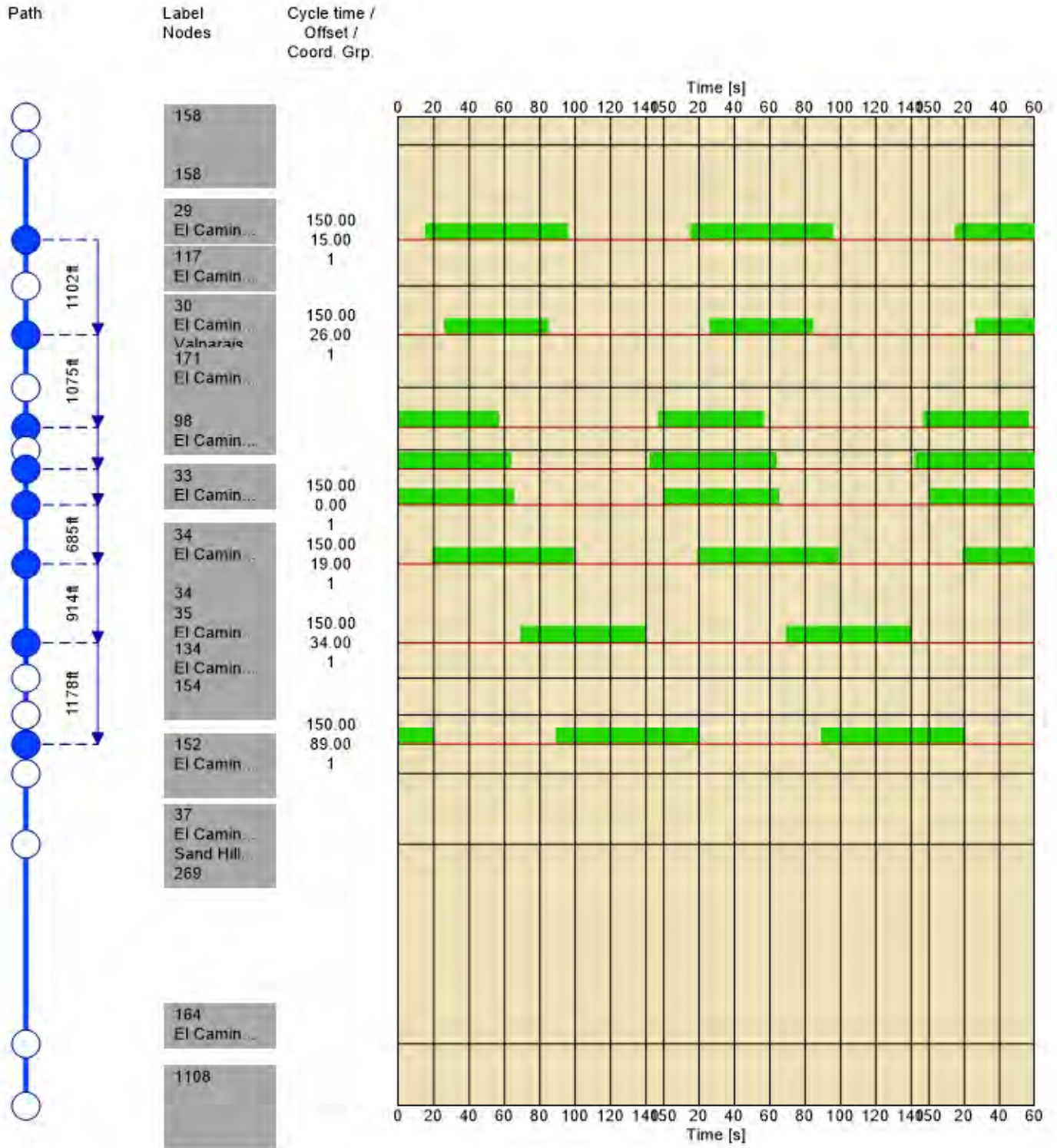


Time Space Diagram - Arterial Band

Route 2: ECR SB



Route 2: ECR SB



Vistro File: \\...\Vistro\_AllScenarios\_AM -  
ReducedTripCap\_10.7.2021.vistro

Scenario 23 Imp- Near-Term AM (2025 vols)+Project

Report File: \\...\Near-Term + P AM\_Imp.pdf

10/14/2021

**Intersection Analysis Summary**

<b>ID</b>	<b>Intersection Name</b>	<b>Control Type</b>	<b>Method</b>	<b>Worst Mvmt</b>	<b>V/C</b>	<b>Delay (s/veh)</b>	<b>LOS</b>
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.317	194.8	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Left	0.860	18.0	B
131	Chilco Street/Hamilton Avenue	Signalized	HCM 6th Edition	NB Thru	0.283	16.1	B
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	EB Right	0.814	50.2	D
200	O'Brien Drive/Kavanaugh Drive	Signalized	HCM 6th Edition	SB Left	0.587	18.0	B
264	Adams Drive/O'Brien Drive	Signalized	HCM 6th Edition	SB Right	0.642	13.3	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	194.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.317

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	143	1771	320	40	1335	7	17	98	418	260	88	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	143	1771	320	40	1335	7	17	98	374	260	88	133
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	471	85	11	355	2	5	26	99	69	23	35
Total Analysis Volume [veh/h]	152	1884	340	43	1420	7	18	104	398	277	94	141
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing in	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	40	40	21	40	40	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	9	29	29	38	58	58	9	32	32	31	54	54
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	6	49	49	4	47	47	2	37	37	25	59	59
g / C, Green / Cycle	0.05	0.38	0.38	0.03	0.36	0.36	0.02	0.28	0.28	0.19	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.09	0.43	0.45	0.02	0.63	0.63	0.01	0.07	0.30	0.18	0.12	0.20
s, saturation flow rate [veh/h]	1781	3455	1655	1781	1491	781	1420	1577	1323	1536	800	698
c, Capacity [veh/h]	82	1303	624	55	540	283	26	447	375	297	360	314
d1, Uniform Delay [s]	62.00	40.48	40.48	62.54	41.46	41.46	63.44	35.76	46.03	51.62	22.26	24.41
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.17	0.04	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	386.30	71.51	100.27	8.43	338.28	345.36	27.63	0.10	45.40	5.72	0.38	1.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.85	1.14	1.19	0.78	1.73	1.74	0.69	0.23	1.06	0.93	0.26	0.45
d, Delay for Lane Group [s/veh]	448.30	111.99	140.74	70.97	379.74	386.82	91.07	35.86	91.42	57.35	22.65	25.41
Lane Group LOS	F	F	F	E	F	F	F	D	F	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	11.50	33.05	36.64	1.55	34.01	36.18	0.79	2.57	16.56	4.67	1.84	3.05
50th-Percentile Queue Length [ft/ln]	287.52	826.29	916.12	38.85	850.28	904.38	19.85	64.16	414.08	116.79	45.98	76.24
95th-Percentile Queue Length [veh/ln]	19.36	46.35	52.20	2.80	56.21	59.48	1.43	4.62	24.11	8.22	3.31	5.49
95th-Percentile Queue Length [ft/ln]	484.08	1158.83	1305.12	69.93	1405.24	1487.09	35.73	115.49	602.70	205.41	82.77	137.24

**Movement, Approach, & Intersection Results**

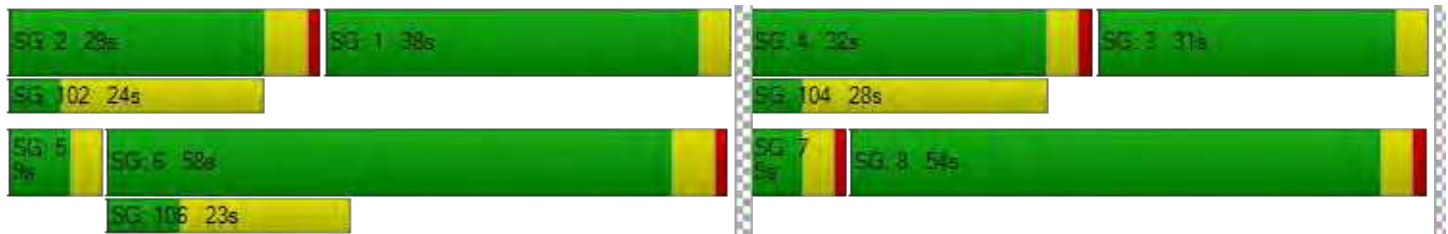
d_M, Delay for Movement [s/veh]	448.30	118.12	140.74	70.97	382.15	386.82	91.07	35.86	91.42	57.35	22.65	25.41
Movement LOS	F	F	F	E	F	F	F	D	F	E	C	C
d_A, Approach Delay [s/veh]	142.48			373.07			80.30			42.18		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	194.81											
Intersection LOS	F											
Intersection V/C	1.317											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	50.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	24.62	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.451	2.991	2.410	2.569
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	369	815	431	769
d_b, Bicycle Delay [s]	43.26	22.82	40.12	24.79
I_b,int, Bicycle LOS Score for Intersection	2.866	2.368	2.490	2.461
Bicycle LOS	C	B	B	B

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	⇐		⇐		⇐⇐⇐	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1216	1202	570	438	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1216	1202	271	438	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	304	301	68	110	0
Total Analysis Volume [veh/h]	65	1216	1202	271	438	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	4	42	34	34	19	19
g / C, Green / Cycle	0.06	0.59	0.48	0.48	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.05	0.46	0.43	0.22	0.24	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1230	1801	841
c, Capacity [veh/h]	75	1543	1341	595	491	229
d1, Uniform Delay [s]	33.13	11.11	16.65	12.01	24.74	0.00
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.91	1.32	3.34	0.78	2.31	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.87	0.79	0.90	0.46	0.89	0.00
d, Delay for Lane Group [s/veh]	44.04	12.43	19.99	12.79	27.04	0.00
Lane Group LOS	D	B	B	B	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.29	6.14	8.06	2.55	3.45	0.00
50th-Percentile Queue Length [ft/ln]	32.37	153.51	201.61	63.75	86.34	0.00
95th-Percentile Queue Length [veh/ln]	2.33	10.20	12.72	4.59	6.22	0.00
95th-Percentile Queue Length [ft/ln]	58.27	255.11	318.04	114.74	155.41	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.04	12.43	19.99	12.79	27.04	0.00
Movement LOS	D	B	B	B	C	A
d_A, Approach Delay [s/veh]	14.03		18.66		27.04	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	17.95					
Intersection LOS	B					
Intersection V/C	0.860					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	25.17
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.508
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1019	1019	1019
d_b, Bicycle Delay [s]	8.50	8.50	8.50
I_b,int, Bicycle LOS Score for Intersection	2.616	3.022	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	Signalized	Delay (sec / veh):	16.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.283

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	226	10	51	98	35	37	41	24	22	51	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	226	10	51	98	35	37	41	24	22	51	133
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	59	3	16	31	11	12	13	8	6	14	36
Total Analysis Volume [veh/h]	14	236	10	64	123	44	47	52	31	24	56	146
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			2			2	
v_co, Outbound Pedestrian Volume crossing		2			4			5			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			5			4			2	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	45	0	0	45	0	0	45	0	0	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	41	41	41	41
g / C, Green / Cycle	0.46	0.46	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.14	0.15	0.09	0.14
s, saturation flow rate [veh/h]	1835	1592	1520	1634
c, Capacity [veh/h]	878	776	747	789
d1, Uniform Delay [s]	15.51	15.30	14.38	15.42
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.86	0.98	0.51	0.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	0.30	0.17	0.29
d, Delay for Lane Group [s/veh]	16.37	16.28	14.89	16.33
Lane Group LOS	B	B	B	B
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.45	3.05	1.61	3.00
50th-Percentile Queue Length [ft/ln]	86.32	76.36	40.22	75.07
95th-Percentile Queue Length [veh/ln]	6.22	5.50	2.90	5.40
95th-Percentile Queue Length [ft/ln]	155.38	137.45	72.39	135.12

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.37	16.37	16.37	16.28	16.28	16.28	14.89	14.89	14.89	16.33	16.33	16.33
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	16.37			16.28			14.89			16.33		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.11											
Intersection LOS	B											
Intersection V/C	0.283											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	1.964	2.105	1.855	1.979
Crosswalk LOS	A	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	911	911	911	911
d_b, Bicycle Delay [s]	13.34	13.34	13.34	13.34
I_b,int, Bicycle LOS Score for Intersection	1.989	1.941	1.774	1.933
Bicycle LOS	A	A	A	A

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	50.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	1109	10	30	7	8	340	296	2028	512	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1109	10	30	7	8	340	296	2028	512	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	289	3	8	2	2	89	77	528	133	9
Total Analysis Volume [veh/h]	169	28	1155	10	31	7	8	354	308	2113	533	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			1			1			0	
v_di, Inbound Pedestrian Volume crossing in		0			1			1			0	
v_co, Outbound Pedestrian Volume crossing		0			22			0			22	
v_ci, Inbound Pedestrian Volume crossing mi		0			22			0			22	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			13			25			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	69	11	11	0	32	25	32	48	32	48	69	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	25	96	29	29	27	27	27	69	69
g / C, Green / Cycle	0.16	0.60	0.18	0.18	0.17	0.17	0.17	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.11	0.28	0.01	0.01	0.15	0.15	0.16	0.42	0.32
s, saturation flow rate [veh/h]	1822	4110	1863	1610	1624	1353	1432	5075	1797
c, Capacity [veh/h]	286	2367	339	293	278	232	245	2182	773
d1, Uniform Delay [s]	63.75	19.94	54.27	54.31	64.47	64.77	64.63	44.53	38.01
k, delay calibration	0.23	0.50	0.04	0.04	0.12	0.13	0.14	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.24	0.72	0.03	0.04	8.50	12.61	16.14	13.12	6.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.69	0.49	0.07	0.08	0.86	0.89	0.92	0.97	0.74
d, Delay for Lane Group [s/veh]	69.99	20.66	54.31	54.35	72.97	77.38	80.77	57.65	44.16
Lane Group LOS	E	C	D	D	E	E	F	E	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	8.14	8.68	0.86	0.78	10.21	9.03	10.07	29.72	19.95
50th-Percentile Queue Length [ft/ln]	203.49	217.07	21.43	19.46	255.32	225.76	251.75	742.95	498.72
95th-Percentile Queue Length [veh/ln]	12.82	13.52	1.54	1.40	15.45	13.96	15.27	38.66	27.27
95th-Percentile Queue Length [ft/ln]	320.46	337.88	38.58	35.04	386.35	348.97	381.86	966.46	681.84

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	69.99	69.99	20.66	54.31	54.33	54.35	72.97	74.49	79.90	57.65	44.16	44.16
Movement LOS	E	E	C	D	D	D	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	27.85			54.33			76.94			54.79		
Approach LOS	C			D			E			D		
d_I, Intersection Delay [s/veh]	50.24											
Intersection LOS	D											
Intersection V/C	0.814											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.496			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			555			791		
d_b, Bicycle Delay [s]	73.76			54.89			42.29			29.23		
I_b,int, Bicycle LOS Score for Intersection	3.790			1.599			2.112			5.983		
Bicycle LOS	D			A			B			F		

**Sequence**

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↬		↶↵		↶↵	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	617	96	70	325	128	194
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	617	96	70	325	128	194
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	175	27	20	92	36	55
Total Analysis Volume [veh/h]	701	109	80	369	145	220
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	0	0	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	59	0	0	59	31	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	55	55	55	27	27
g / C, Green / Cycle	0.61	0.61	0.61	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.45	0.12	0.20	0.08	0.14
s, saturation flow rate [veh/h]	1812	668	1855	1767	1577
c, Capacity [veh/h]	1107	263	1134	530	473
d1, Uniform Delay [s]	12.31	26.91	8.50	24.02	25.63
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.28	2.96	0.76	1.27	3.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.73	0.30	0.33	0.27	0.47
d, Delay for Lane Group [s/veh]	16.58	29.86	9.26	25.30	28.89
Lane Group LOS	B	C	A	C	C
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.33	1.60	3.39	2.50	4.17
50th-Percentile Queue Length [ft/ln]	283.31	40.06	84.76	62.41	104.15
95th-Percentile Queue Length [veh/ln]	16.85	2.88	6.10	4.49	7.50
95th-Percentile Queue Length [ft/ln]	421.33	72.11	152.57	112.34	187.46

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.58	16.58	29.86	9.26	25.30	28.89
Movement LOS	B	B	C	A	C	C
d_A, Approach Delay [s/veh]	16.58		12.93		27.46	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.02					
Intersection LOS	B					
Intersection V/C	0.587					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1222	1222	600
d_b, Bicycle Delay [s]	6.81	6.81	22.05
I_b,int, Bicycle LOS Score for Intersection	2.896	2.300	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↔		↖		↗	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	



**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	29	72	86	164	752	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	72	86	164	752	28
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	23	28	53	244	9
Total Analysis Volume [veh/h]	38	94	112	213	977	36
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	71	71	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	67	67	67
g / C, Green / Cycle	0.17	0.74	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.08	0.21	0.12	0.56
s, saturation flow rate [veh/h]	1599	543	1823	1812
c, Capacity [veh/h]	267	296	1357	1349
d1, Uniform Delay [s]	34.06	20.53	3.33	6.66
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.44	3.65	0.25	3.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.50	0.38	0.16	0.75
d, Delay for Lane Group [s/veh]	40.50	24.19	3.57	10.55
Lane Group LOS	D	C	A	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.06	2.02	0.94	9.51
50th-Percentile Queue Length [ft/ln]	76.48	50.41	23.46	237.70
95th-Percentile Queue Length [veh/ln]	5.51	3.63	1.69	14.56
95th-Percentile Queue Length [ft/ln]	137.67	90.74	42.22	364.12

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	40.50	40.50	24.19	3.57	10.55	10.55
Movement LOS	D	D	C	A	B	B
d_A, Approach Delay [s/veh]	40.50		10.68		10.55	
Approach LOS	D		B		B	
d_I, Intersection Delay [s/veh]	13.27					
Intersection LOS	B					
Intersection V/C	0.642					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.012	2.395	2.333
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	1489	1489
d_b, Bicycle Delay [s]	31.25	2.94	2.94
I_b,int, Bicycle LOS Score for Intersection	1.777	2.096	3.231
Bicycle LOS	A	B	C

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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ReducedTripCap\_10.7.2021.vistro

Scenario 23 Imp- Near-Term AM (2025 vols)+Project

Report File: \\...\Near-Term + P AM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	143	1771	320	40	1335	7	17	98	418	260	88	167	4664

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1216	1202	570	438	60	3551

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	226	10	51	98	35	37	41	24	22	51	133	741

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	162	27	1109	10	30	7	8	340	296	2028	512	34	4563

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	617	96	70	325	128	194	1430

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	29	72	86	164	752	28	1131

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ReducedTripCap\_10.7.2021.vistro

Scenario 23 Imp- Near-Term AM (2025 vols)+Project

Report File: \\...\Near-Term + P AM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	143	1771	320	40	1335	7	17	98	418	260	88	167	4664
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>143</b>	<b>1771</b>	<b>320</b>	<b>40</b>	<b>1335</b>	<b>7</b>	<b>17</b>	<b>98</b>	<b>418</b>	<b>260</b>	<b>88</b>	<b>167</b>	<b>4664</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1216	1202	570	438	60	3551
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1216</b>	<b>1202</b>	<b>570</b>	<b>438</b>	<b>60</b>	<b>3551</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	13	226	10	51	98	35	37	41	24	22	51	133	741
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>226</b>	<b>10</b>	<b>51</b>	<b>98</b>	<b>35</b>	<b>37</b>	<b>41</b>	<b>24</b>	<b>22</b>	<b>51</b>	<b>133</b>	<b>741</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	162	27	1109	10	30	7	8	340	296	2028	512	34	4563
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>162</b>	<b>27</b>	<b>1109</b>	<b>10</b>	<b>30</b>	<b>7</b>	<b>8</b>	<b>340</b>	<b>296</b>	<b>2028</b>	<b>512</b>	<b>34</b>	<b>4563</b>

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ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	617	96	70	325	128	194	1430
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>617</b>	<b>96</b>	<b>70</b>	<b>325</b>	<b>128</b>	<b>194</b>	<b>1430</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	29	72	86	164	752	28	1131
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>29</b>	<b>72</b>	<b>86</b>	<b>164</b>	<b>752</b>	<b>28</b>	<b>1131</b>

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Study Intersections

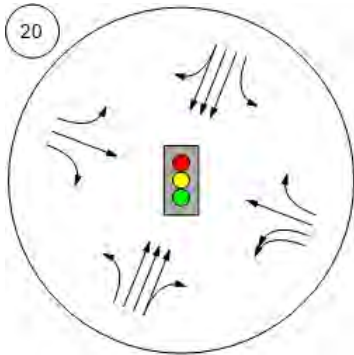




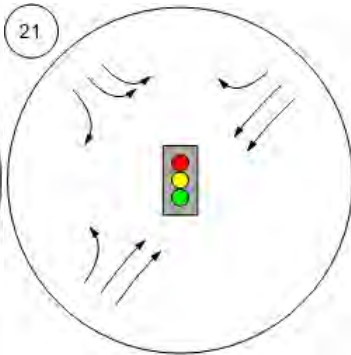
Lane Configuration and Traffic Control



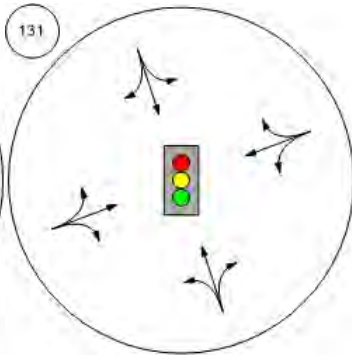
Willow Rd (SR 114)/Newbrid



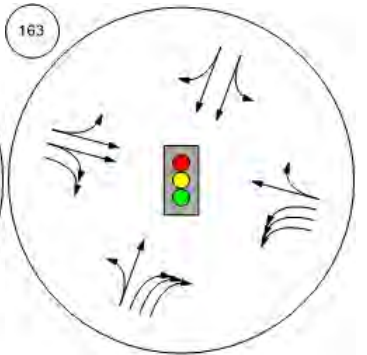
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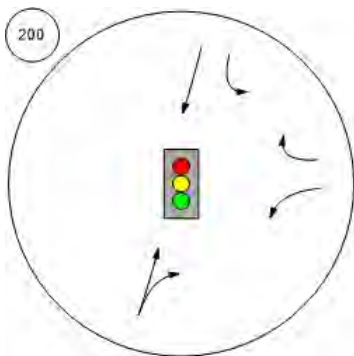
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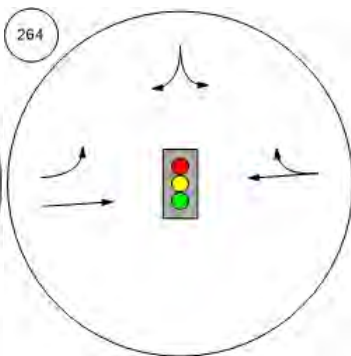
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O'Brien Drive/Kavanaugh Dri



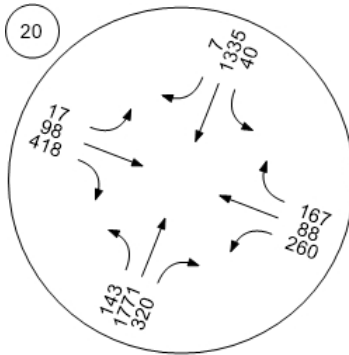
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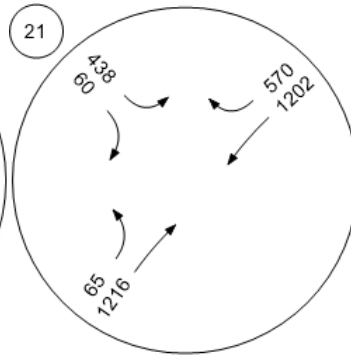
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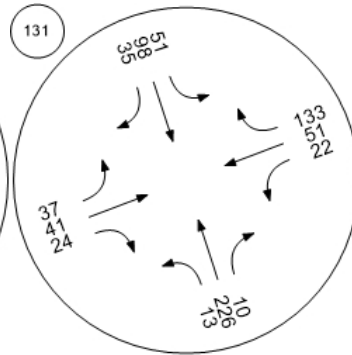
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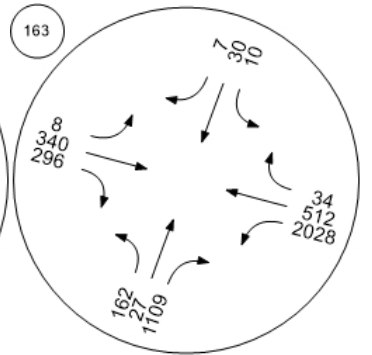
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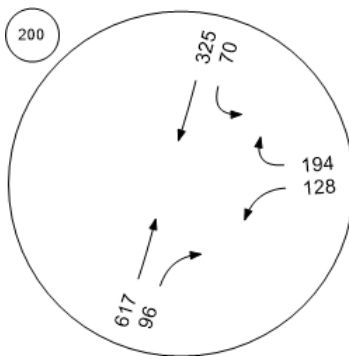
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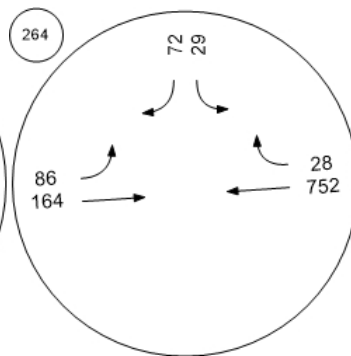
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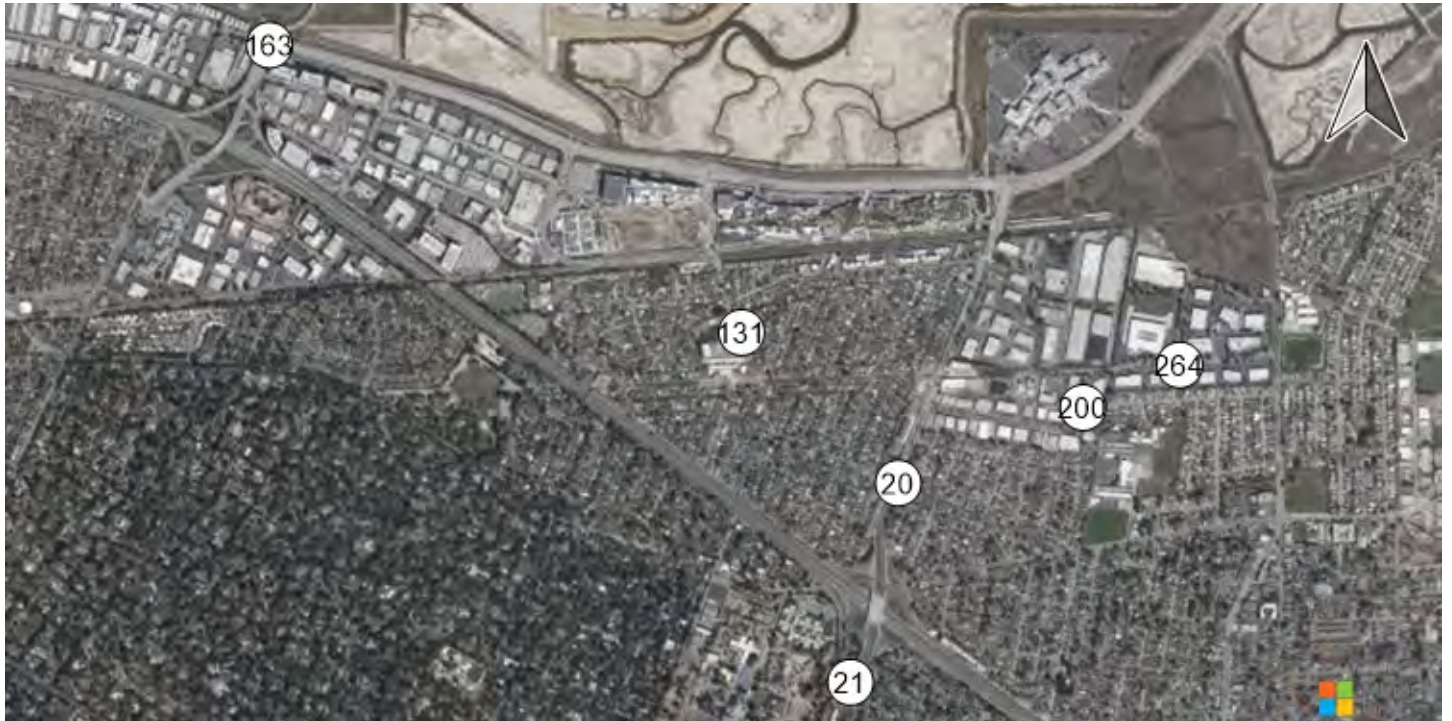
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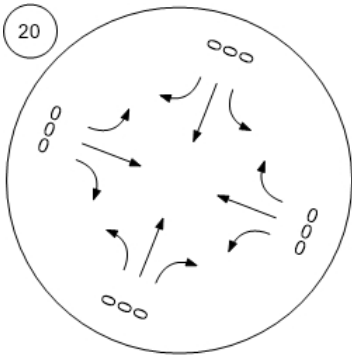
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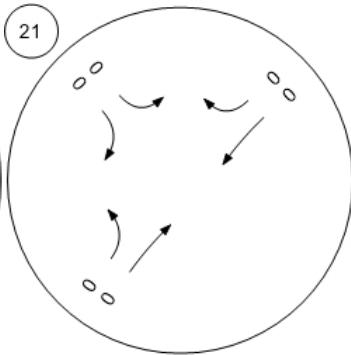
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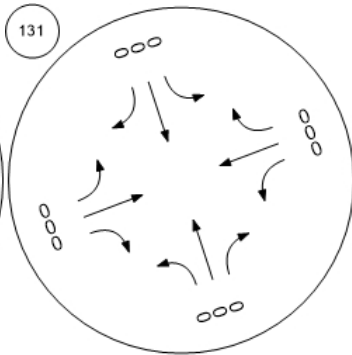
Willow Rd (SR 114)/Newbrid



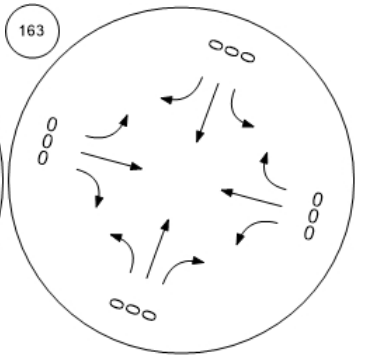
Willow Rd/Bay Rd



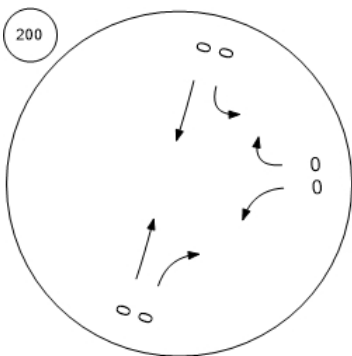
Chilco Street/Hamilton Avenue



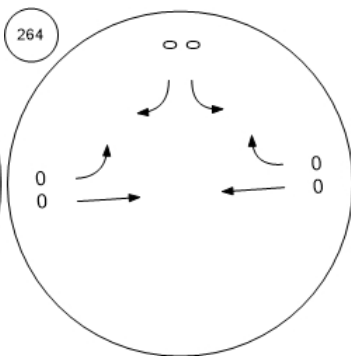
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri



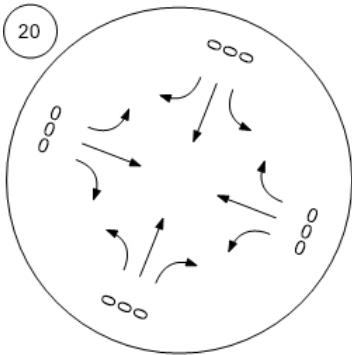
Adams Drive/O'Brien Drive



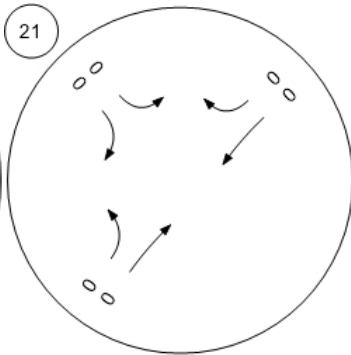
Traffic Volume - Net New Site Trips



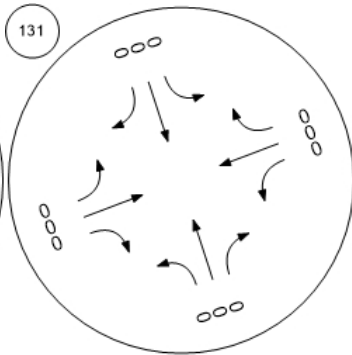
Willow Rd (SR 114)/Newbrid



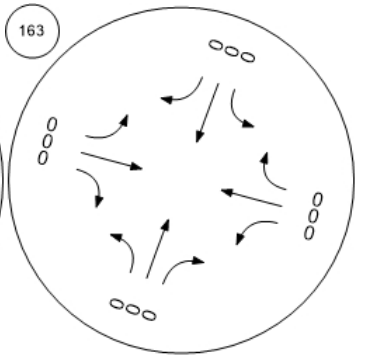
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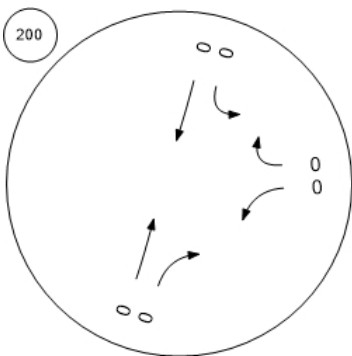
Chilco Street/Hamilton Avenue



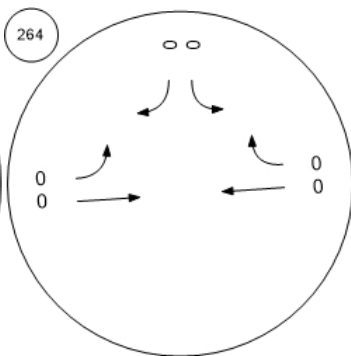
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri



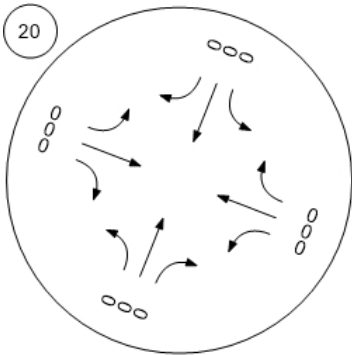
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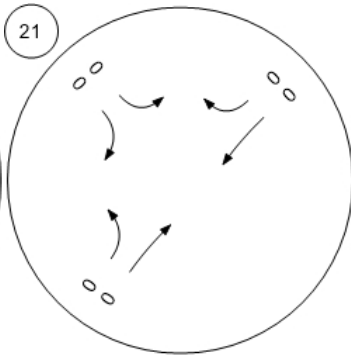
Traffic Volume - Other Volume



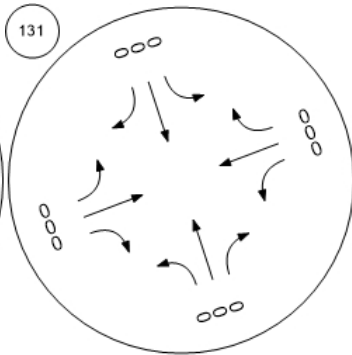
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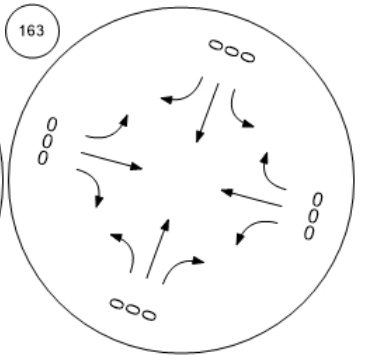
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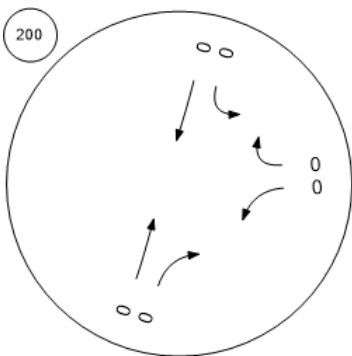
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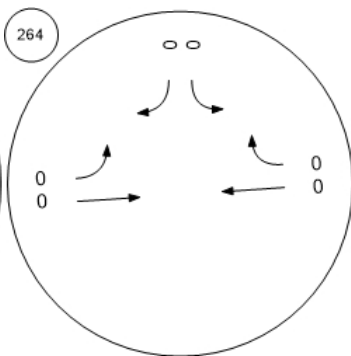
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri



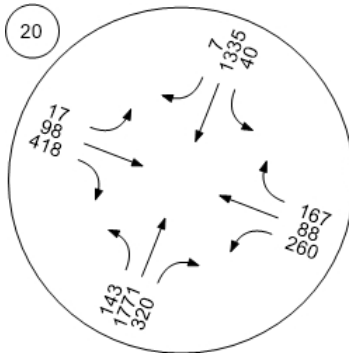
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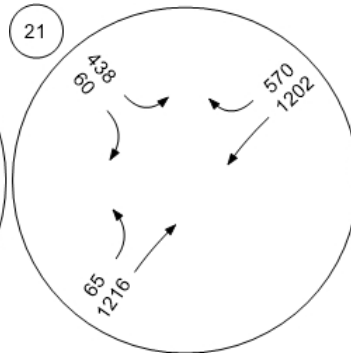
Traffic Volume - Future Total Volume



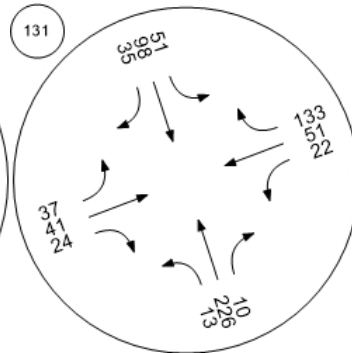
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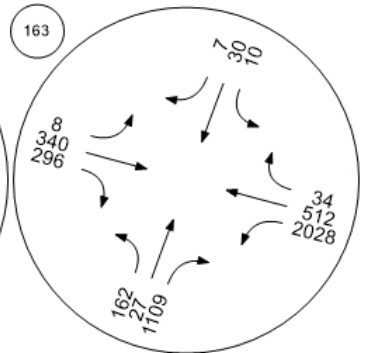
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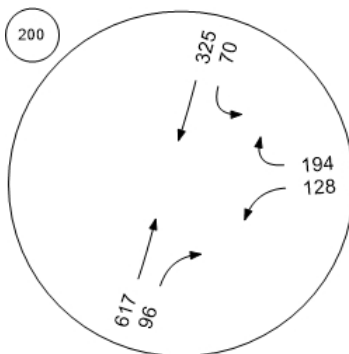
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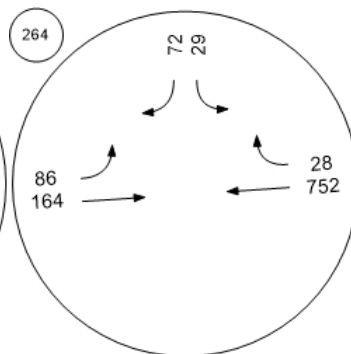
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri



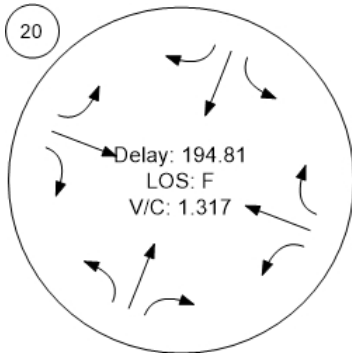
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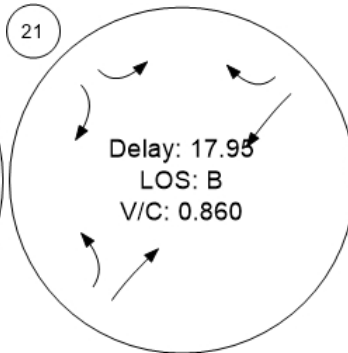
Traffic Conditions



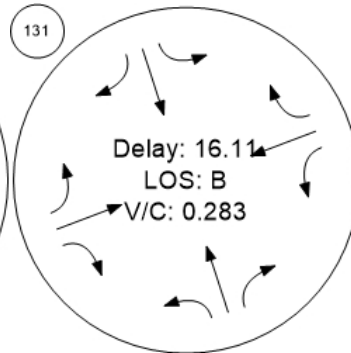
Willow Rd (SR 114)/Newbrid



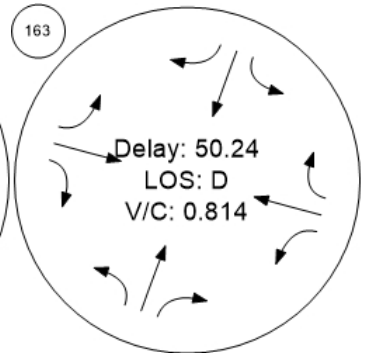
Willow Rd/Bay Rd



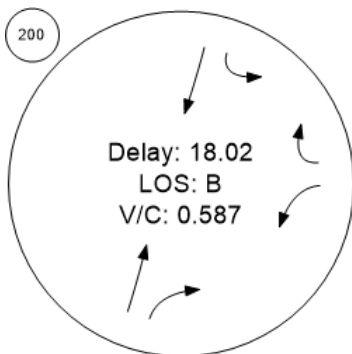
Chilco Street/Hamilton Avenue



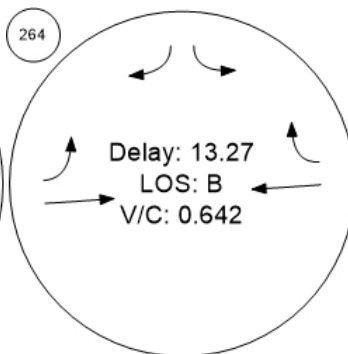
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri

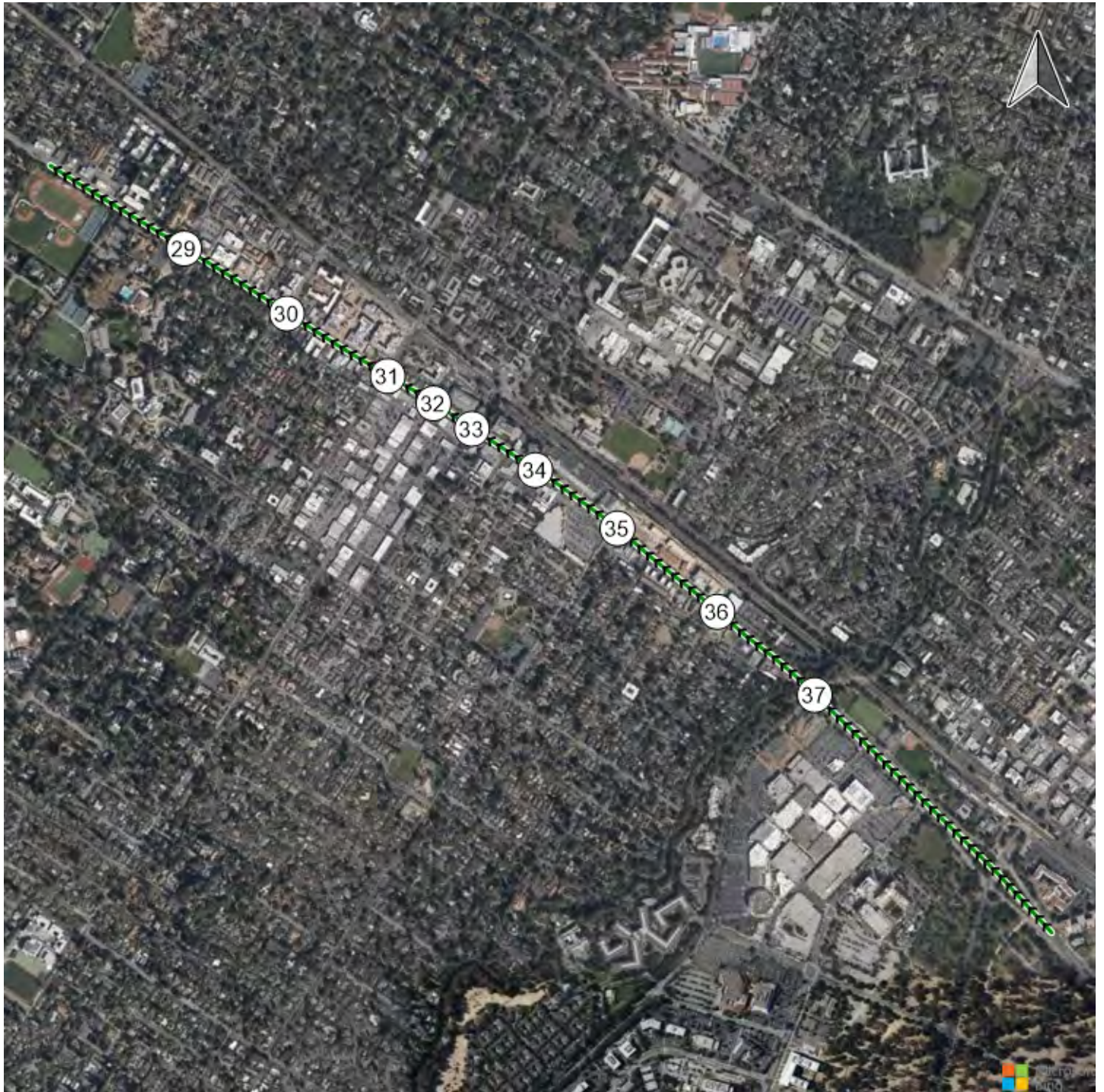


Adams Drive/O'Brien Drive



Time Space Diagram - Flowing Off

Route 1: ECR NB





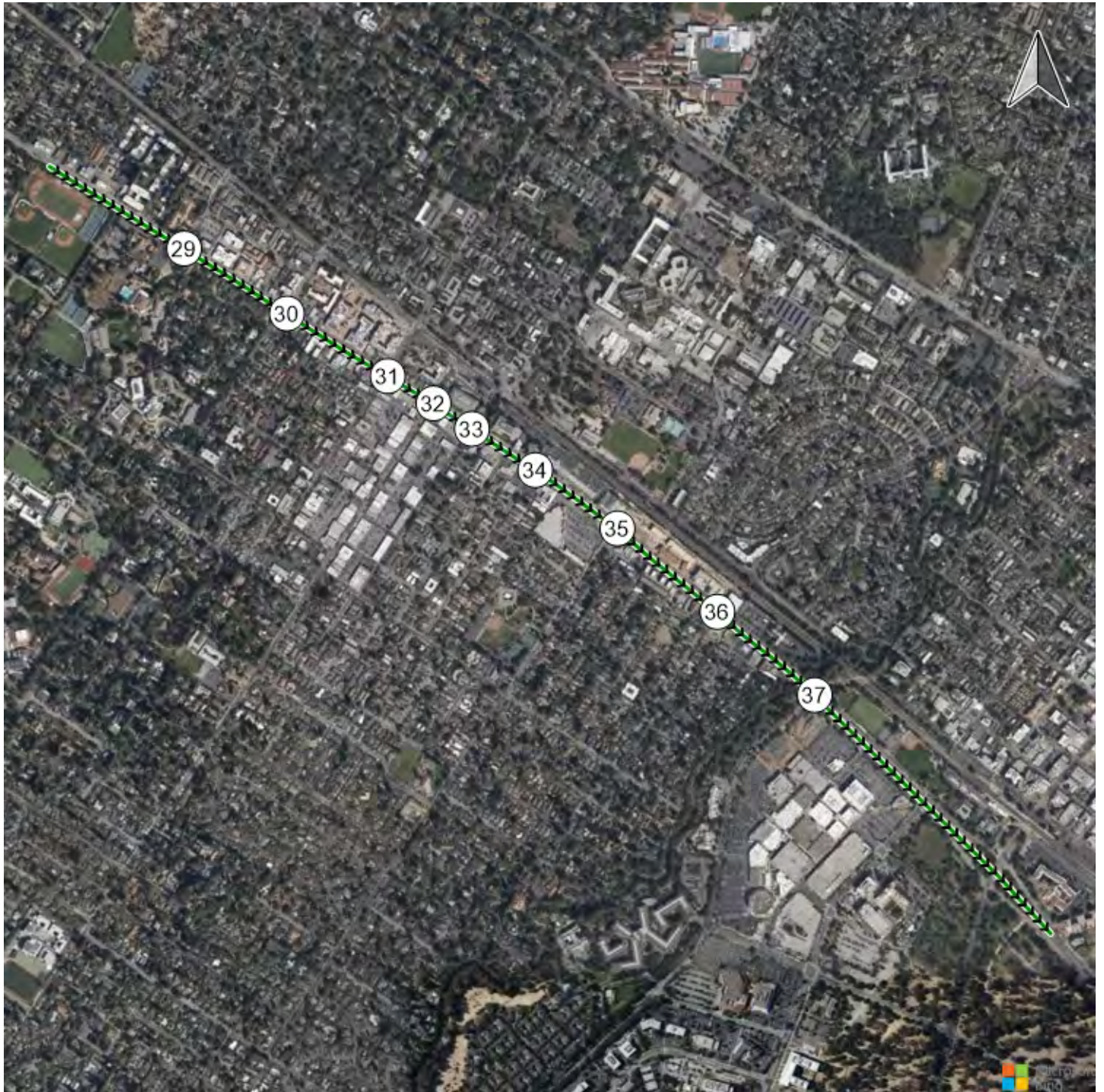
Generated with 

Version 2021 (SP 0-4)

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Route 1: ECR NB

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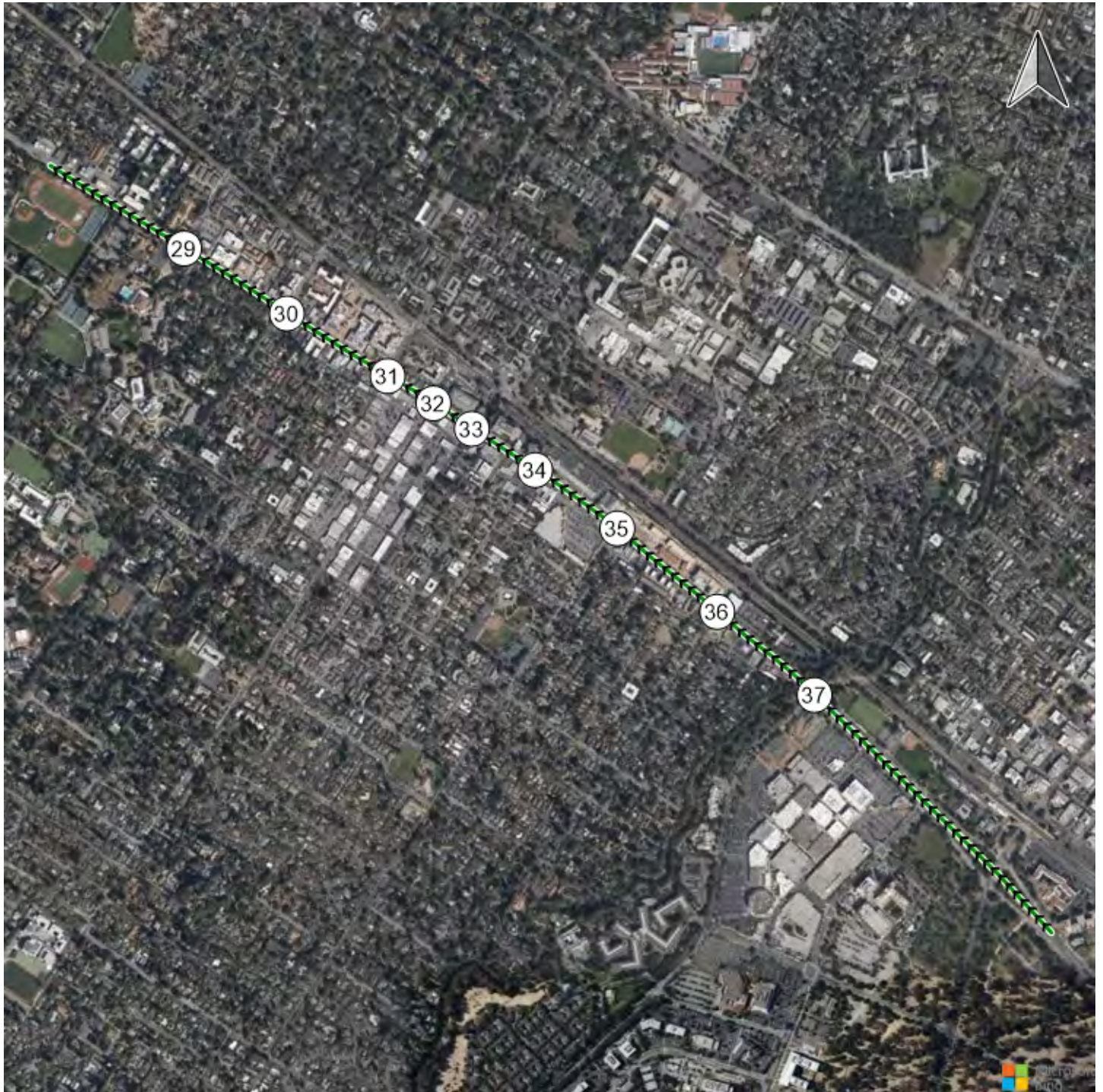
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



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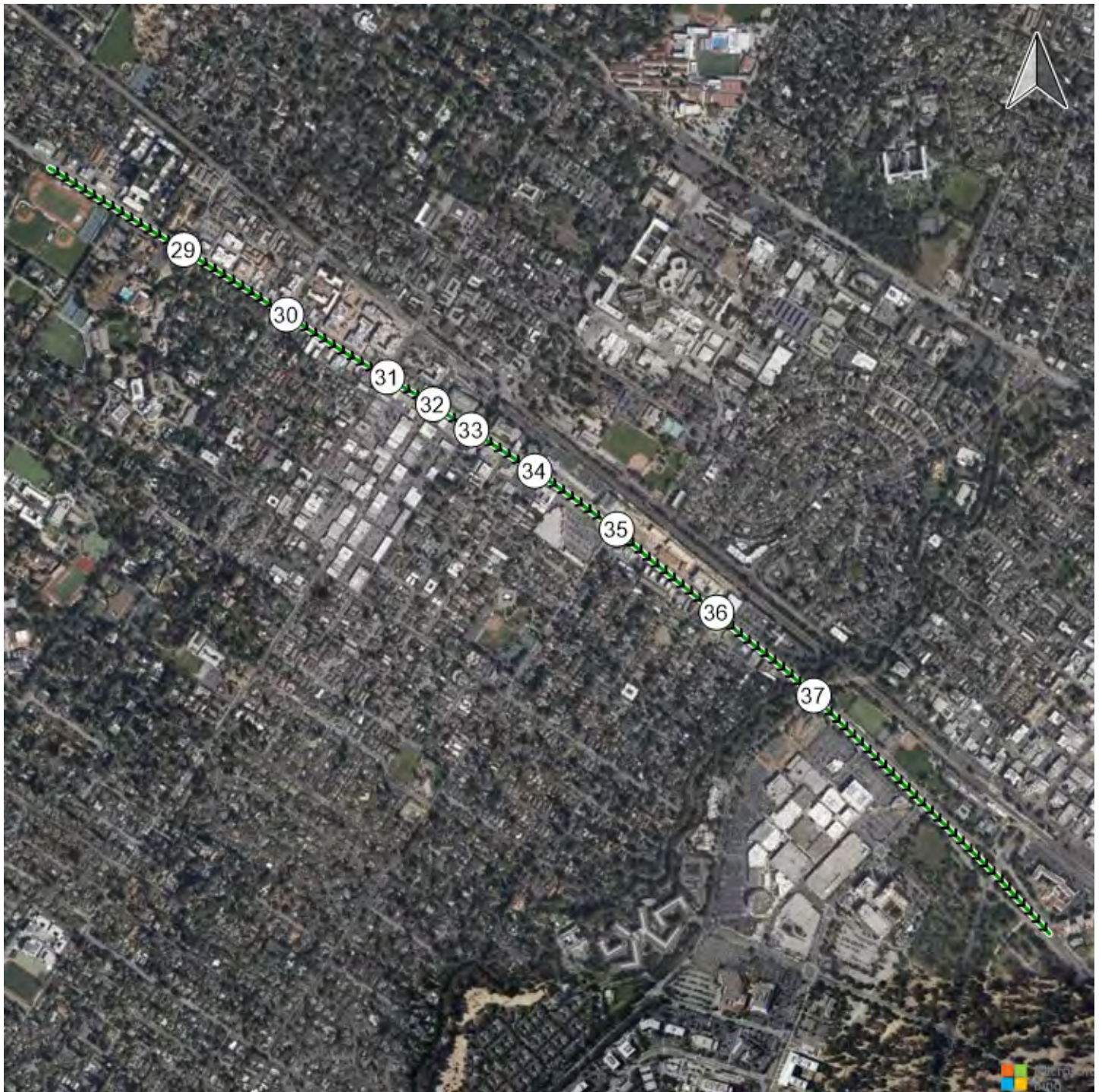
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



Generated with 

Version 2021 (SP 0-4)

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Route 2: ECR SB

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Vistro File: \\...\Vistro\_AllScenarios\_PM -  
ReducedTripCap\_10.7.2021.vistro

Scenario 23 Imp-Near-Term PM (2025 vols)+Project

Report File: \\...\Near-Term + P PM\_Imp.pdf

10/14/2021

**Intersection Analysis Summary**

<b>ID</b>	<b>Intersection Name</b>	<b>Control Type</b>	<b>Method</b>	<b>Worst Mvmt</b>	<b>V/C</b>	<b>Delay (s/veh)</b>	<b>LOS</b>
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	SB Right	1.139	116.4	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.250	105.7	F
131	Chilco Street/Hamilton Avenue	Signalized	HCM 6th Edition	SB Thru	0.493	18.4	B
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	SB Right	0.964	38.9	D
200	O'Brien Drive/Kavanaugh Drive	Signalized	HCM 6th Edition	WB Right	0.674	24.3	C
264	Adams Drive/O'Brien Drive	Signalized	HCM 6th Edition	SB Left	0.582	20.3	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	116.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.139

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑ →			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	268	1442	292	78	1275	26	27	183	373	261	255	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	268	1442	292	78	1275	26	27	183	198	261	255	70
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	396	80	21	350	7	7	50	54	72	70	19
Total Analysis Volume [veh/h]	295	1585	321	86	1401	29	30	201	218	287	280	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	40	40	21	40	40	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	27	54	54	13	40	40	9	32	32	31	54	54
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	24	64	64	10	50	50	3	28	28	13	36	36
g / C, Green / Cycle	0.18	0.49	0.49	0.08	0.39	0.39	0.03	0.21	0.21	0.10	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.23	0.51	0.53	0.09	0.51	0.51	0.02	0.21	0.14	0.08	0.21	0.05
s, saturation flow rate [veh/h]	1273	2481	1193	952	1853	960	1750	965	1537	3409	1303	1520
c, Capacity [veh/h]	235	1227	590	73	717	372	45	207	330	336	364	425
d1, Uniform Delay [s]	53.00	32.85	32.85	60.00	39.85	39.85	62.79	50.66	46.40	57.68	42.96	35.43
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.11	0.41	0.15	0.04	0.12	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	145.04	36.98	55.79	96.71	150.36	160.23	15.80	49.69	3.05	2.42	3.92	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.26	1.04	1.07	1.17	1.31	1.32	0.67	0.97	0.66	0.85	0.77	0.18
d, Delay for Lane Group [s/veh]	198.04	69.83	88.65	156.71	190.21	200.08	78.59	100.35	49.45	60.10	46.88	35.63
Lane Group LOS	F	F	F	F	F	F	E	F	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	16.98	24.42	26.57	4.41	26.37	28.35	1.18	9.32	6.70	4.76	8.64	1.89
50th-Percentile Queue Length [ft/ln]	424.59	610.50	664.19	110.18	659.37	708.81	29.58	233.08	167.55	119.06	215.98	47.34
95th-Percentile Queue Length [veh/ln]	26.37	33.55	36.77	7.93	40.85	43.65	2.13	14.33	10.95	8.34	13.46	3.41
95th-Percentile Queue Length [ft/ln]	659.36	838.77	919.32	198.33	1021.15	1091.18	53.24	358.26	273.69	208.53	336.49	85.21

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	198.04	73.48	88.65	156.71	193.45	200.08	78.59	100.35	49.45	60.10	46.88	35.63
Movement LOS	F	E	F	F	F	F	E	F	D	E	D	D
d_A, Approach Delay [s/veh]	92.39			191.49			74.18			51.43		
Approach LOS	F			F			E			D		
d_I, Intersection Delay [s/veh]	116.44											
Intersection LOS	F											
Intersection V/C	1.139											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	50.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	24.62	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.408	2.957	2.697	2.747
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	754	538	431	769
d_b, Bicycle Delay [s]	25.24	34.80	40.10	24.69
I_b,int, Bicycle LOS Score for Intersection	2.770	2.393	2.589	2.696
Bicycle LOS	C	B	B	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	105.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.250

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	20	1349	716	190	301	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	20	1349	716	0	301	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	348	185	0	78	0
Total Analysis Volume [veh/h]	21	1391	738	0	310	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	59	59	59	59	59	59
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	1	36	31	31	13	13
g / C, Green / Cycle	0.02	0.61	0.53	0.53	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.01	0.83	0.44	0.00	0.19	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	1615	1651	756
c, Capacity [veh/h]	37	1028	896	860	368	169
d1, Uniform Delay [s]	28.60	11.42	11.47	0.00	21.90	0.00
k, delay calibration	0.04	0.24	0.15	0.15	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.86	162.13	2.78	0.00	2.02	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.56	1.35	0.82	0.00	0.84	0.00
d, Delay for Lane Group [s/veh]	33.46	173.55	14.26	0.00	23.92	0.00
Lane Group LOS	C	F	B	A	C	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.33	27.70	3.31	0.00	1.98	0.00
50th-Percentile Queue Length [ft/ln]	8.23	692.44	82.75	0.00	49.45	0.00
95th-Percentile Queue Length [veh/ln]	0.59	44.40	5.96	0.00	3.56	0.00
95th-Percentile Queue Length [ft/ln]	14.81	1109.96	148.96	0.00	89.01	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.46	173.55	14.26	0.00	23.92	0.00
Movement LOS	C	F	B	A	C	A
d_A, Approach Delay [s/veh]	171.47		14.26		23.92	
Approach LOS	F		B		C	
d_I, Intersection Delay [s/veh]	105.71					
Intersection LOS	F					
Intersection V/C	1.250					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	19.43
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.321
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1225	1225	1225
d_b, Bicycle Delay [s]	4.44	4.43	4.43
I_b,int, Bicycle LOS Score for Intersection	2.725	2.352	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	Signalized	Delay (sec / veh):	18.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.493

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
	24	225	18	74	500	36	29	124	23	7	16	61
Base Volume Input [veh/h]	24	225	18	74	500	36	29	124	23	7	16	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	225	18	74	500	36	29	124	23	7	16	61
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	61	5	20	135	10	8	35	7	2	4	17
Total Analysis Volume [veh/h]	26	243	19	80	541	39	33	140	26	8	17	66
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			1			2	
v_di, Inbound Pedestrian Volume crossing in		1			2			2			2	
v_co, Outbound Pedestrian Volume crossing		2			1			1			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			1			1			2	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	51	0	0	51	0	0	39	0	0	39	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	47	35	35
g / C, Green / Cycle	0.52	0.52	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.17	0.38	0.11	0.06
s, saturation flow rate [veh/h]	1733	1742	1741	1617
c, Capacity [veh/h]	948	955	724	672
d1, Uniform Delay [s]	12.17	16.21	18.86	17.79
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.83	4.10	0.94	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	0.69	0.27	0.14
d, Delay for Lane Group [s/veh]	12.99	20.31	19.80	18.20
Lane Group LOS	B	C	B	B
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.31	10.57	3.01	1.27
50th-Percentile Queue Length [ft/ln]	82.71	264.22	75.18	31.79
95th-Percentile Queue Length [veh/ln]	5.96	15.90	5.41	2.29
95th-Percentile Queue Length [ft/ln]	148.89	397.51	135.33	57.23

**Movement, Approach, & Intersection Results**

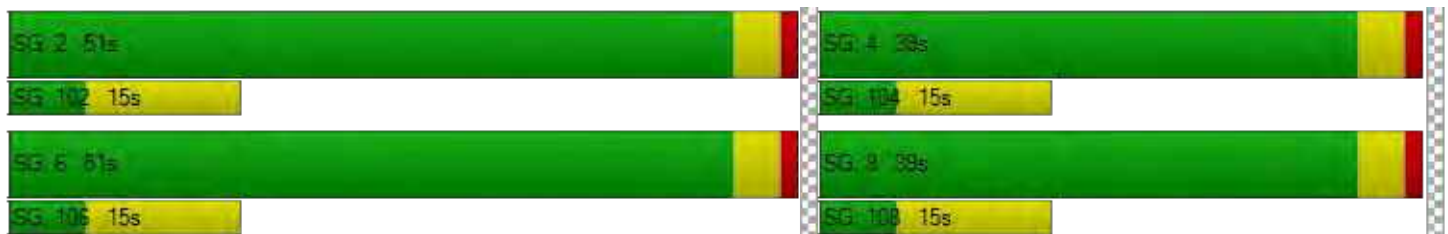
d_M, Delay for Movement [s/veh]	12.99	12.99	12.99	20.31	20.31	20.31	19.80	19.80	19.80	18.20	18.20	18.20
Movement LOS	B	B	B	C	C	C	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	12.99			20.31			19.80			18.20		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	18.37											
Intersection LOS	B											
Intersection V/C	0.493											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.148	2.252	1.868	1.991
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1044	1044	778	778
d_b, Bicycle Delay [s]	10.27	10.27	16.81	16.81
I_b,int, Bicycle LOS Score for Intersection	2.035	2.649	1.888	1.710
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	38.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.964

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		



**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	179	40	1761	12	31	5	9	609	208	2225	477	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	40	1761	12	31	5	9	609	208	2225	477	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	10	459	3	8	1	2	159	54	579	124	4
Total Analysis Volume [veh/h]	186	42	1834	13	32	5	9	634	217	2318	497	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			4			4			0	
v_di, Inbound Pedestrian Volume crossing in		0			4			4			0	
v_co, Outbound Pedestrian Volume crossing		0			13			0			13	
v_ci, Inbound Pedestrian Volume crossing mi		0			13			0			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			13			8			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	6	4	6	4	1	4	1	2	8
Auxiliary Signal Groups			2,3									
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	10	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	10	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	58	11	11	25	32	25	32	59	32	59	58	0
Vehicle Extension [s]	4.5	2.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0	4.5	0.0
Walk [s]	5	0	0	10	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	10	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.1	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	32	121	10	10	33	33	33	76	76
g / C, Green / Cycle	0.20	0.76	0.06	0.06	0.21	0.21	0.21	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.12	0.44	0.02	0.01	0.17	0.19	0.14	0.45	0.31
s, saturation flow rate [veh/h]	1826	4190	1707	1588	1891	1724	1554	5150	1674
c, Capacity [veh/h]	360	3082	137	97	390	355	320	2449	796
d1, Uniform Delay [s]	58.88	9.94	71.59	71.56	60.40	62.38	58.40	40.02	31.71
k, delay calibration	0.22	0.50	0.04	0.04	0.04	0.08	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.66	0.85	0.27	0.45	1.47	8.09	0.94	9.36	3.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.63	0.59	0.20	0.23	0.80	0.93	0.68	0.95	0.64
d, Delay for Lane Group [s/veh]	62.54	10.79	71.86	72.01	61.87	70.47	59.34	49.38	35.69
Lane Group LOS	E	B	E	E	E	E	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.91	9.88	1.10	0.89	12.29	14.05	8.23	30.79	15.93
50th-Percentile Queue Length [ft/ln]	222.87	246.99	27.52	22.30	307.18	351.16	205.69	769.76	398.26
95th-Percentile Queue Length [veh/ln]	13.81	15.03	1.98	1.61	18.04	20.19	12.93	39.89	22.48
95th-Percentile Queue Length [ft/ln]	345.29	375.86	49.54	40.15	450.90	504.82	323.29	997.27	561.90

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	62.54	62.54	10.79	71.86	71.94	72.01	61.87	66.35	59.34	49.38	35.69	35.69
Movement LOS	E	E	B	E	E	E	E	E	E	D	D	D
d_A, Approach Delay [s/veh]	16.51			71.93			64.54			46.90		
Approach LOS	B			E			E			D		
d_I, Intersection Delay [s/veh]	38.93											
Intersection LOS	D											
Intersection V/C	0.964											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.537			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			693			654		
d_b, Bicycle Delay [s]	73.73			54.89			34.33			36.27		
I_b,int, Bicycle LOS Score for Intersection	4.962			1.601			2.269			6.229		
Bicycle LOS	E			A			B			F		

**Sequence**

Ring 1	-	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↵		↶↷		↶↷	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	389	236	134	185	45	345
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	389	236	134	185	45	345
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	112	68	39	53	13	99
Total Analysis Volume [veh/h]	447	271	154	213	52	397
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	0	0	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	57	0	0	57	33	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	53	53	53	29	29
g / C, Green / Cycle	0.59	0.59	0.59	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.42	0.21	0.12	0.03	0.26
s, saturation flow rate [veh/h]	1714	717	1828	1741	1554
c, Capacity [veh/h]	1009	274	1076	561	501
d1, Uniform Delay [s]	13.09	30.52	8.61	21.31	27.77
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.26	8.12	0.41	0.33	12.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.71	0.56	0.20	0.09	0.79
d, Delay for Lane Group [s/veh]	17.35	38.64	9.02	21.64	39.95
Lane Group LOS	B	D	A	C	D
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.33	3.63	1.91	0.80	9.19
50th-Percentile Queue Length [ft/ln]	258.24	90.74	47.64	20.12	229.78
95th-Percentile Queue Length [veh/ln]	15.60	6.53	3.43	1.45	14.16
95th-Percentile Queue Length [ft/ln]	390.02	163.33	85.76	36.21	354.08



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	17.35	17.35	38.64	9.02	21.64	39.95
Movement LOS	B	B	D	A	C	D
d_A, Approach Delay [s/veh]	17.35		21.45		37.82	
Approach LOS	B		C		D	
d_I, Intersection Delay [s/veh]	24.32					
Intersection LOS	C					
Intersection V/C	0.674					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.45	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.335	0.000
Crosswalk LOS	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1178	1178	644
d_b, Bicycle Delay [s]	7.61	7.61	20.67
I_b,int, Bicycle LOS Score for Intersection	2.744	2.165	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.582

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↔		↖		↗	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	73	63	226	726	153	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	63	226	726	153	15
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	19	68	219	46	5
Total Analysis Volume [veh/h]	88	76	272	875	184	18
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	34	0	0	56	56	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	52	52	52
g / C, Green / Cycle	0.33	0.58	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.10	0.24	0.48	0.11
s, saturation flow rate [veh/h]	1638	1146	1816	1788
c, Capacity [veh/h]	546	655	1049	1033
d1, Uniform Delay [s]	22.23	14.65	15.48	9.04
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.41	1.94	7.80	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	0.42	0.83	0.20
d, Delay for Lane Group [s/veh]	23.63	16.58	23.28	9.47
Lane Group LOS	C	B	C	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.73	3.77	15.23	1.87
50th-Percentile Queue Length [ft/ln]	68.14	94.16	380.71	46.71
95th-Percentile Queue Length [veh/ln]	4.91	6.78	21.63	3.36
95th-Percentile Queue Length [ft/ln]	122.65	169.48	540.70	84.08

**Movement, Approach, & Intersection Results**

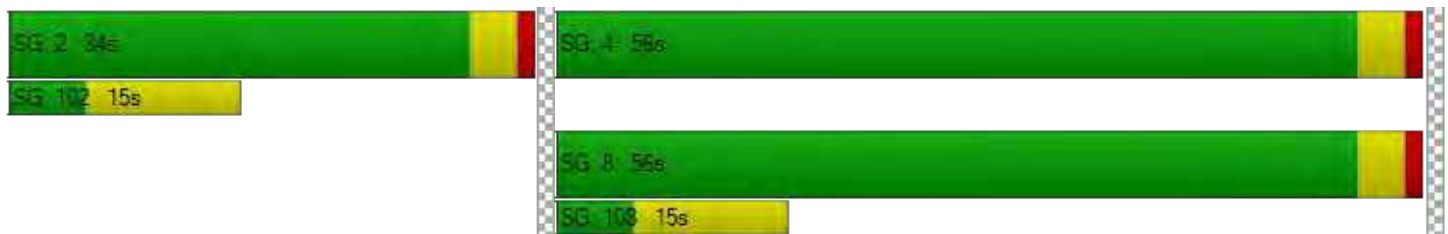
d_M, Delay for Movement [s/veh]	23.63	23.63	16.58	23.28	9.47	9.47
Movement LOS	C	C	B	C	A	A
d_A, Approach Delay [s/veh]	23.63		21.70		9.47	
Approach LOS	C		C		A	
d_I, Intersection Delay [s/veh]	20.27					
Intersection LOS	C					
Intersection V/C	0.582					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.325	2.399	2.284
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	1156	1156
d_b, Bicycle Delay [s]	20.00	8.02	8.02
I_b,int, Bicycle LOS Score for Intersection	1.830	3.452	1.893
Bicycle LOS	A	C	A

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Vistro File: \\...\Vistro\_AllScenarios\_PM -  
ReducedTripCap\_10.7.2021.vistro

Scenario 23 Imp-Near-Term PM (2025 vols)+Project

Report File: \\...\Near-Term + P PM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	268	1442	292	78	1275	26	27	183	373	261	255	115	4595

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	20	1349	716	190	301	40	2616

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	24	225	18	74	500	36	29	124	23	7	16	61	1137

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	179	40	1761	12	31	5	9	609	208	2225	477	14	5570

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	389	236	134	185	45	345	1334

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	73	63	226	726	153	15	1256

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Scenario 23 Imp-Near-Term PM (2025 vols)+Project

Report File: \\...\Near-Term + P PM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	268	1442	292	78	1275	26	27	183	373	261	255	115	4595
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>268</b>	<b>1442</b>	<b>292</b>	<b>78</b>	<b>1275</b>	<b>26</b>	<b>27</b>	<b>183</b>	<b>373</b>	<b>261</b>	<b>255</b>	<b>115</b>	<b>4595</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	20	1349	716	190	301	40	2616
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>20</b>	<b>1349</b>	<b>716</b>	<b>190</b>	<b>301</b>	<b>40</b>	<b>2616</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	24	225	18	74	500	36	29	124	23	7	16	61	1137
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>24</b>	<b>225</b>	<b>18</b>	<b>74</b>	<b>500</b>	<b>36</b>	<b>29</b>	<b>124</b>	<b>23</b>	<b>7</b>	<b>16</b>	<b>61</b>	<b>1137</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	179	40	1761	12	31	5	9	609	208	2225	477	14	5570
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>179</b>	<b>40</b>	<b>1761</b>	<b>12</b>	<b>31</b>	<b>5</b>	<b>9</b>	<b>609</b>	<b>208</b>	<b>2225</b>	<b>477</b>	<b>14</b>	<b>5570</b>



ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	389	236	134	185	45	345	1334
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>389</b>	<b>236</b>	<b>134</b>	<b>185</b>	<b>45</b>	<b>345</b>	<b>1334</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	73	63	226	726	153	15	1256
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>73</b>	<b>63</b>	<b>226</b>	<b>726</b>	<b>153</b>	<b>15</b>	<b>1256</b>

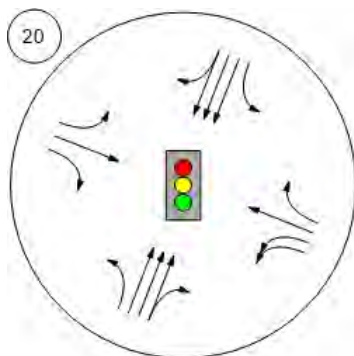
Study Intersections



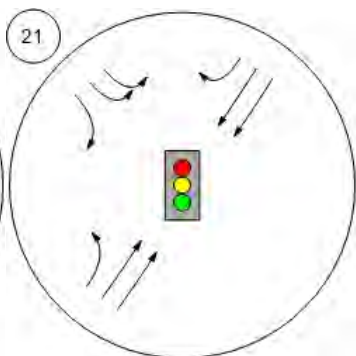
Lane Configuration and Traffic Control



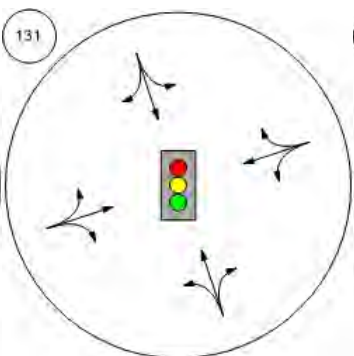
Willow Rd (SR 114)/Newbrid



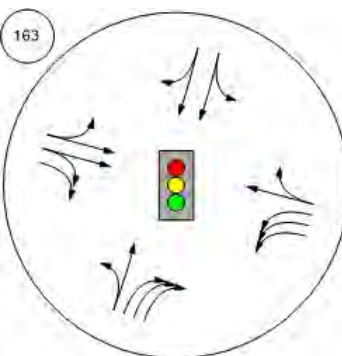
Willow Rd/Bay Rd



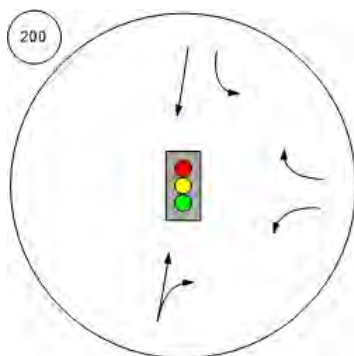
Chilco Street/Hamilton Avenue



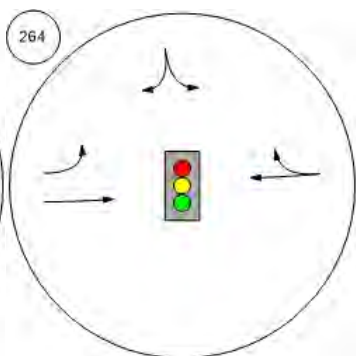
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri



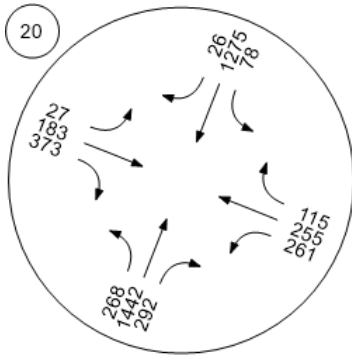
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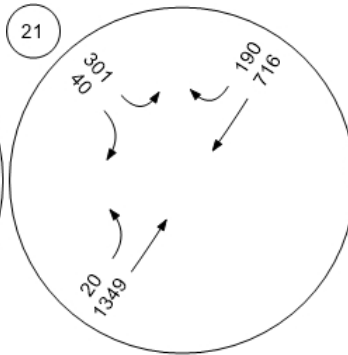
Traffic Volume - Base Volume



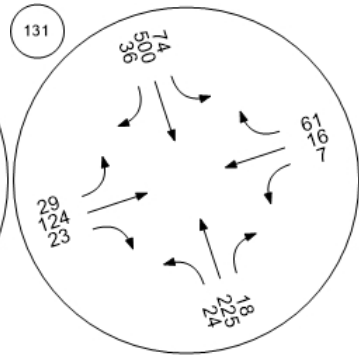
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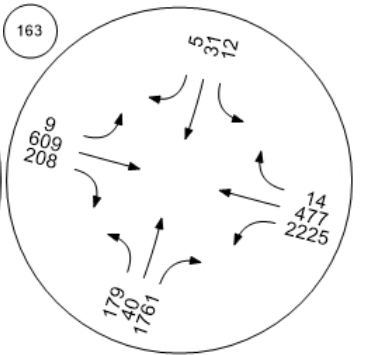
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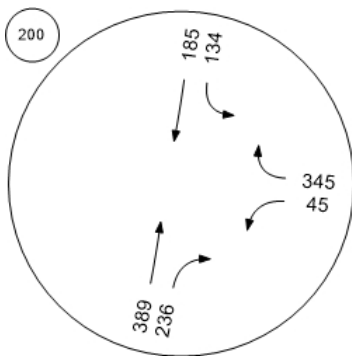
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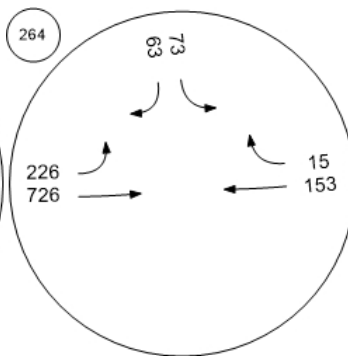
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O'Brien Drive/Kavanaugh Dri



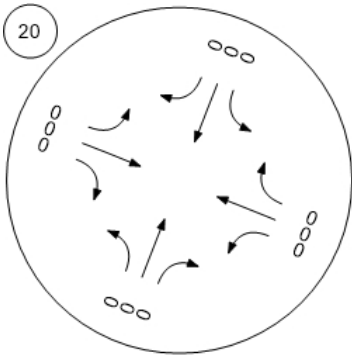
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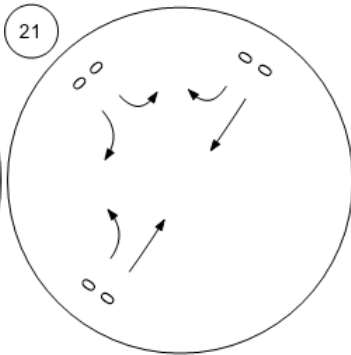
Traffic Volume - In-Process Volume



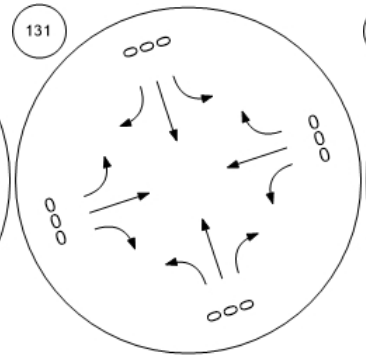
Willow Rd (SR 114)/Newbrid



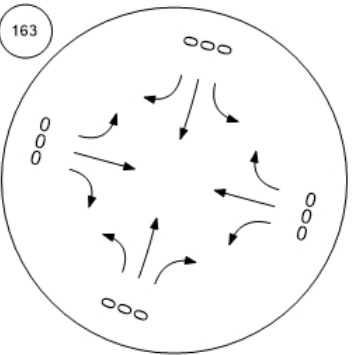
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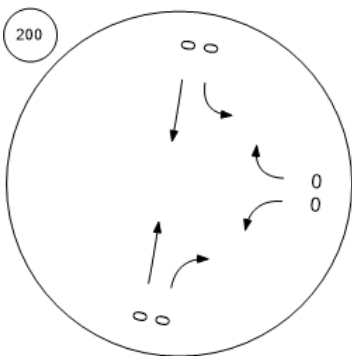
Chilco Street/Hamilton Avenue



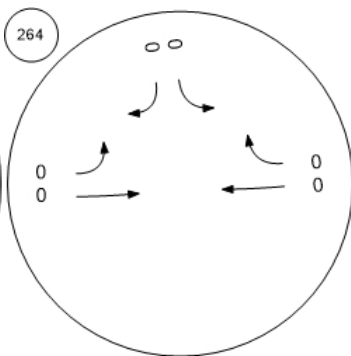
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri



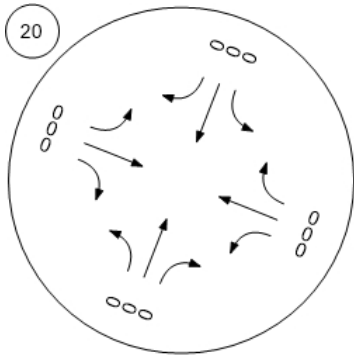
Adams Drive/O'Brien Drive



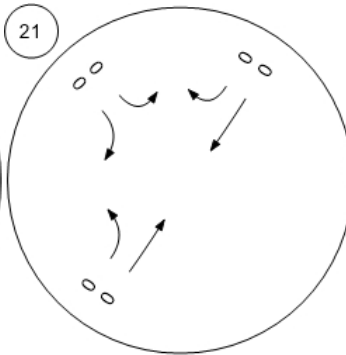
Traffic Volume - Net New Site Trips



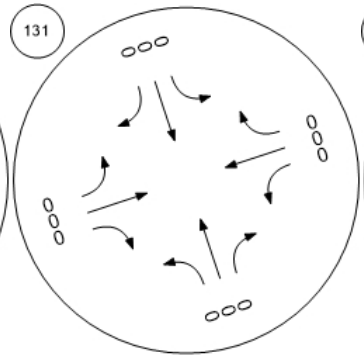
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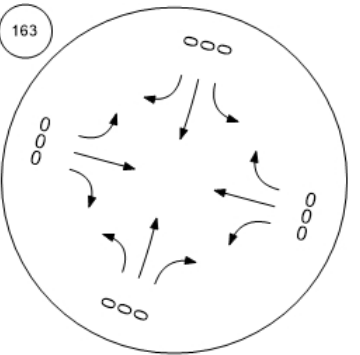
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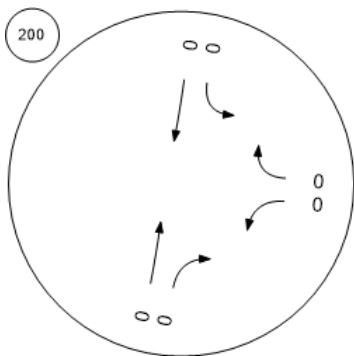
Chilco Street/Hamilton Avenue



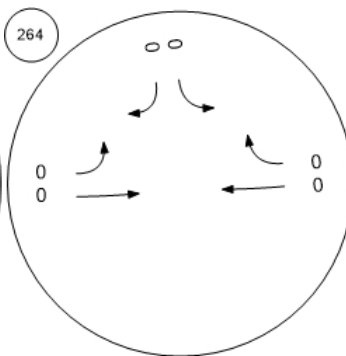
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri



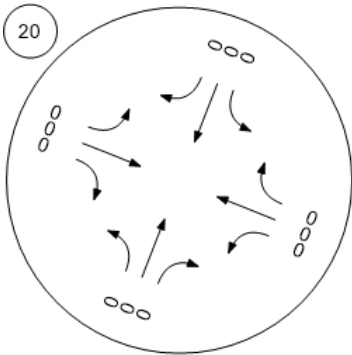
Adams Drive/O'Brien Drive



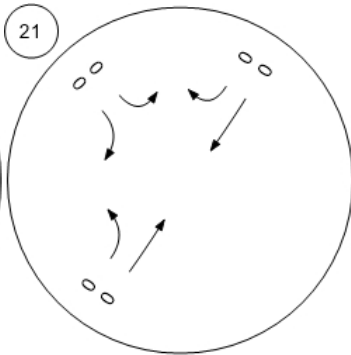
Traffic Volume - Other Volume



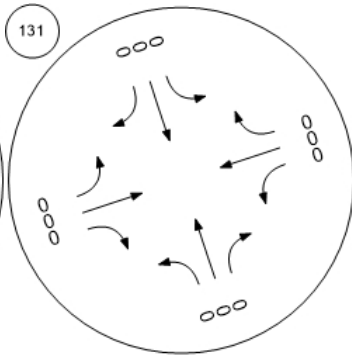
Willow Rd (SR 114)/Newbrid



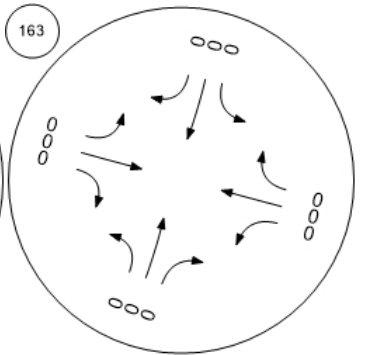
Willow Rd/Bay Rd



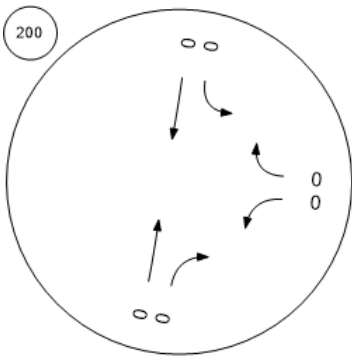
Chilco Street/Hamilton Avenue



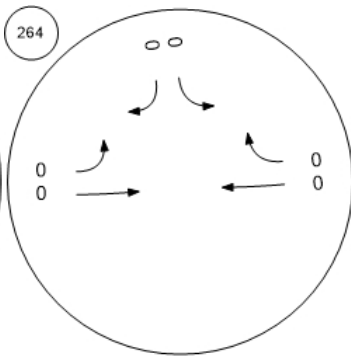
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri



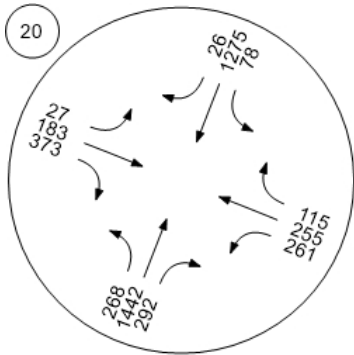
Adams Drive/O'Brien Drive



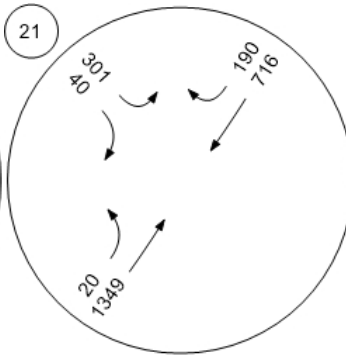
Traffic Volume - Future Total Volume



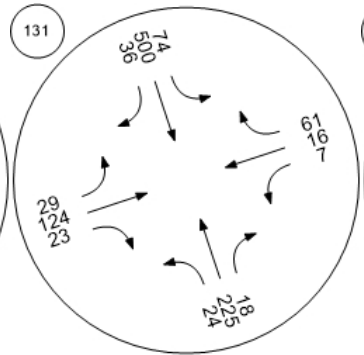
Willow Rd (SR 114)/Newbrid



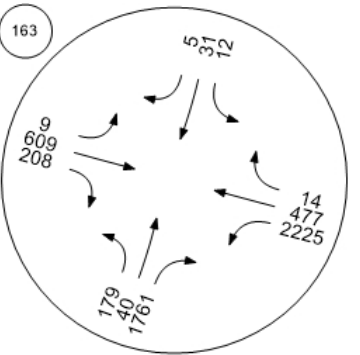
Willow Rd/Bay Rd



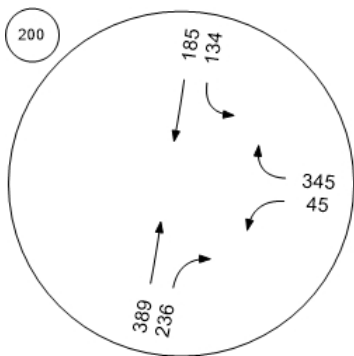
Chilco Street/Hamilton Avenue



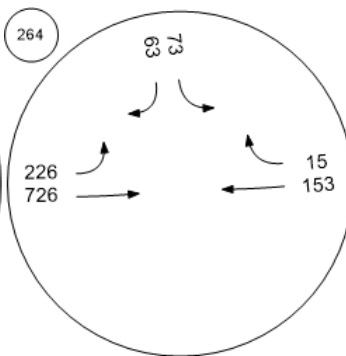
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri



Adams Drive/O'Brien Drive

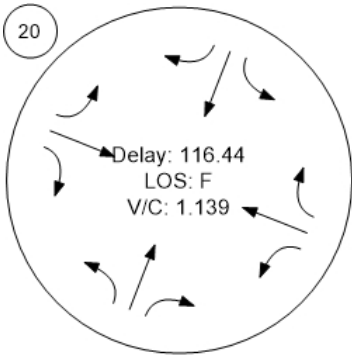




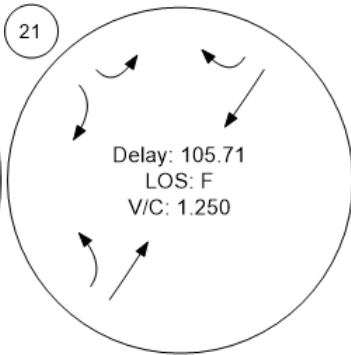
Traffic Conditions



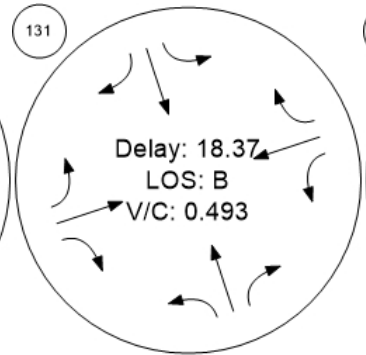
Willow Rd (SR 114)/Newbrid



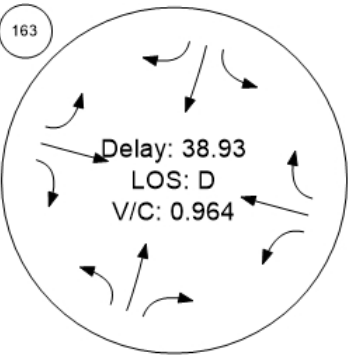
Willow Rd/Bay Rd



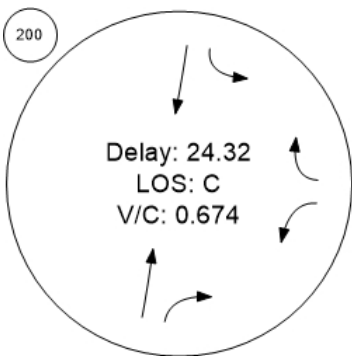
Chilco Street/Hamilton Avenue



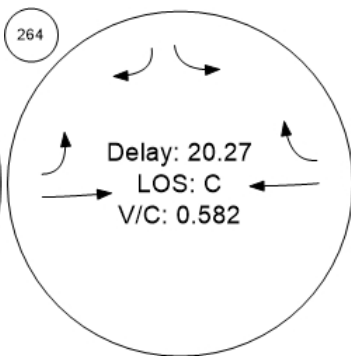
Bayfront Expy/Marsh Rd



O'Brien Drive/Kavanaugh Dri

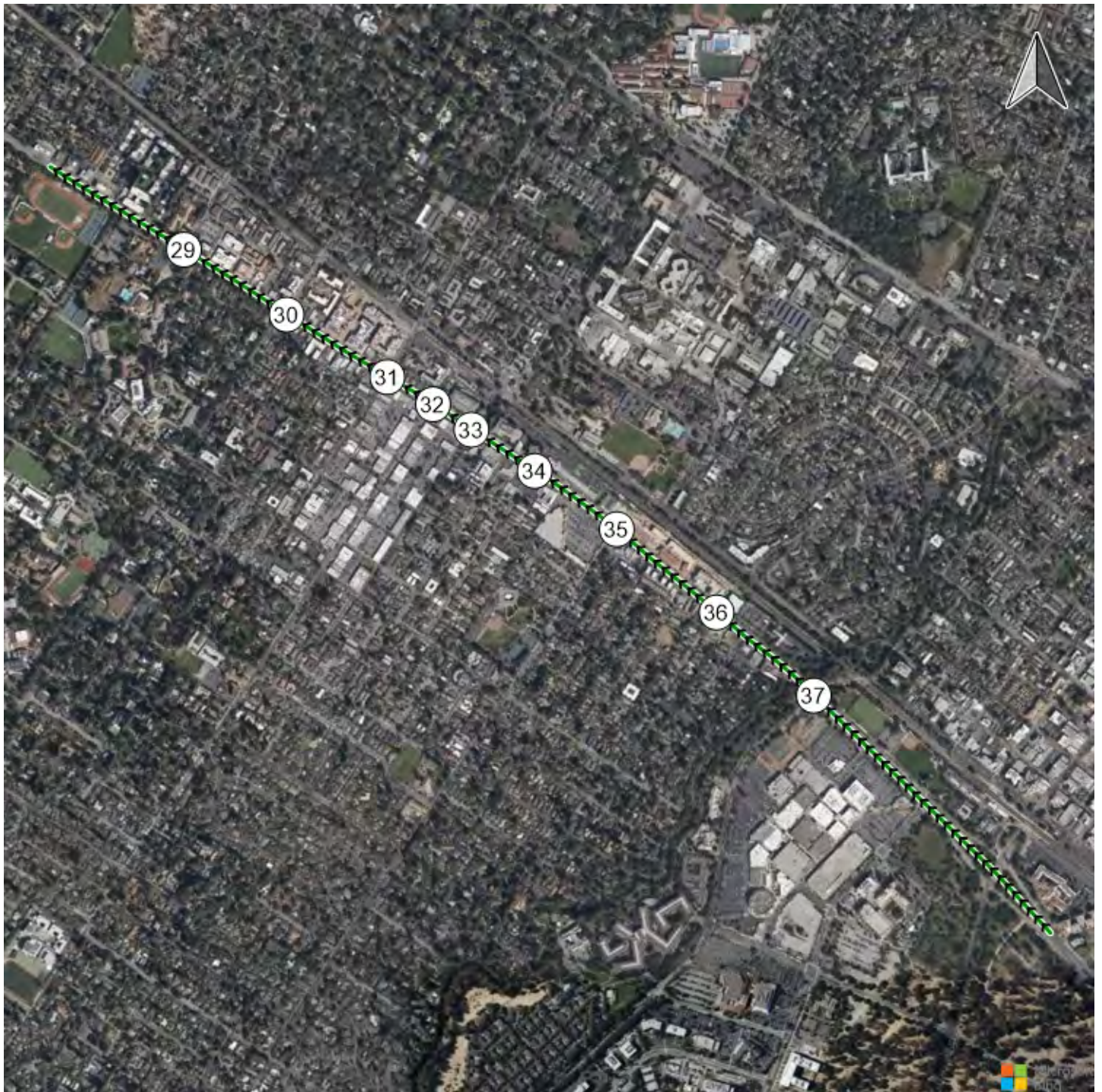


Adams Drive/O'Brien Drive

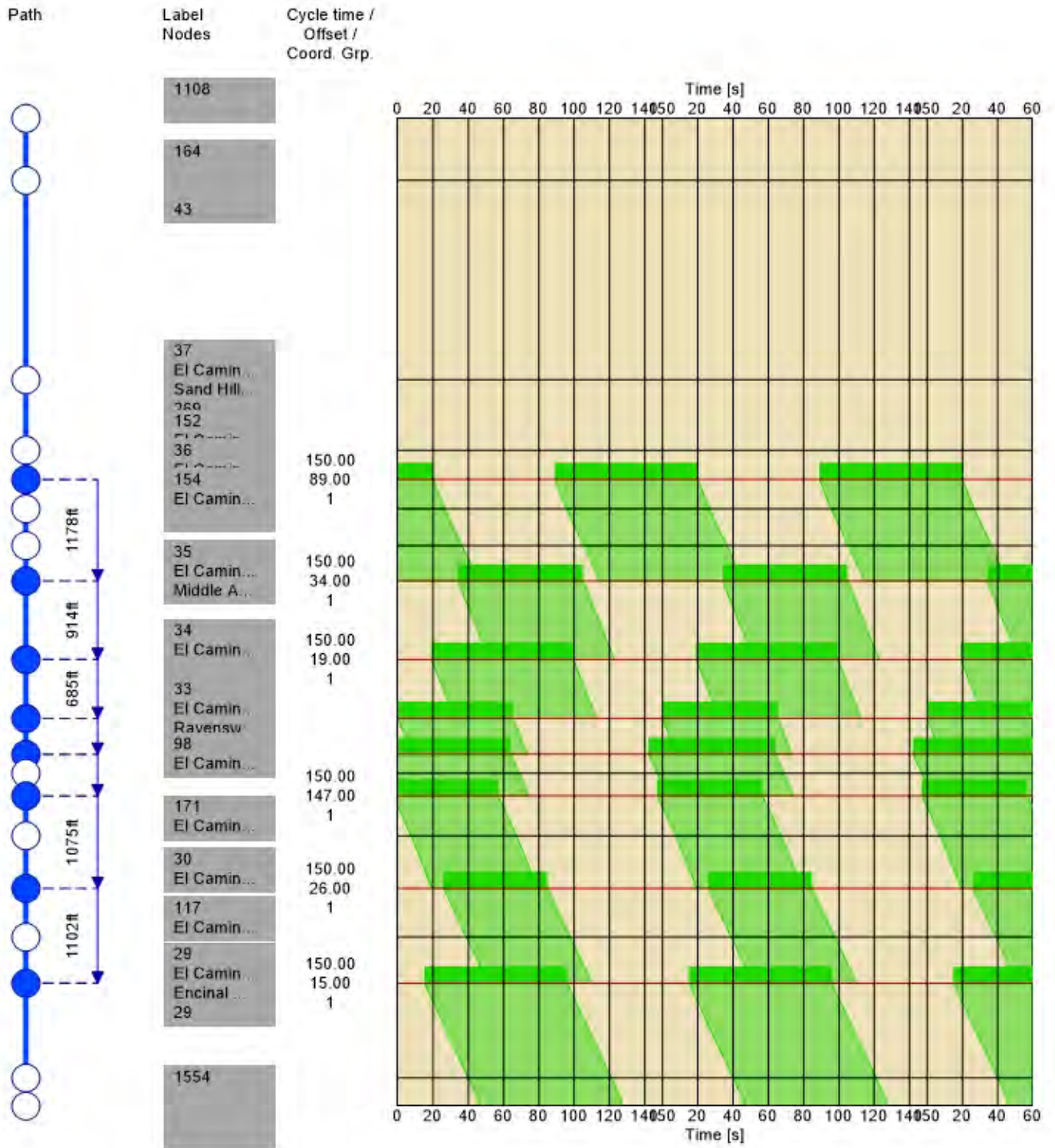


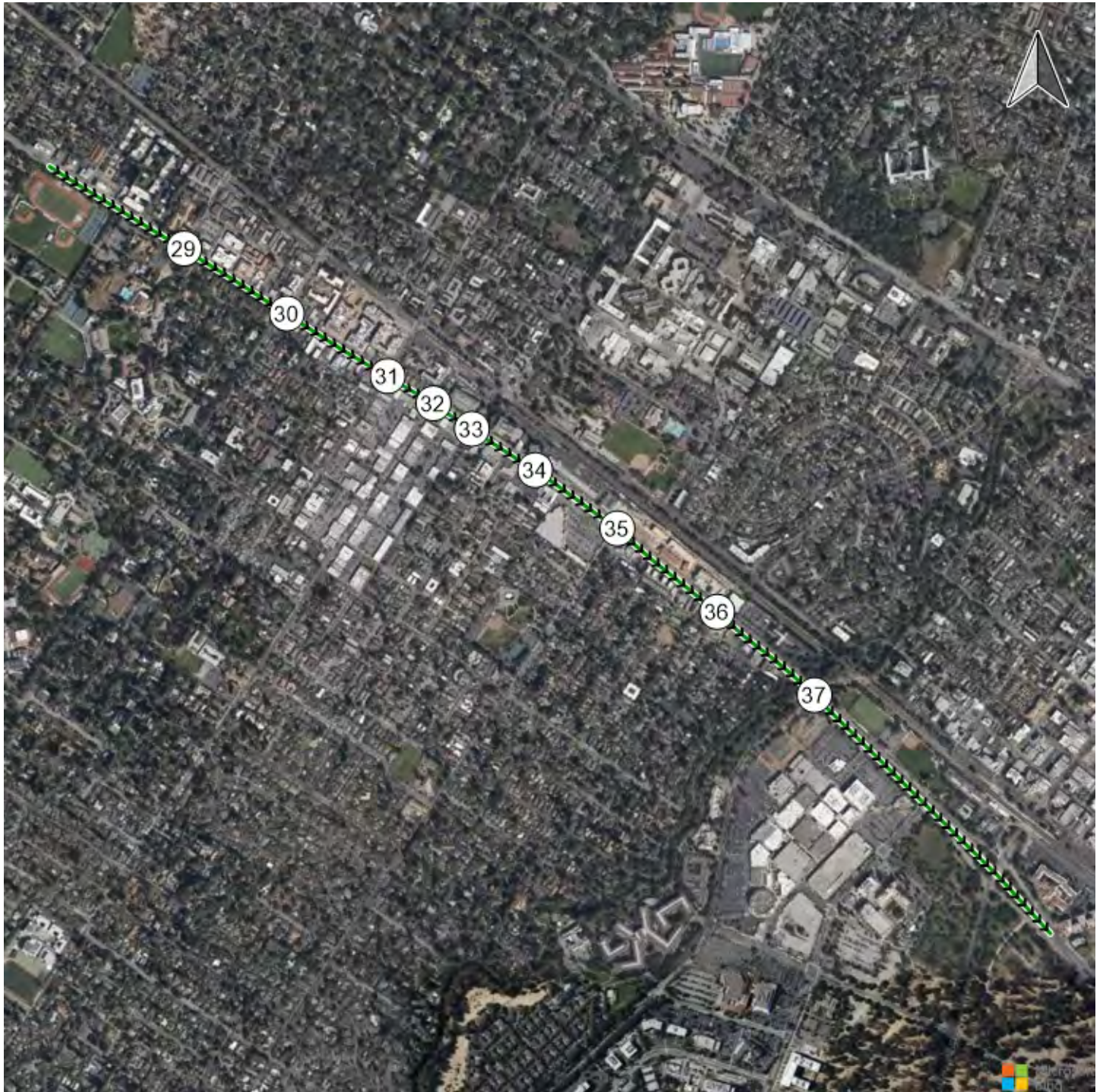
Time Space Diagram - Flowing Off

Route 1: ECR NB

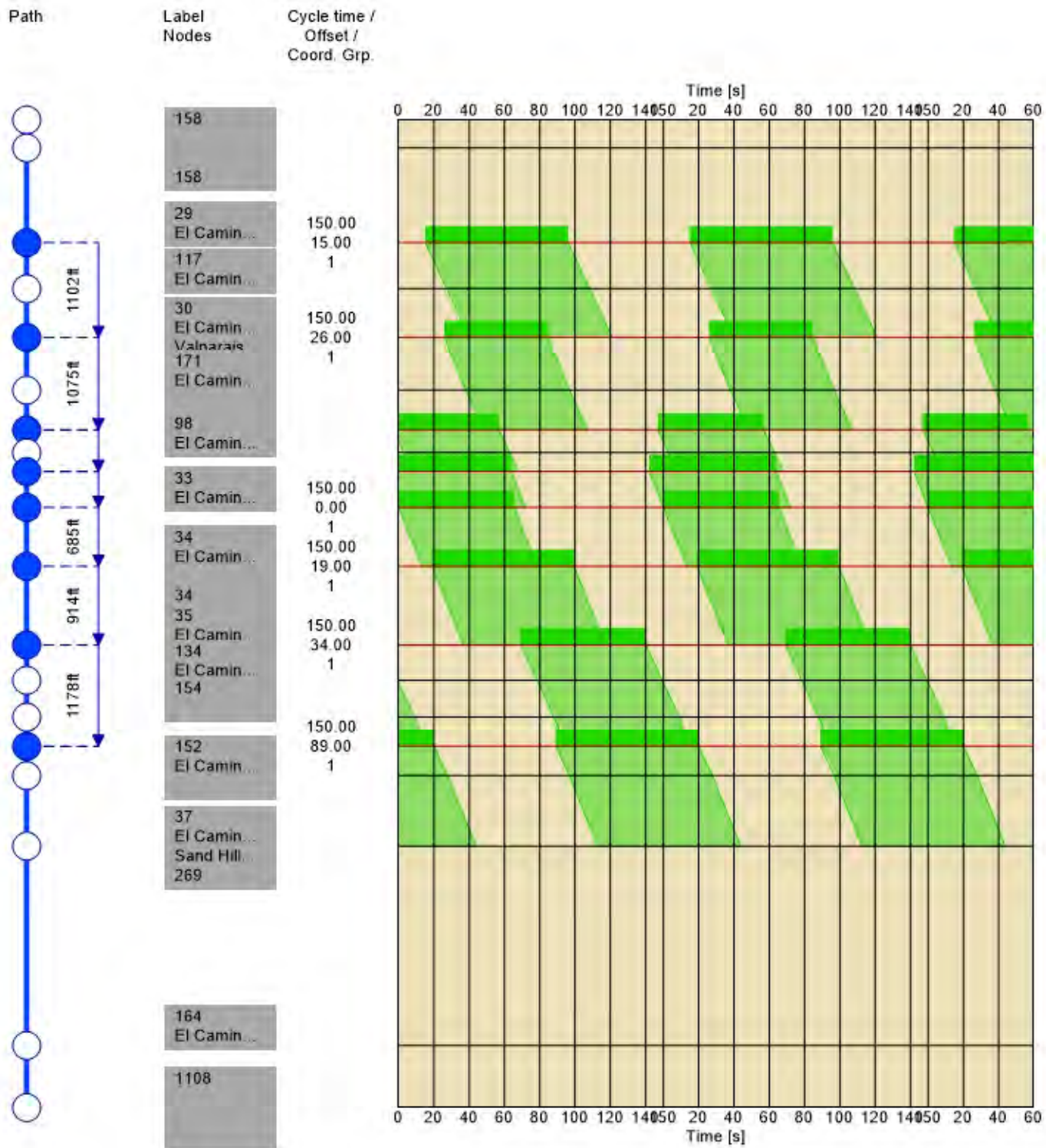


Route 1: ECR NB



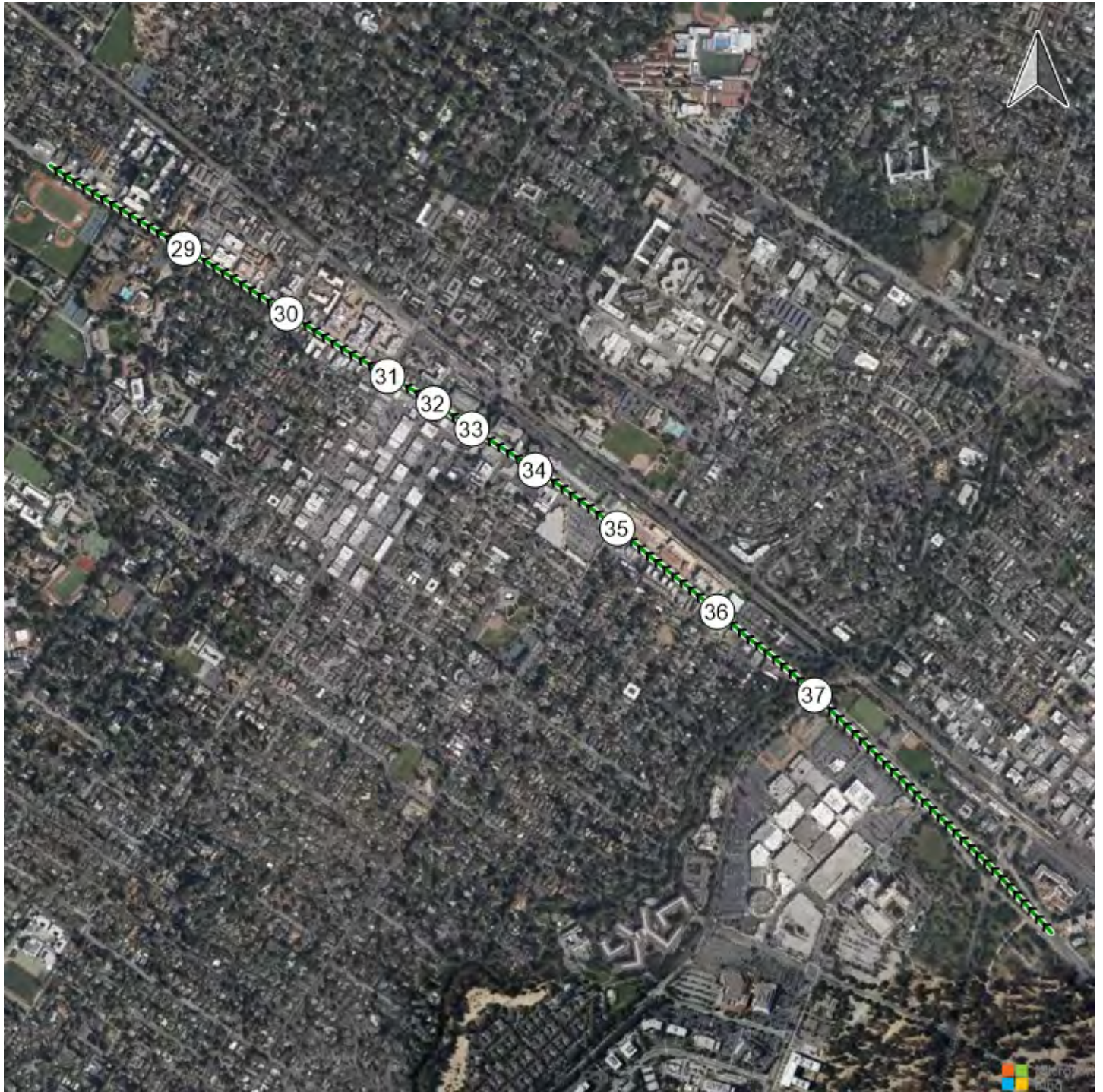


Route 2: ECR SB



Time Space Diagram - Arterial Band

Route 1: ECR NB

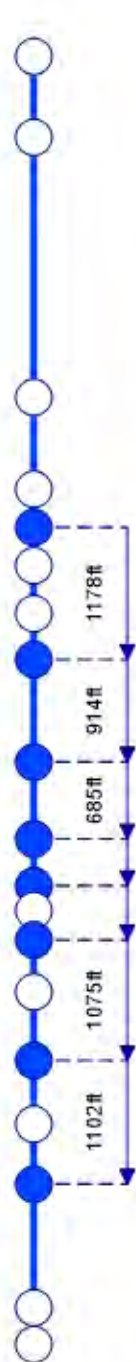


Route 1: ECR NB

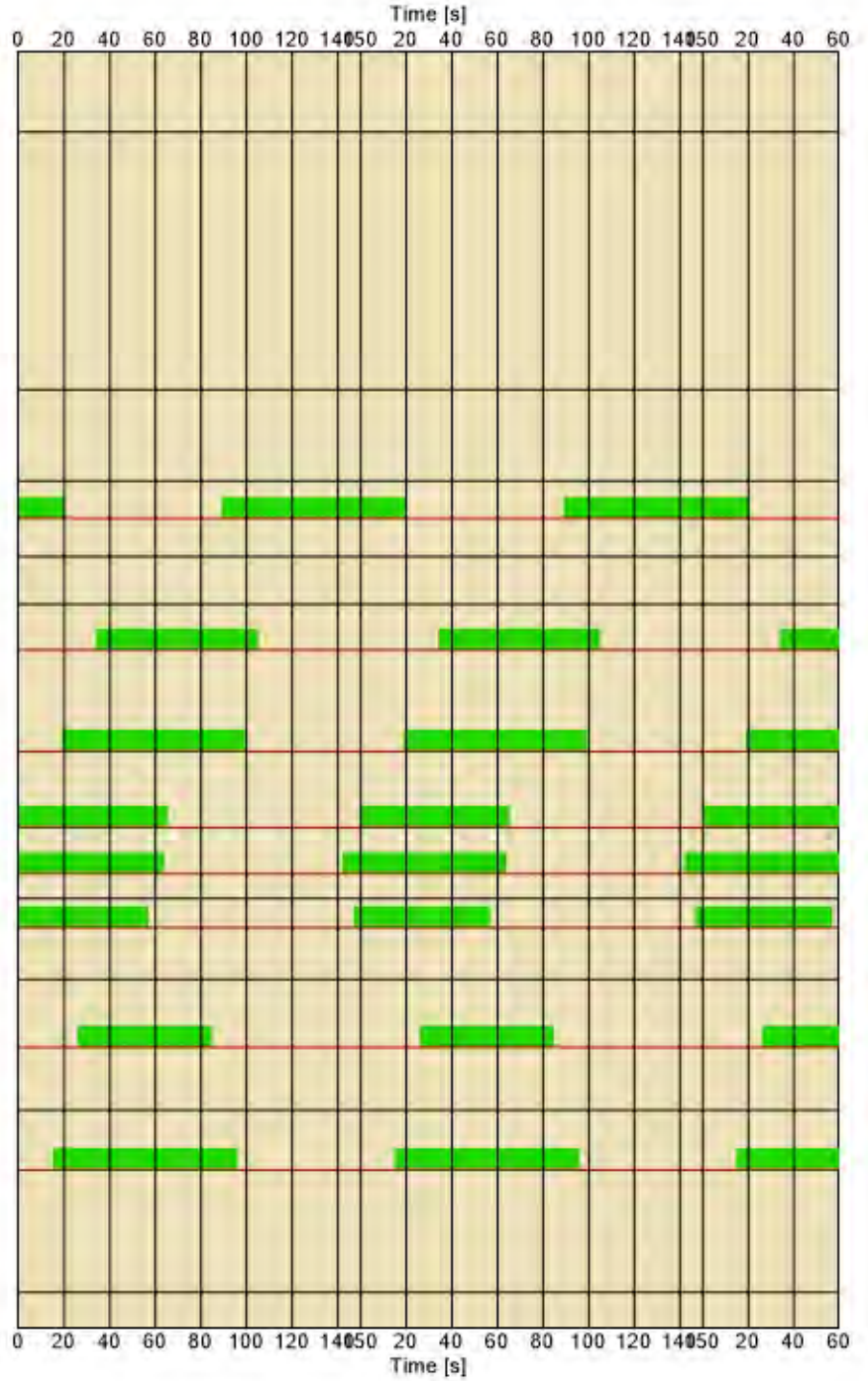
Path

Label  
Nodes

Cycle time /  
Offset /  
Coord. Grp

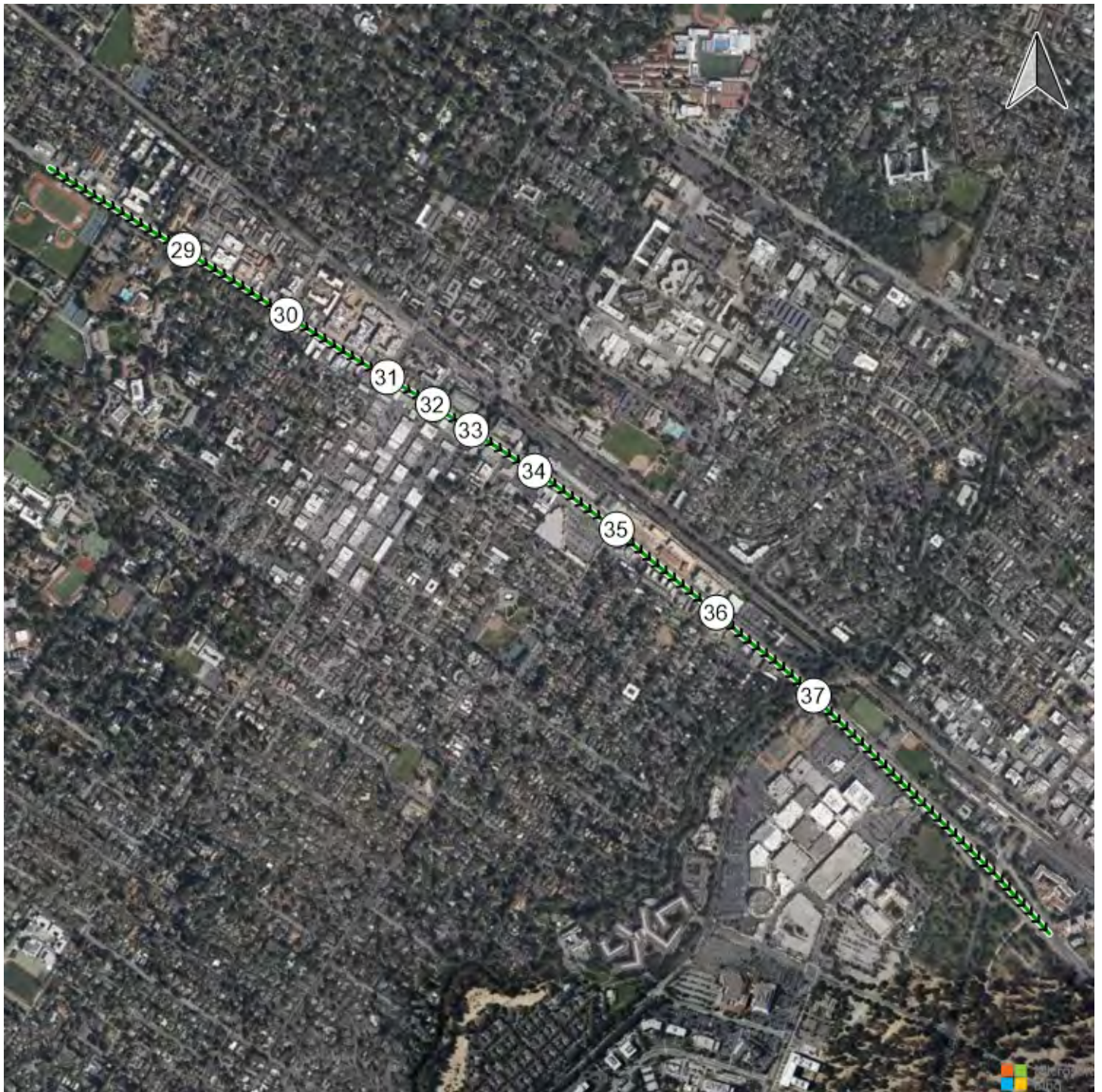


1108
164
43
37
El Camin ...
Sand Hill ...
200
152
36
154
El Camin...
35
El Camin...
Middle A...
34
El Camin ...
33
El Camin ...
Ravensw
98
El Camin ...
171
El Camin ...
30
El Camin...
117
El Camin ...
29
El Camin ...
Encinal ...
29
1554



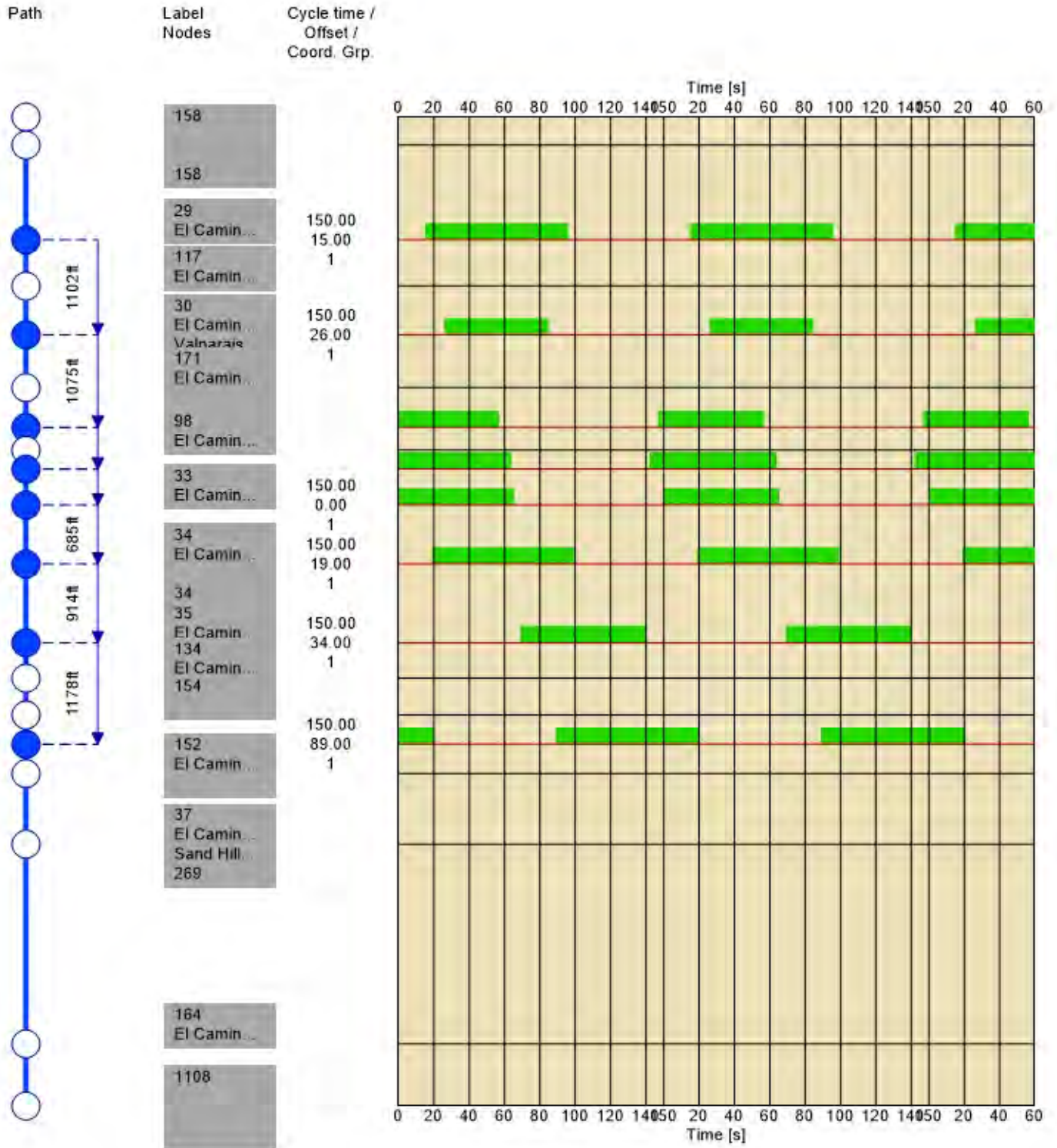
Time Space Diagram - Arterial Band

Route 2: ECR SB





Route 2: ECR SB



**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Right	0.916	22.8	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	SEB Left	0.849	31.9	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.837	58.0	E
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	EB Left	1.216	64.2	E
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NWB Left	0.757	49.7	D
10	Middlefield Rd/Ringswood Ave	Signalized	HCM 6th Edition	NEB Left	0.407	13.2	B
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Left	0.802	14.8	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	WB Left	1.307	260.1	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	WB Thru	1.794	451.7	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	NB Left	1.444	205.6	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	NB Thru	1.259	106.6	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	WB Right	1.533	206.3	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	SEB Left	1.152	77.5	E
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	WB Right	1.137	128.6	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.940	34.9	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.709	24.4	C
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.621	64.5	E
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	1.102	60.9	E

131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	NB Thru	0.875	24.5	C
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.878	68.7	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.740	100.3	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.617	146.1	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.032	44.5	D
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.713	13.1	B
199	Bayfront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.734	5.7	A
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	1.610	170.8	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.945	10.0	B
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Thru	0.716	52.9	D
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.661	359.1	F
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	0.497	62.4	F
265	Adam Court/Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.057	20.1	C
267	Willow Road(SR114)/Park Street	Signalized	HCM 6th Edition		0.000	0.0	A
269	O'Brien Drive/Loop Road	Roundabout	HCM 6th Edition	WB Left		2.7	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.916

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↶↷↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	1037	1481	217	1341	539
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1037	1481	217	1341	539
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	265	378	54	342	138
Total Analysis Volume [veh/h]	0	1058	1511	217	1368	550
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.26	0.43	0.41	0.35
s, saturation flow rate [veh/h]	4000	3515	3373	1572
c, Capacity [veh/h]	2121	1772	1394	650
d1, Uniform Delay [s]	11.98	17.23	23.13	21.15
k, delay calibration	0.50	0.50	0.05	0.38
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	5.44	4.17	10.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.50	0.85	0.98	0.85
d, Delay for Lane Group [s/veh]	12.82	22.67	27.30	31.38
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.50	11.80	12.49	10.44
50th-Percentile Queue Length [ft/ln]	137.61	294.93	312.30	260.92
95th-Percentile Queue Length [veh/ln]	9.35	17.43	18.29	15.73
95th-Percentile Queue Length [ft/ln]	233.80	435.75	457.21	393.37

**Movement, Approach, & Intersection Results**

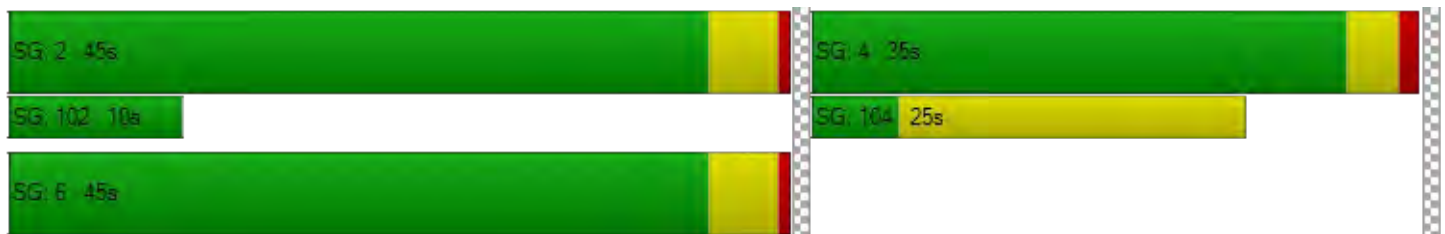
d_M, Delay for Movement [s/veh]	0.00	12.82	22.67	0.00	27.30	31.38
Movement LOS		B	C		C	C
d_A, Approach Delay [s/veh]	12.82		22.67		28.47	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	22.83					
Intersection LOS	C					
Intersection V/C	0.916					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	3.014	0.000	2.588
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.432	2.806	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.849

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	42	1324	7	448	1259	338	13	4	68	353	19	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	0.00	0.00	12.70	1.70	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	59	0	0	0
Total Hourly Volume [veh/h]	42	1324	7	448	1259	338	13	4	9	353	19	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	368	2	124	350	94	4	1	3	98	5	0
Total Analysis Volume [veh/h]	47	1471	8	498	1399	376	14	4	10	392	21	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			1			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			1			1	
v_co, Outbound Pedestrian Volume crossing		1			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		1			0			1			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	40	40	15	40	40	0	20	0	20	20	20
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	51	51	31	70	70	0	41	0	37	37	37
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	96	96	112	102	102	7	7	35	35
g / C, Green / Cycle	0.05	0.60	0.60	0.70	0.64	0.64	0.04	0.04	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.03	0.27	0.27	0.49	0.48	0.52	0.01	0.00	0.22	0.01
s, saturation flow rate [veh/h]	1758	3532	1849	1016	1840	1712	1829	2555	1785	1900
c, Capacity [veh/h]	82	2122	1111	692	1177	1095	82	115	390	415
d1, Uniform Delay [s]	74.70	17.57	17.58	16.72	20.03	21.53	73.64	73.20	62.47	49.35
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	0.71	1.36	6.37	4.50	6.52	0.98	0.24	46.59	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.58	0.46	0.46	0.72	0.75	0.81	0.22	0.09	1.00	0.05
d, Delay for Lane Group [s/veh]	79.39	18.29	18.94	23.09	24.53	28.05	74.62	73.44	109.06	49.39
Lane Group LOS	E	B	B	C	C	C	E	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.00	10.00	10.67	3.85	23.57	25.74	0.75	0.20	21.07	0.68
50th-Percentile Queue Length [ft/ln]	50.05	249.89	266.77	96.27	589.22	643.38	18.64	5.09	526.70	17.12
95th-Percentile Queue Length [veh/ln]	3.60	15.18	16.03	6.93	31.53	34.05	1.34	0.37	28.67	1.23
95th-Percentile Queue Length [ft/ln]	90.09	379.51	400.70	173.28	788.27	851.37	33.55	9.16	716.67	30.82

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	79.39	18.51	18.94	23.09	25.82	28.05	74.62	74.62	73.44	109.06	49.39	49.39
Movement LOS	E	B	B	C	C	C	E	E	E	F	D	D
d_A, Approach Delay [s/veh]	20.39			25.59			74.20			106.02		
Approach LOS	C			C			E			F		
d_I, Intersection Delay [s/veh]	31.87											
Intersection LOS	C											
Intersection V/C	0.849											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.43	68.43	69.35	69.35
I_p,int, Pedestrian LOS Score for Intersection	3.098	3.304	2.945	2.195
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	575	813	460	410
d_b, Bicycle Delay [s]	40.61	28.18	47.41	50.54
I_b,int, Bicycle LOS Score for Intersection	2.399	3.435	1.703	2.241
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	58.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.837

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	220	983	124	29	1031	413	622	76	230	39	21	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	220	983	124	29	1031	413	622	76	215	39	21	25
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	253	32	7	266	106	160	20	55	10	5	6
Total Analysis Volume [veh/h]	227	1013	128	30	1063	426	641	78	222	40	22	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing in	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	96	96	5	88	88	39	39	39	12	12
g / C, Green / Cycle	0.08	0.60	0.60	0.03	0.55	0.55	0.24	0.24	0.24	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.31	0.02	0.42	0.44	0.21	0.21	0.15	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1793	1704	1823	1650	1717	1706	1527	1439	1212
c, Capacity [veh/h]	142	1126	1076	58	1009	913	415	412	369	107	90
d1, Uniform Delay [s]	73.44	18.49	18.59	75.88	27.62	28.27	58.29	58.15	53.63	70.50	71.37
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.17	0.17	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	298.03	1.68	1.81	2.58	5.48	6.82	9.01	8.37	1.18	1.62	3.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.59	0.52	0.52	0.51	0.76	0.79	0.87	0.87	0.60	0.38	0.54
d, Delay for Lane Group [s/veh]	371.47	20.18	20.40	78.45	33.10	35.09	67.30	66.52	54.81	72.12	75.01
Lane Group LOS	F	C	C	E	C	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	17.63	12.85	12.52	1.26	23.88	23.07	15.28	14.95	8.15	1.63	2.01
50th-Percentile Queue Length [ft/ln]	440.67	321.16	313.08	31.42	597.08	576.79	382.05	373.77	203.81	40.77	50.34
95th-Percentile Queue Length [veh/ln]	28.13	18.72	18.33	2.26	31.90	30.95	21.69	21.29	12.83	2.94	3.62
95th-Percentile Queue Length [ft/ln]	703.25	468.11	458.17	56.56	797.45	773.72	542.33	532.30	320.87	73.39	90.62

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	371.47	20.27	20.40	78.45	33.65	35.09	66.96	66.52	54.81	72.12	75.01	75.01
Movement LOS	F	C	C	E	C	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	78.56			34.94			64.06			73.69		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	58.04											
Intersection LOS	E											
Intersection V/C	0.837											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.994			3.087			2.511			2.055		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.688			2.813			3.137			1.705		
Bicycle LOS	B			C			C			A		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	64.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.216

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	836	82	425	755	47	339	68	2	45	52	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	836	82	425	755	47	339	68	2	45	52	339
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	213	21	108	193	12	86	17	1	11	13	86
Total Analysis Volume [veh/h]	0	853	84	434	770	48	346	69	2	46	53	346
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			5			0			5	
v_di, Inbound Pedestrian Volume crossing in		0			5			0			5	
v_co, Outbound Pedestrian Volume crossing		1			1			1			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			1			1			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			12			9			2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	30	30
g / C, Green / Cycle	0.33	0.33	0.20	0.57	0.57	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.25	0.23	0.23	0.64	0.26
s, saturation flow rate [veh/h]	1882	1656	1708	1807	1763	655	1709
c, Capacity [veh/h]	669	549	343	1030	1005	326	686
d1, Uniform Delay [s]	24.38	24.39	32.07	9.62	9.64	31.08	21.80
k, delay calibration	0.50	0.50	0.23	0.50	0.50	0.50	0.34
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.38	11.55	129.85	1.16	1.21	146.83	3.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.74	0.80	1.26	0.40	0.40	1.28	0.65
d, Delay for Lane Group [s/veh]	31.76	35.93	161.92	10.79	10.84	177.91	24.98
Lane Group LOS	C	D	F	B	B	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.35	8.79	18.68	3.80	3.74	19.70	7.37
50th-Percentile Queue Length [ft/ln]	233.73	219.65	467.07	94.97	93.56	492.50	184.32
95th-Percentile Queue Length [veh/ln]	14.36	13.65	28.83	6.84	6.74	31.08	11.83
95th-Percentile Queue Length [ft/ln]	359.10	341.18	720.64	170.94	168.42	777.07	295.65

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.76	33.50	35.93	161.92	10.81	10.84	177.91	177.91	177.91	24.98	24.98	24.98
Movement LOS	C	C	D	F	B	B	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	33.71			63.20			177.91			24.98		
Approach LOS	C			E			F			C		
d_I, Intersection Delay [s/veh]	64.25											
Intersection LOS	E											
Intersection V/C	1.216											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.82			29.82			29.82			19.73		
l_p,int, Pedestrian LOS Score for Intersection	2.689			3.422			1.919			2.195		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	596			1071			681			681		
d_b, Bicycle Delay [s]	19.73			8.70			17.50			17.44		
l_b,int, Bicycle LOS Score for Intersection	2.333			2.593			2.248			2.294		
Bicycle LOS	B			B			B			B		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	49.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	



**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	87	569	520	508	501	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	11.80	4.20	3.10	2.50	3.30	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	87	0	520	508	501	104
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	138	135	133	28
Total Analysis Volume [veh/h]	93	0	553	540	533	111
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing in	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	10	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.6	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	13	13	33	100	68
g / C, Green / Cycle	0.11	0.11	0.28	0.84	0.57
(v / s)_i Volume / Saturation Flow Rate	0.06	0.00	0.31	0.29	0.36
s, saturation flow rate [veh/h]	1641	1561	1765	1862	1779
c, Capacity [veh/h]	180	172	485	1555	1005
d1, Uniform Delay [s]	50.42	0.00	43.52	2.30	17.79
k, delay calibration	0.08	0.08	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.69	0.00	84.97	0.61	3.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	1.14	0.35	0.64
d, Delay for Lane Group [s/veh]	52.11	0.00	128.49	2.91	20.92
Lane Group LOS	D	A	F	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	0.00	25.56	2.07	12.35
50th-Percentile Queue Length [ft/ln]	68.20	0.00	639.03	51.64	308.77
95th-Percentile Queue Length [veh/ln]	4.91	0.00	36.59	3.72	18.11
95th-Percentile Queue Length [ft/ln]	122.76	0.00	914.81	92.96	452.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.11	0.00	128.49	2.91	20.92	20.92
Movement LOS	D	A	F	A	C	C
d_A, Approach Delay [s/veh]	52.11		66.45		20.92	
Approach LOS	D		E		C	
d_I, Intersection Delay [s/veh]	49.70					
Intersection LOS	D					
Intersection V/C	0.757					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.52	49.52	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.948	2.892	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	763	1090	507
d_b, Bicycle Delay [s]	23.21	12.68	34.09
I_b,int, Bicycle LOS Score for Intersection	1.560	3.363	2.622
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringswood Ave**

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.407

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	⇐⇈			⇈⇐			⇈⇈⇈			⇈⇈		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	6	11	9	129	28	344	21	684	206	288	747	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	8.30	4.40	0.00	4.00	0.00	3.20	0.00	4.60	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	222	0	0	96	0	0	0
Total Hourly Volume [veh/h]	6	11	9	129	28	122	21	684	110	288	747	56
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	2	34	7	32	6	182	29	77	199	15
Total Analysis Volume [veh/h]	6	12	10	137	30	130	22	728	117	306	795	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			5			2			6	
v_di, Inbound Pedestrian Volume crossing in		2			6			1			5	
v_co, Outbound Pedestrian Volume crossing		9			41			40			8	
v_ci, Inbound Pedestrian Volume crossing mi		8			40			41			9	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		8			23			15			38	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	22	22	22	22	94	80	80	91	85	85
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.78	0.67	0.67	0.76	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.00	0.01	0.13	0.09	0.03	0.21	0.08	0.36	0.24	0.24
s, saturation flow rate [veh/h]	1397	1736	1310	1477	706	3526	1474	845	1840	1779
c, Capacity [veh/h]	124	325	300	277	579	2343	979	665	1301	1258
d1, Uniform Delay [s]	54.82	40.13	46.92	43.22	4.12	8.51	7.28	5.14	6.73	6.75
k, delay calibration	0.10	0.10	0.10	0.10	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.08	1.54	1.18	0.03	0.35	0.25	2.28	0.69	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.07	0.56	0.47	0.04	0.31	0.12	0.46	0.33	0.34
d, Delay for Lane Group [s/veh]	54.97	40.22	48.46	44.40	4.14	8.86	7.53	7.42	7.42	7.48
Lane Group LOS	D	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.18	0.56	4.82	3.52	0.11	3.81	1.08	2.26	4.01	3.93
50th-Percentile Queue Length [ft/ln]	4.56	13.93	120.50	88.10	2.87	95.15	27.09	56.55	100.19	98.34
95th-Percentile Queue Length [veh/ln]	0.33	1.00	8.42	6.34	0.21	6.85	1.95	4.07	7.21	7.08
95th-Percentile Queue Length [ft/ln]	8.20	25.07	210.52	158.59	5.16	171.28	48.76	101.79	180.33	177.01



**Movement, Approach, & Intersection Results**

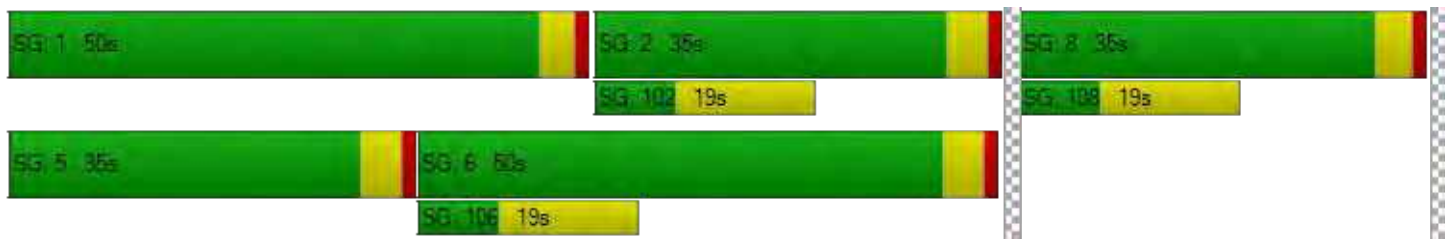
d_M, Delay for Movement [s/veh]	54.97	40.22	40.22	48.46	48.46	44.40	4.14	8.86	7.53	7.42	7.45	7.48
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	43.38			46.68			8.56			7.44		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	13.23											
Intersection LOS	B											
Intersection V/C	0.407											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersection	2.008	2.898	3.159	2.833
Crosswalk LOS	B	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	513	513	757	507
d_b, Bicycle Delay [s]	33.29	33.54	23.36	34.10
I_b,int, Bicycle LOS Score for Intersection	1.606	2.416	2.354	2.517
Bicycle LOS	A	B	B	B

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.802

**Intersection Setup**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	829	110	1297	2940	333	416
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	3.50	1.60	3.10	2.20	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	829	110	1297	2940	333	416
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	214	28	334	758	86	107
Total Analysis Volume [veh/h]	855	113	1337	3031	343	429
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	21	21	34	58	11	48
g / C, Green / Cycle	0.27	0.27	0.43	0.74	0.13	0.61
(v / s)_i Volume / Saturation Flow Rate	0.17	0.07	0.39	0.60	0.10	0.10
s, saturation flow rate [veh/h]	4955	1547	3470	5049	3453	4166
c, Capacity [veh/h]	1322	413	1483	3736	463	2551
d1, Uniform Delay [s]	25.54	22.77	20.97	6.65	32.74	6.59
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.65	0.43	0.87	0.54	0.89	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.65	0.27	0.90	0.81	0.74	0.17
d, Delay for Lane Group [s/veh]	26.19	23.20	21.84	7.18	33.62	6.60
Lane Group LOS	C	C	C	A	C	A
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.20	1.51	9.39	4.36	3.06	0.86
50th-Percentile Queue Length [ft/ln]	105.09	37.68	234.85	109.08	76.54	21.38
95th-Percentile Queue Length [veh/ln]	7.57	2.71	14.42	7.79	5.51	1.54
95th-Percentile Queue Length [ft/ln]	189.15	67.82	360.52	194.73	137.78	38.48

**Movement, Approach, & Intersection Results**

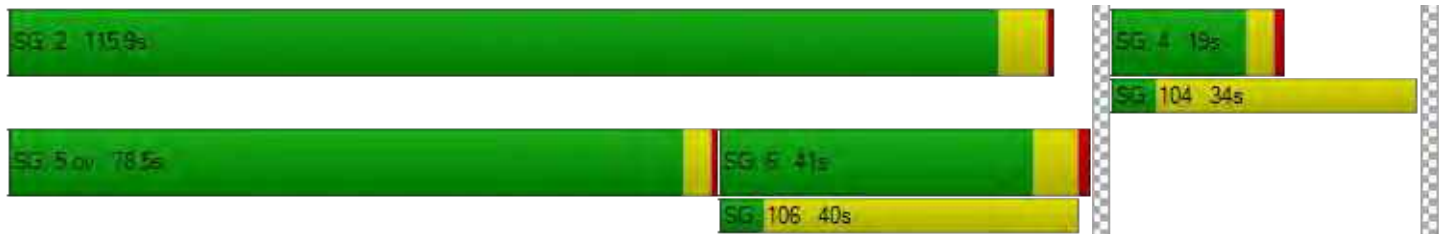
d_M, Delay for Movement [s/veh]	26.19	23.20	21.84	7.18	33.62	6.60
Movement LOS	C	C	C	A	C	A
d_A, Approach Delay [s/veh]	25.84		11.67		18.60	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	14.79					
Intersection LOS	B					
Intersection V/C	0.802					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.78	0.00	30.78
I_p,int, Pedestrian LOS Score for Intersection	3.697	0.000	2.950
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	891	357	382
d_b, Bicycle Delay [s]	12.07	26.53	25.70
I_b,int, Bicycle LOS Score for Intersection	2.092	3.962	1.670
Bicycle LOS	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	260.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.307

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	249	596	277	38	76	72	391	475	195	1133	2572	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	249	596	277	38	76	56	391	475	89	1133	2572	72
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	152	71	10	19	14	100	121	23	289	656	18
Total Analysis Volume [veh/h]	254	608	283	39	78	57	399	485	91	1156	2624	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			2			3			0	
v_di, Inbound Pedestrian Volume crossing in		0			3			2			0	
v_co, Outbound Pedestrian Volume crossing		4			0			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		3			0			4			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	22	21	51	9	9	9	26	51	51	25	50	50
g / C, Green / Cycle	0.17	0.17	0.40	0.07	0.07	0.07	0.21	0.40	0.40	0.20	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.34	0.28	0.07	0.06	0.03	0.05	0.26	0.10	0.06	0.43	0.52	0.05
s, saturation flow rate [veh/h]	740	2209	3942	670	2746	1075	1515	4922	1458	2715	5020	1615
c, Capacity [veh/h]	128	369	1578	48	196	77	312	1989	589	538	1990	640
d1, Uniform Delay [s]	52.15	52.54	24.45	57.77	55.98	57.37	50.10	24.85	23.90	50.58	38.08	24.08
k, delay calibration	0.50	0.50	0.11	0.19	0.11	0.15	0.17	0.11	0.11	0.48	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	467.79	302.80	0.05	42.31	1.30	17.49	134.15	0.06	0.12	522.87	144.31	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.98	1.65	0.18	0.82	0.40	0.74	1.28	0.24	0.15	2.15	1.32	0.11
d, Delay for Lane Group [s/veh]	519.94	355.34	24.50	100.07	57.28	74.85	184.24	24.92	24.02	573.46	182.40	24.16
Lane Group LOS	F	F	C	F	E	E	F	C	C	F	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	20.65	21.26	1.81	1.81	1.24	2.18	10.71	3.24	1.77	47.53	46.68	1.41
50th-Percentile Queue Length [ft/ln]	516.15	531.54	45.13	45.24	31.12	54.61	267.84	81.07	44.21	1188.37	1166.96	35.31
95th-Percentile Queue Length [veh/ln]	34.82	34.60	3.25	3.26	2.24	3.93	17.92	5.84	3.18	75.77	68.84	2.54
95th-Percentile Queue Length [ft/ln]	870.62	865.09	81.24	81.43	56.02	98.31	448.00	145.93	79.58	1894.29	1720.97	63.56

**Movement, Approach, & Intersection Results**

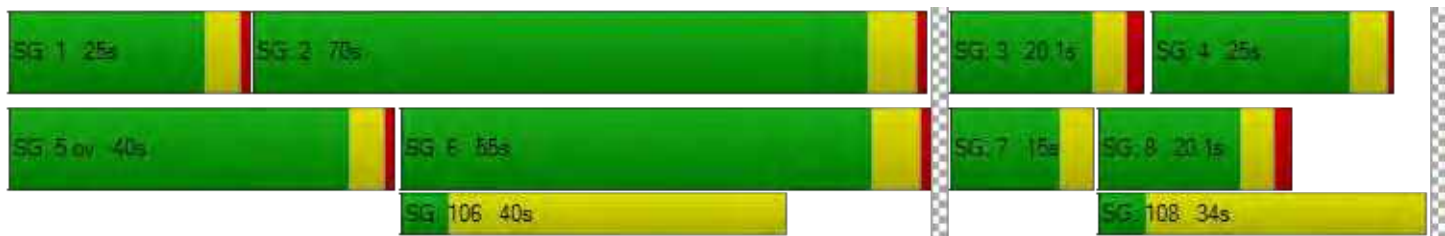
d_M, Delay for Movement [s/veh]	519.94	355.34	24.50	100.07	57.28	74.85	184.24	24.92	24.02	573.46	182.40	24.16
Movement LOS	F	F	C	F	E	E	F	C	C	F	F	C
d_A, Approach Delay [s/veh]	310.08			72.63			90.03			296.73		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	260.09											
Intersection LOS	F											
Intersection V/C	1.307											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.44	0.00	54.44	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.139	0.000	3.347	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	326	238	776	1014
d_b, Bicycle Delay [s]	44.20	49.01	23.63	15.34
I_b,int, Bicycle LOS Score for Intersection	2.504	1.716	2.154	3.679
Bicycle LOS	B	A	B	D

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	451.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.794

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	99	820	379	190	1297	48	47	56	48	56	431	373
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	6.30	7.00	9.10	8.40	10.50	1.30	4.50	6.00	23.10	12.50	30.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	820	379	190	1297	48	47	56	48	56	431	373
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	220	102	51	349	13	13	15	13	15	116	100
Total Analysis Volume [veh/h]	106	882	408	204	1395	52	51	60	52	60	463	401
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		6			57			5			57	
v_di, Inbound Pedestrian Volume crossing in		5			57			6			57	
v_co, Outbound Pedestrian Volume crossing		5			18			18			6	
v_ci, Inbound Pedestrian Volume crossing mi		6			18			18			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		15			38			5			11	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	90	73	73	90	78	78	33	33
g / C, Green / Cycle	0.69	0.56	0.56	0.69	0.60	0.60	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.25	0.83	0.87	0.42	0.78	0.79	0.44	1.01
s, saturation flow rate [veh/h]	416	808	711	484	934	916	369	916
c, Capacity [veh/h]	133	454	399	178	562	551	129	247
d1, Uniform Delay [s]	33.79	28.50	28.50	47.21	25.87	25.87	51.50	48.28
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	37.51	230.47	256.19	113.40	144.07	151.23	164.38	1240.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.80	1.49	1.54	1.15	1.29	1.31	1.26	3.74
d, Delay for Lane Group [s/veh]	71.30	258.96	284.69	160.61	169.94	177.09	215.88	1288.96
Lane Group LOS	E	F	F	F	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.34	41.96	39.79	7.42	38.74	39.10	10.24	93.35
50th-Percentile Queue Length [ft/ln]	58.42	1048.94	994.87	185.47	968.53	977.57	256.09	2333.70
95th-Percentile Queue Length [veh/ln]	4.21	67.16	64.85	13.03	58.73	59.63	17.27	149.14
95th-Percentile Queue Length [ft/ln]	105.16	1678.94	1621.26	325.78	1468.14	1490.70	431.69	3728.53

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	71.30	265.02	284.69	160.61	173.37	177.09	215.88	215.88	215.88	1288.96	1288.96	1288.96
Movement LOS	E	F	F	F	F	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	256.06			171.91			215.88			1288.96		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	451.73											
Intersection LOS	F											
Intersection V/C	1.794											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.46	54.46
I_p,int, Pedestrian LOS Score for Intersection	3.502	3.029	2.144	2.557
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1123	1077	505	508
d_b, Bicycle Delay [s]	12.59	14.11	36.42	36.38
I_b,int, Bicycle LOS Score for Intersection	2.711	2.922	1.829	3.084
Bicycle LOS	B	C	A	C

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	205.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.444

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	237	1304	1231	31	88	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	5.70	10.30	22.20	0.00	6.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	237	1304	1231	31	88	95
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	354	335	8	24	26
Total Analysis Volume [veh/h]	258	1417	1338	34	96	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing in	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	106	90	90	24	24
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	103	87	87	20	20
g / C, Green / Cycle	0.10	0.80	0.67	0.67	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.32	0.92	0.88	0.89	0.06	0.13
s, saturation flow rate [veh/h]	795	1546	781	773	1745	779
c, Capacity [veh/h]	80	1230	525	520	262	117
d1, Uniform Delay [s]	58.39	13.26	21.27	21.27	49.59	53.77
k, delay calibration	0.50	0.50	0.50	0.50	0.04	0.30
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1036.78	78.18	151.41	157.15	0.32	38.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	3.23	1.15	1.31	1.32	0.37	0.88
d, Delay for Lane Group [s/veh]	1095.17	91.44	172.68	178.43	49.91	92.62
Lane Group LOS	F	F	F	F	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	25.56	25.53	35.68	36.15	2.84	4.55
50th-Percentile Queue Length [ft/ln]	639.05	638.16	891.94	903.70	71.09	113.65
95th-Percentile Queue Length [veh/ln]	41.84	38.01	55.17	56.14	5.12	8.04
95th-Percentile Queue Length [ft/ln]	1046.10	950.22	1379.28	1403.44	127.97	201.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	1095.17	91.44	175.48	178.43	49.91	92.62
Movement LOS	F	F	F	F	D	F
d_A, Approach Delay [s/veh]	246.05		175.55		72.02	
Approach LOS	F		F		E	
d_I, Intersection Delay [s/veh]	205.58					
Intersection LOS	F					
Intersection V/C	1.444					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.129	3.088	2.117
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.01	7.42	45.67
I_b,int, Bicycle LOS Score for Intersection	2.941	2.692	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	106.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.259

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1395	878	42	1187	237	259
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.30	7.40	9.70	10.30	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1395	878	42	1187	237	259
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	371	234	11	316	63	69
Total Analysis Volume [veh/h]	1484	934	45	1263	252	276
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	93	93	4	100	23	23
g / C, Green / Cycle	0.71	0.71	0.03	0.77	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.96	0.63	0.03	0.85	0.19	0.19
s, saturation flow rate [veh/h]	1549	1477	1704	1494	1312	1509
c, Capacity [veh/h]	1104	1052	57	1149	230	265
d1, Uniform Delay [s]	18.68	13.55	62.31	15.00	53.56	53.56
k, delay calibration	0.50	0.50	0.04	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	161.10	11.10	8.53	57.87	77.94	74.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.34	0.89	0.79	1.10	1.07	1.07
d, Delay for Lane Group [s/veh]	179.78	24.65	70.85	72.87	131.50	127.73
Lane Group LOS	F	C	E	F	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	38.21	19.83	1.59	21.67	12.49	14.09
50th-Percentile Queue Length [ft/ln]	955.23	495.71	39.85	541.77	312.29	352.17
95th-Percentile Queue Length [veh/ln]	59.84	27.13	2.87	31.71	18.88	20.91
95th-Percentile Queue Length [ft/ln]	1495.95	678.28	71.73	792.86	471.94	522.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	179.78	24.65	70.85	72.87	131.50	127.73
Movement LOS	F	C	E	F	F	F
d_A, Approach Delay [s/veh]	119.86		72.80		129.49	
Approach LOS	F		E		F	
d_I, Intersection Delay [s/veh]	106.58					
Intersection LOS	F					
Intersection V/C	1.259					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.448
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.18	3.45	44.20
I_b,int, Bicycle LOS Score for Intersection	3.554	2.639	2.431
Bicycle LOS	D	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	206.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.533

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐			⇐			⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	160	1808	351	40	1347	7	95	142	458	298	167	241
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	160	1808	351	40	1347	7	95	142	414	298	167	207
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	481	93	11	358	2	25	38	110	79	44	55
Total Analysis Volume [veh/h]	170	1923	373	43	1433	7	101	151	440	317	178	220
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			3			3	
v_di, Inbound Pedestrian Volume crossing in		3			3			2			2	
v_co, Outbound Pedestrian Volume crossing		8			12			7			11	
v_ci, Inbound Pedestrian Volume crossing mi		7			11			8			12	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			1			5			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	55	55	4	46	46	36	36	36	20	20	20
g / C, Green / Cycle	0.10	0.43	0.43	0.03	0.36	0.36	0.27	0.27	0.27	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.10	0.44	0.47	0.02	0.63	0.63	0.07	0.10	0.33	0.21	0.22	0.33
s, saturation flow rate [veh/h]	1781	3455	1647	1781	1491	781	1420	1577	1322	1536	800	668
c, Capacity [veh/h]	178	1480	705	55	536	281	386	428	359	236	123	103
d1, Uniform Delay [s]	58.21	37.15	37.15	62.54	41.64	41.64	37.13	38.14	46.78	55.02	55.02	54.28
k, delay calibration	0.10	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.50	0.14	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.82	32.17	60.55	8.43	351.33	358.33	0.13	0.18	123.83	162.65	241.75	545.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.95	1.03	1.09	0.78	1.76	1.76	0.26	0.35	1.23	1.34	1.45	2.14
d, Delay for Lane Group [s/veh]	79.02	69.33	97.70	70.97	392.96	399.97	37.26	38.32	170.62	217.66	296.76	599.54
Lane Group LOS	E	F	F	E	F	F	D	D	F	F	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.51	29.10	33.30	1.55	34.73	36.92	2.55	3.92	23.72	9.19	12.26	18.86
50th-Percentile Queue Length [ft/ln]	162.76	727.52	832.58	38.85	868.26	922.98	63.83	98.03	593.07	229.68	306.59	471.58
95th-Percentile Queue Length [veh/ln]	10.70	38.88	45.53	2.80	57.48	60.80	4.60	7.06	35.50	15.82	20.65	32.16
95th-Percentile Queue Length [ft/ln]	267.38	972.02	1138.19	69.93	1437.00	1520.00	114.90	176.45	887.61	395.52	516.35	803.88

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	79.02	75.16	97.70	70.97	395.35	399.97	37.26	38.32	170.62	217.66	296.76	599.54
Movement LOS	E	E	F	E	F	F	D	D	F	F	F	F
d_A, Approach Delay [s/veh]	78.83			385.97			122.28			354.85		
Approach LOS	E			F			F			F		
d_I, Intersection Delay [s/veh]	206.34											
Intersection LOS	F											
Intersection V/C	1.533											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.486	3.049	2.477	2.624
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.33	21.07	38.56	50.34
I_b,int, Bicycle LOS Score for Intersection	2.916	2.375	2.774	2.795
Bicycle LOS	C	B	C	C

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	77.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.152

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩️		↩️		↩️↩️	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	



**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1402	1226	655	441	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1402	1226	356	441	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	351	307	89	110	0
Total Analysis Volume [veh/h]	65	1402	1226	356	441	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	5	45	36	36	36	36
g / C, Green / Cycle	0.06	0.49	0.40	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.54	0.44	0.29	0.48	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1229	928	1597
c, Capacity [veh/h]	78	1296	1101	489	369	635
d1, Uniform Delay [s]	42.15	22.85	27.29	22.94	27.29	0.00
k, delay calibration	0.04	0.23	0.16	0.27	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.15	44.07	55.87	5.08	111.84	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	1.08	1.11	0.73	1.20	0.00
d, Delay for Lane Group [s/veh]	50.30	66.92	83.16	28.02	139.13	0.00
Lane Group LOS	D	F	F	C	F	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.60	20.53	19.52	6.66	18.95	0.00
50th-Percentile Queue Length [ft/ln]	39.96	513.21	488.12	166.55	473.69	0.00
95th-Percentile Queue Length [veh/ln]	2.88	29.62	28.75	10.90	29.15	0.00
95th-Percentile Queue Length [ft/ln]	71.92	740.57	718.80	272.38	728.82	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	50.30	66.92	83.16	28.02	139.13	0.00
Movement LOS	D	F	F	C	F	A
d_A, Approach Delay [s/veh]	66.18		70.75		139.13	
Approach LOS	E		E		F	
d_I, Intersection Delay [s/veh]	77.47					
Intersection LOS	E					
Intersection V/C	1.152					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.91
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.452
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	796	796	796
d_b, Bicycle Delay [s]	16.41	16.42	16.41
I_b,int, Bicycle LOS Score for Intersection	2.770	3.111	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	128.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.137

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	23	913	7	36	931	108	67	14	32	59	12	360
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0
Total Hourly Volume [veh/h]	23	913	7	36	931	108	67	14	26	59	12	360
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	238	2	9	242	28	17	4	7	15	3	94
Total Analysis Volume [veh/h]	24	951	7	38	970	113	70	15	27	61	13	375
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing in	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			6			2		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	166	166	166	166	166	166	166	166	166	166
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	4	97	97	7	100	14	14	14	30	30
g / C, Green / Cycle	0.03	0.58	0.58	0.04	0.60	0.08	0.08	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.03	0.29	0.29	0.04	0.70	0.04	0.04	0.02	0.06	0.32
s, saturation flow rate [veh/h]	952	1445	1895	952	1537	952	1396	1335	952	1202
c, Capacity [veh/h]	25	844	1107	42	926	79	116	110	172	217
d1, Uniform Delay [s]	80.82	20.12	20.12	79.04	33.01	72.48	72.45	71.03	59.54	68.01
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	78.21	0.95	0.72	44.67	88.13	3.81	2.57	1.13	1.24	372.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.49	0.49	0.91	1.17	0.44	0.44	0.24	0.35	1.79
d, Delay for Lane Group [s/veh]	159.03	21.06	20.84	123.72	121.15	76.29	75.03	72.16	60.77	440.13
Lane Group LOS	F	C	C	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.57	9.80	12.79	2.16	59.08	1.53	2.19	1.14	2.35	31.74
50th-Percentile Queue Length [ft/ln]	39.36	244.92	319.66	53.94	1477.04	38.30	54.70	28.53	58.66	793.53
95th-Percentile Queue Length [veh/ln]	2.83	14.93	18.65	3.88	81.42	2.76	3.94	2.05	4.22	50.65
95th-Percentile Queue Length [ft/ln]	70.85	373.25	466.27	97.10	2035.62	68.95	98.46	51.36	105.58	1266.26



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	159.03	20.94	20.84	123.72	121.15	121.15	75.68	75.03	72.16	60.77	440.13	440.13
Movement LOS	F	C	C	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	24.31			121.23			74.73			388.59		
Approach LOS	C			F			E			F		
d_I, Intersection Delay [s/veh]	128.61											
Intersection LOS	F											
Intersection V/C	1.137											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.32	72.32	72.32	72.32
I_p,int, Pedestrian LOS Score for Intersection	2.576	2.823	2.190	2.107
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	241	241	362	362
d_b, Bicycle Delay [s]	64.22	64.19	55.83	55.72
I_b,int, Bicycle LOS Score for Intersection	2.370	3.409	1.754	2.300
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.940

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	37	783	7	4	878	186	283	6	64	1	2	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.70	0.00	0.00	3.90	3.30	1.00	0.00	0.00	0.00	0.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	783	7	4	878	186	283	6	64	1	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	206	2	1	231	49	74	2	17	0	1	2
Total Analysis Volume [veh/h]	39	824	7	4	924	196	298	6	67	1	2	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing in	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			2			13			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	109	109	109	109	109	109	41	41	41	0	41	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	105	105	105	105	37	37
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.46	0.01	0.63	0.27	0.01
s, saturation flow rate [veh/h]	493	1826	671	1778	1392	1744
c, Capacity [veh/h]	137	1278	342	1244	385	455
d1, Uniform Delay [s]	54.56	12.39	23.79	18.25	57.69	42.92
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.12	2.58	0.06	10.57	37.59	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.28	0.65	0.01	0.90	0.96	0.02
d, Delay for Lane Group [s/veh]	59.68	14.96	23.85	28.82	95.27	42.93
Lane Group LOS	E	B	C	C	F	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.53	15.94	0.09	32.80	18.40	0.26
50th-Percentile Queue Length [ft/ln]	38.18	398.51	2.21	820.00	460.06	6.56
95th-Percentile Queue Length [veh/ln]	2.75	22.49	0.16	42.19	25.44	0.47
95th-Percentile Queue Length [ft/ln]	68.72	562.20	3.98	1054.81	635.94	11.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	59.68	14.96	14.96	23.85	28.82	28.82	95.27	95.27	95.27	42.93	42.93	42.93
Movement LOS	E	B	B	C	C	C	F	F	F	D	D	D
d_A, Approach Delay [s/veh]	16.97			28.80			95.27			42.93		
Approach LOS	B			C			F			D		
d_I, Intersection Delay [s/veh]	34.91											
Intersection LOS	C											
Intersection V/C	0.940											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.38			64.38			64.38			64.38		
I_p,int, Pedestrian LOS Score for Intersection	2.470			3.120			2.091			1.755		
Crosswalk LOS	B			C			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1399			1399			492			492		
d_b, Bicycle Delay [s]	6.79			6.77			42.89			42.63		
I_b,int, Bicycle LOS Score for Intersection	2.995			3.414			2.172			1.574		
Bicycle LOS	C			C			B			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇐			⇑⇐⇐			⇑⇐⇐			⇑⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	7	686	151	52	919	0	21	111	11	153	95	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.20	10.00	7.40	3.60	0.00	2.70	0.00	0.00	2.60	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	686	151	52	919	0	21	111	11	153	95	93
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	186	41	14	250	0	6	30	3	42	26	25
Total Analysis Volume [veh/h]	8	746	164	57	999	0	23	121	12	166	103	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		6			4			6			3	
v_di, Inbound Pedestrian Volume crossing in		6			3			6			4	
v_co, Outbound Pedestrian Volume crossing		0			2			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			2			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		9			12			11			11	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	116	116	116	116	116	116	34	34	34	0	34	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	112	112	112	112	30	30	30	30
g / C, Green / Cycle	0.75	0.75	0.75	0.75	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.01	0.52	0.10	0.54	0.02	0.07	0.13	0.12
s, saturation flow rate [veh/h]	573	1756	586	1846	1169	1856	1232	1715
c, Capacity [veh/h]	295	1310	316	1377	140	370	201	342
d1, Uniform Delay [s]	24.60	10.03	24.42	10.54	64.90	51.71	66.34	54.49
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.21	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	3.06	1.25	3.36	0.55	0.59	15.04	2.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.03	0.69	0.18	0.73	0.16	0.36	0.83	0.60
d, Delay for Lane Group [s/veh]	24.77	13.09	25.67	13.90	65.45	52.30	81.38	56.84
Lane Group LOS	C	B	C	B	E	D	F	E
Critical Lane Group	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.18	16.07	1.37	18.53	0.86	4.46	7.31	7.33
50th-Percentile Queue Length [ft/ln]	4.61	401.66	34.18	463.25	21.48	111.39	182.74	183.16
95th-Percentile Queue Length [veh/ln]	0.33	22.64	2.46	25.59	1.55	7.92	11.74	11.77
95th-Percentile Queue Length [ft/ln]	8.30	566.00	61.53	639.74	38.66	197.93	293.58	294.13

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.77	13.09	13.09	25.67	13.90	13.90	65.45	52.30	52.30	81.38	56.84	56.84
Movement LOS	C	B	B	C	B	B	E	D	D	F	E	E
d_A, Approach Delay [s/veh]	13.19			14.54			54.24			67.85		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	24.41											
Intersection LOS	C											
Intersection V/C	0.709											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.35			64.35			64.35			64.35		
I_p,int, Pedestrian LOS Score for Intersection	2.768			2.579			2.048			2.238		
Crosswalk LOS	C			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1493			1493			399			399		
d_b, Bicycle Delay [s]	4.84			4.84			48.29			48.29		
I_b,int, Bicycle LOS Score for Intersection	3.074			3.302			1.817			2.170		
Bicycle LOS	C			C			A			B		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	64.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	27	297	156	374	138	445	132	456	170	343	331	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	3.60	2.60	2.70	3.80	2.50	0.50	5.50	5.30	3.70	13.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	119	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	27	297	37	374	138	0	132	456	170	343	331	20
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	77	10	97	36	0	34	119	44	89	86	5
Total Analysis Volume [veh/h]	28	309	39	390	144	0	138	475	177	357	345	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		10			2			10			2	
v_di, Inbound Pedestrian Volume crossing in		10			2			10			2	
v_co, Outbound Pedestrian Volume crossing		5			3			2			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			2			3			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		29			22			6			20	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			Yes	
Maximum Recall		No			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	27	27	27	57	57	57	22	22	22	22	25	25	25
g / C, Green / Cycle	0.18	0.18	0.18	0.38	0.38	0.38	0.15	0.15	0.15	0.15	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.03	0.15	0.15	0.00	0.08	0.12	0.13	0.12	0.14	0.14	0.14
s, saturation flow rate [veh/h]	1810	1825	1447	1772	1817	1567	1774	1892	1892	1491	1734	1803	1634
c, Capacity [veh/h]	331	334	265	675	692	596	265	282	282	222	286	297	269
d1, Uniform Delay [s]	50.86	60.27	51.34	33.78	33.78	0.00	58.85	61.82	62.30	61.30	60.79	60.77	60.88
k, delay calibration	0.11	0.36	0.11	0.50	0.50	0.50	0.11	0.19	0.22	0.18	0.14	0.14	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	26.86	0.25	1.70	1.66	0.00	1.59	10.00	14.47	10.29	8.88	8.46	10.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.08	0.93	0.15	0.39	0.39	0.00	0.52	0.82	0.86	0.80	0.85	0.85	0.85
d, Delay for Lane Group [s/veh]	50.96	87.14	51.60	35.48	35.44	0.00	60.44	71.83	76.77	71.59	69.67	69.23	70.91
Lane Group LOS	D	F	D	D	D	A	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.90	14.08	1.26	7.49	7.67	0.00	4.99	9.36	10.25	7.14	9.67	10.01	9.29
50th-Percentile Queue Length [ft/ln]	22.40	351.91	31.61	187.35	191.81	0.00	124.7	233.9	256.1	178.5	241.84	250.20	232.25
95th-Percentile Queue Length [veh/ln]	1.61	20.23	2.28	11.98	12.22	0.00	8.65	14.37	15.50	11.53	14.77	15.20	14.29
95th-Percentile Queue Length [ft/ln]	40.32	505.74	56.90	299.58	305.38	0.00	216.2	359.3	387.4	288.1	369.36	379.90	357.21

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	50.96	87.14	51.60	35.47	35.44	0.00	60.44	74.36	71.59	69.52	70.25	70.91
Movement LOS	D	F	D	D	D	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	80.76			35.46			71.31			69.91		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	64.46											
Intersection LOS	E											
Intersection V/C	0.621											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.46	63.46	63.46	63.46
I_p,int, Pedestrian LOS Score for Intersection	2.519	4.295	4.335	2.758
Crosswalk LOS	B	E	E	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	457
d_b, Bicycle Delay [s]	49.75	39.81	50.32	45.06
I_b,int, Bicycle LOS Score for Intersection	2.376	4.091	3.036	2.156
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road and US 101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	60.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.102

**Intersection Setup**

Name	Marsh Road		Marsh Road			
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road			
Base Volume Input [veh/h]	1821	0	0	906	771	1251
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1821	0	0	906	771	1251
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	469	0	0	234	199	322
Total Analysis Volume [veh/h]	1877	0	0	934	795	1290
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.54	0.27	0.23	0.47
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	14.31	9.05	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.24
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.23	0.72	0.23	153.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.91	0.45	0.66	1.33
d, Delay for Lane Group [s/veh]	21.53	9.77	22.10	179.25
Lane Group LOS	C	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	14.56	4.13	6.00	29.21
50th-Percentile Queue Length [ft/ln]	363.92	103.34	149.89	730.22
95th-Percentile Queue Length [veh/ln]	20.81	7.44	10.01	44.86
95th-Percentile Queue Length [ft/ln]	520.35	186.00	250.29	1121.47

**Movement, Approach, & Intersection Results**

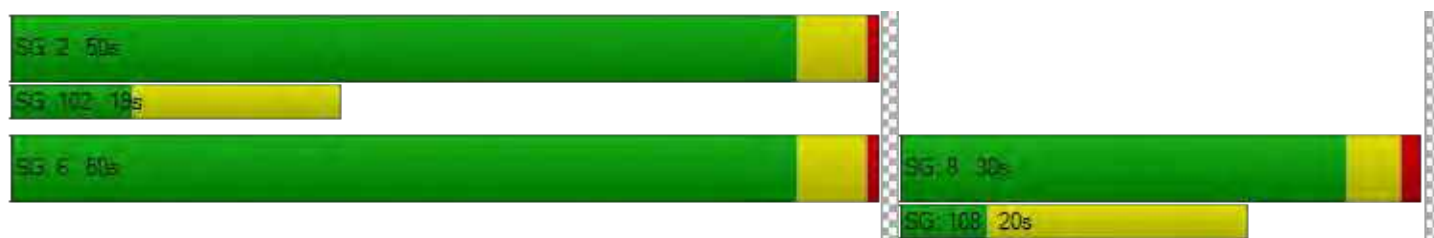
d_M, Delay for Movement [s/veh]	21.53	0.00	0.00	9.77	22.10	179.25
Movement LOS	C			A	C	F
d_A, Approach Delay [s/veh]	21.53		9.77		119.33	
Approach LOS	C		A		F	
d_I, Intersection Delay [s/veh]	60.94					
Intersection LOS	E					
Intersection V/C	1.102					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.126	2.633
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	3.108	2.330	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	24.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.875

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	493	10	52	183	35	37	41	23	22	55	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	493	10	52	183	35	37	41	23	22	55	131
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	129	3	16	57	11	12	13	7	6	15	36
Total Analysis Volume [veh/h]	14	515	10	65	229	44	47	52	29	24	60	144
Pedestrian Volume [ped/h]	3			3			9			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	616	583	504	552
Degree of Utilization, x	0.87	0.58	0.25	0.41

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	10.20	3.69	1.00	2.01
95th-Percentile Queue Length [ft]	254.92	92.19	24.99	50.34
Approach Delay [s/veh]	36.32	17.32	12.55	14.05
Approach LOS	E	C	B	B
Intersection Delay [s/veh]	24.53			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	68.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.878

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		



**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	1371	10	30	7	8	481	296	2095	761	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1371	10	30	7	8	481	296	2095	761	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	357	3	8	2	2	125	77	546	198	9
Total Analysis Volume [veh/h]	169	28	1428	10	31	7	8	501	308	2182	793	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			1			1			0	
v_di, Inbound Pedestrian Volume crossing in		0			1			1			0	
v_co, Outbound Pedestrian Volume crossing		0			22			0			22	
v_ci, Inbound Pedestrian Volume crossing mi		0			22			0			22	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			13			25			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	69	11	11	0	32	25	32	48	32	48	69	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	18	87	29	29	36	36	36	67	67
g / C, Green / Cycle	0.11	0.54	0.18	0.18	0.23	0.23	0.23	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.01	0.01	0.16	0.16	0.21	0.43	0.46
s, saturation flow rate [veh/h]	1822	4114	1863	1610	1624	1480	1444	5075	1806
c, Capacity [veh/h]	208	2143	339	293	367	335	327	2122	755
d1, Uniform Delay [s]	70.43	28.01	54.28	54.32	57.30	57.30	60.29	46.56	46.56
k, delay calibration	0.50	0.50	0.04	0.04	0.16	0.16	0.30	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	50.50	1.66	0.03	0.04	4.08	4.46	26.62	27.22	62.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.95	0.67	0.07	0.08	0.72	0.72	0.94	1.03	1.10
d, Delay for Lane Group [s/veh]	120.93	29.67	54.31	54.36	61.37	61.75	86.91	73.78	108.96
Lane Group LOS	F	C	D	D	E	E	F	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.98	13.71	0.86	0.78	10.45	9.56	14.63	33.26	42.88
50th-Percentile Queue Length [ft/ln]	274.42	342.66	21.43	19.47	261.29	239.01	365.73	831.40	1071.96
95th-Percentile Queue Length [veh/ln]	16.41	19.78	1.54	1.40	15.75	14.63	20.90	43.65	57.44
95th-Percentile Queue Length [ft/ln]	410.25	494.45	38.58	35.04	393.84	365.78	522.55	1091.14	1436.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	120.93	120.93	29.67	54.31	54.34	54.36	61.37	61.56	86.91	73.78	108.96	108.96
Movement LOS	F	F	C	D	D	D	E	E	F	F	F	F
d_A, Approach Delay [s/veh]	40.73			54.33			71.11			83.46		
Approach LOS	D			D			E			F		
d_I, Intersection Delay [s/veh]	68.75											
Intersection LOS	E											
Intersection V/C	0.878											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.595			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			555			791		
d_b, Bicycle Delay [s]	73.76			54.89			42.29			29.24		
I_b,int, Bicycle LOS Score for Intersection	4.241			1.599			2.234			6.526		
Bicycle LOS	D			A			B			F		

**Sequence**

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	100.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.740

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1357	623	0	1321	919	0	0	0	1097	0	394
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	3.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1357	623	0	1321	919	0	0	0	1097	0	394
Peak Hour Factor	1.0000	0.9700	1.0000	1.0000	0.9700	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	350	156	0	340	237	0	0	0	274	0	109
Total Analysis Volume [veh/h]	0	1399	623	0	1362	947	0	0	0	1097	0	438
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing in		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		6			1			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	43	43	43		29	29
g / C, Green / Cycle	0.54	0.54	0.54		0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.28	0.27	1.08		0.31	0.15
s, saturation flow rate [veh/h]	5053	5053	877		3514	2859
c, Capacity [veh/h]	2711	2711	471		1276	1038
d1, Uniform Delay [s]	11.85	11.73	18.06		23.53	19.11
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.71	0.67	462.77		1.81	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.50	2.01		0.86	0.42
d, Delay for Lane Group [s/veh]	12.55	12.40	480.82		25.34	19.38
Lane Group LOS	B	B	F		C	B
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	4.96	4.78	67.87		9.28	2.94
50th-Percentile Queue Length [ft/ln]	123.95	119.39	1696.65		232.00	73.62
95th-Percentile Queue Length [veh/ln]	8.61	8.36	113.77		14.28	5.30
95th-Percentile Queue Length [ft/ln]	215.25	208.99	2844.17		356.89	132.52



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.55	0.00	0.00	12.40	480.82	0.00	0.00	0.00	25.34	0.00	19.38
Movement LOS		B			B	F				C		B
d_A, Approach Delay [s/veh]	12.55		204.52			0.00			23.64			
Approach LOS	B		F			A			C			
d_I, Intersection Delay [s/veh]	100.34											
Intersection LOS	F											
Intersection V/C	1.740											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.035	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.10	12.07	39.95	12.06
I_b,int, Bicycle LOS Score for Intersection	2.329	2.830	4.132	1.560
Bicycle LOS	B	C	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	146.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.617

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1718	748	0	1931	424	0	0	0	391	0	789
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	2.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1718	748	0	1931	424	0	0	0	391	0	789
Peak Hour Factor	1.0000	0.9700	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	443	193	0	498	106	0	0	0	98	0	219
Total Analysis Volume [veh/h]	0	1771	771	0	1991	424	0	0	0	391	0	877
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			3			0			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	L	R
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	36	36	36
g / C, Green / Cycle	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.35	0.50	0.73	0.11	0.56
s, saturation flow rate [veh/h]	5012	1551	2715	3514	1567
c, Capacity [veh/h]	2253	697	1220	1582	706
d1, Uniform Delay [s]	18.70	21.54	21.97	13.57	21.71
k, delay calibration	0.50	0.50	0.50	0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.85	66.88	288.03	0.08	113.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	1.11	1.63	0.25	1.24
d, Delay for Lane Group [s/veh]	21.56	88.42	310.00	13.65	135.29
Lane Group LOS	C	F	F	B	F
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	9.11	24.54	39.43	2.07	17.06
50th-Percentile Queue Length [ft/ln]	227.79	613.41	985.84	51.69	426.40
95th-Percentile Queue Length [veh/ln]	14.06	35.09	64.41	3.72	27.23
95th-Percentile Queue Length [ft/ln]	351.55	877.28	1610.34	93.05	680.82

**Movement, Approach, & Intersection Results**

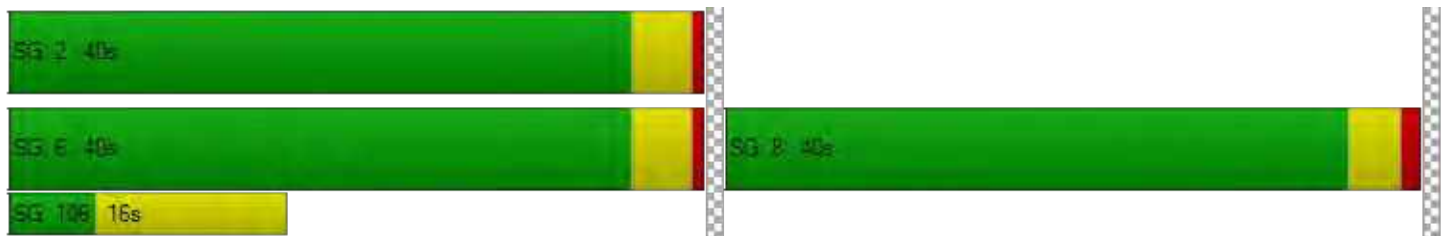
d_M, Delay for Movement [s/veh]	0.00	21.56	88.42	0.00	310.00	0.00	0.00	0.00	0.00	13.65	0.00	135.29
Movement LOS		C	F		F					B		F
d_A, Approach Delay [s/veh]		41.84			310.00			0.00			97.78	
Approach LOS		D			F			A			F	
d_I, Intersection Delay [s/veh]	146.10											
Intersection LOS	F											
Intersection V/C	1.617											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.09	12.08	39.95	12.07
I_b,int, Bicycle LOS Score for Intersection	2.958	2.655	4.132	1.560
Bicycle LOS	C	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	44.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.032

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	324	292	1225	756	625	1963
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	324	292	1225	756	625	1963
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	77	322	199	164	517
Total Analysis Volume [veh/h]	341	307	1289	796	658	2066
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	79	79
g / C, Green / Cycle	0.18	0.18	0.46	0.46	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.10	0.23	0.26	0.51	0.76	0.41
s, saturation flow rate [veh/h]	3420	1320	4967	1547	861	5020
c, Capacity [veh/h]	627	242	2278	710	643	3643
d1, Uniform Delay [s]	40.36	44.50	21.56	29.50	28.85	6.97
k, delay calibration	0.04	0.50	0.04	0.50	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	148.76	0.08	72.34	41.35	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.54	1.27	0.57	1.12	1.02	0.57
d, Delay for Lane Group [s/veh]	40.63	193.26	21.65	101.84	70.19	7.02
Lane Group LOS	D	F	C	F	F	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.16	16.49	7.33	30.78	12.26	5.57
50th-Percentile Queue Length [ft/ln]	103.99	412.23	183.15	769.50	306.58	139.13
95th-Percentile Queue Length [veh/ln]	7.49	25.79	11.77	43.35	18.34	9.43
95th-Percentile Queue Length [ft/ln]	187.18	644.63	294.13	1083.65	458.42	235.85

**Movement, Approach, & Intersection Results**

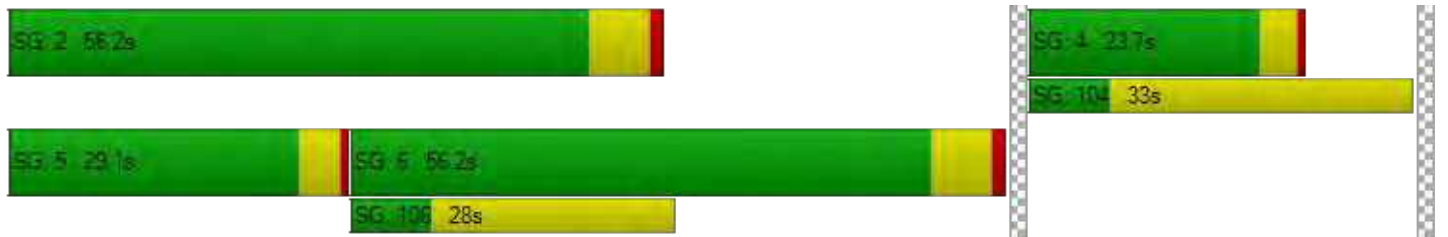
d_M, Delay for Movement [s/veh]	40.63	193.26	21.65	101.84	70.19	7.02
Movement LOS	D	F	C	F	F	A
d_A, Approach Delay [s/veh]	112.94		52.26		22.28	
Approach LOS	F		D		C	
d_I, Intersection Delay [s/veh]	44.50					
Intersection LOS	D					
Intersection V/C	1.032					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.06	44.06	44.06
I_p,int, Pedestrian LOS Score for Intersection	3.250	3.647	3.506
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	917	917
d_b, Bicycle Delay [s]	36.33	15.97	15.97
I_b,int, Bicycle LOS Score for Intersection	1.560	2.706	3.058
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	438	93	1790	486	160	2354
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	438	93	1790	486	160	2354
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	24	461	125	41	607
Total Analysis Volume [veh/h]	452	96	1845	501	165	2427
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	12	12	38	38	8	50
g / C, Green / Cycle	0.17	0.17	0.52	0.52	0.11	0.69
(v / s)_i Volume / Saturation Flow Rate	0.14	0.06	0.37	0.34	0.09	0.48
s, saturation flow rate [veh/h]	3173	1509	4959	1493	1810	5024
c, Capacity [veh/h]	533	254	2550	768	207	3439
d1, Uniform Delay [s]	29.55	27.06	13.76	12.87	31.61	7.05
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.47	0.35	0.15	0.35	2.68	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	0.38	0.72	0.65	0.80	0.71
d, Delay for Lane Group [s/veh]	31.01	27.40	13.91	13.22	34.28	7.16
Lane Group LOS	C	C	B	B	C	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.86	1.48	6.18	4.75	2.77	4.46
50th-Percentile Queue Length [ft/ln]	96.59	37.12	154.40	118.85	69.35	111.48
95th-Percentile Queue Length [veh/ln]	6.95	2.67	10.25	8.33	4.99	7.92
95th-Percentile Queue Length [ft/ln]	173.85	66.82	256.29	208.25	124.82	198.06

**Movement, Approach, & Intersection Results**

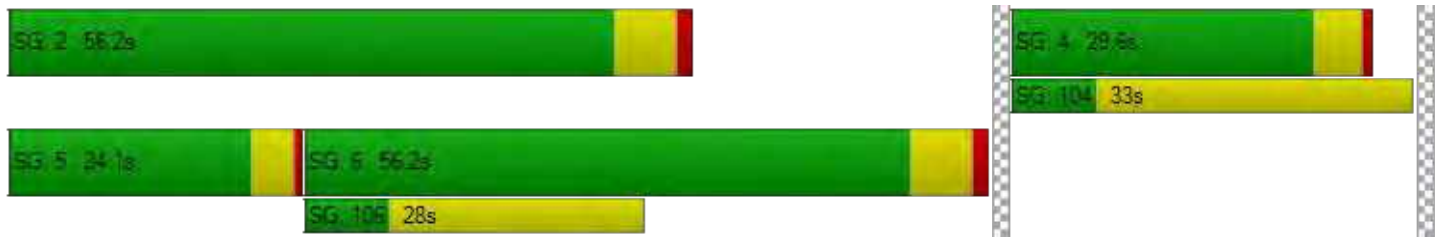
d_M, Delay for Movement [s/veh]	31.01	27.40	13.91	13.22	34.28	7.16
Movement LOS	C	C	B	B	C	A
d_A, Approach Delay [s/veh]	30.38		13.76		8.88	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	13.12					
Intersection LOS	B					
Intersection V/C	0.713					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.37	26.37	26.37
I_p,int, Pedestrian LOS Score for Intersection	2.366	3.669	3.529
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	684	1368	1368
d_b, Bicycle Delay [s]	15.81	3.65	3.64
I_b,int, Bicycle LOS Score for Intersection	1.560	2.850	2.985
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 199: Bayfront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	5.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

**Intersection Setup**

Name	Bldg 21		Bayfront Expwy		Bayfront Expwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑⇐		⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	66	51	1116	396	247	2478
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	35.50	35.50	11.60	11.60	4.40	4.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	51	1116	396	247	2478
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	13	291	103	64	645
Total Analysis Volume [veh/h]	69	53	1163	413	257	2581
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	25	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	64	64	64	64	64	64
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	5	5	40	40	49	49
g / C, Green / Cycle	0.08	0.08	0.62	0.62	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.27	0.31	0.22	0.57
s, saturation flow rate [veh/h]	1172	1058	4231	1320	1151	4496
c, Capacity [veh/h]	92	83	2640	824	967	3447
d1, Uniform Delay [s]	28.70	28.79	6.24	6.59	2.95	4.09
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.22	4.23	0.04	0.18	0.05	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.68	0.72	0.44	0.50	0.27	0.75
d, Delay for Lane Group [s/veh]	31.93	33.03	6.29	6.76	3.00	4.21
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.97	0.95	1.66	1.90	0.09	1.18
50th-Percentile Queue Length [ft/ln]	24.28	23.70	41.55	47.41	2.15	29.38
95th-Percentile Queue Length [veh/ln]	1.75	1.71	2.99	3.41	0.16	2.12
95th-Percentile Queue Length [ft/ln]	43.70	42.67	74.78	85.34	3.88	52.88

**Movement, Approach, & Intersection Results**

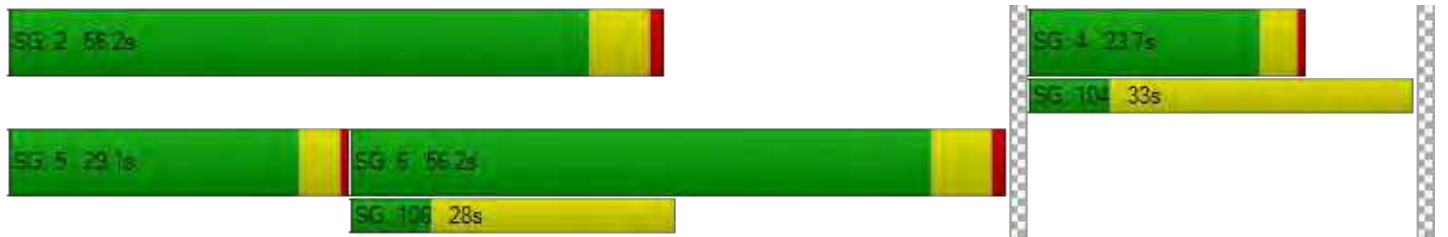
d_M, Delay for Movement [s/veh]	32.05	33.03	6.29	6.76	3.00	4.21
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	32.46		6.41		4.10	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	5.67					
Intersection LOS	A					
Intersection V/C	0.734					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.87	21.87	21.87
I_p,int, Pedestrian LOS Score for Intersection	2.545	3.458	3.448
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	626	1566	1566
d_b, Bicycle Delay [s]	15.06	1.50	1.50
I_b,int, Bicycle LOS Score for Intersection	1.761	2.426	3.121
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	170.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.610

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	428	390	10	408	337	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	428	390	10	408	337	21
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	122	111	3	116	96	6
Total Analysis Volume [veh/h]	486	443	11	464	383	24
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	929	547	512
Degree of Utilization, x	1.61	0.87	0.79

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	50.83	9.60	7.43
95th-Percentile Queue Length [ft]	1270.74	240.12	185.67
Approach Delay [s/veh]	299.10	38.82	32.04
Approach LOS	F	E	D
Intersection Delay [s/veh]	170.82		
Intersection LOS	F		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.945

**Intersection Setup**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	980.00	760.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	



**Volumes**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Base Volume Input [veh/h]	0	48	970	234	86	2766
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	88.60	11.70	11.70	6.30	6.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	48	970	234	86	2766
Peak Hour Factor	0.9500	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	258	62	23	736
Total Analysis Volume [veh/h]	0	51	1032	249	91	2943
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	25	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	52	52	52	52	52
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	3	31	31	39	39
g / C, Green / Cycle	0.06	0.59	0.59	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.12	0.24	0.19	0.14	0.66
s, saturation flow rate [veh/h]	436	4227	1319	648	4426
c, Capacity [veh/h]	28	2481	774	617	3300
d1, Uniform Delay [s]	24.41	5.89	5.49	2.36	5.05
k, delay calibration	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	372.10	0.04	0.09	0.04	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.80	0.42	0.32	0.15	0.89
d, Delay for Lane Group [s/veh]	396.52	5.93	5.58	2.40	5.40
Lane Group LOS	F	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.27	1.11	0.76	0.02	0.45
50th-Percentile Queue Length [ft/ln]	81.70	27.70	18.99	0.45	11.23
95th-Percentile Queue Length [veh/ln]	5.88	1.99	1.37	0.03	0.81
95th-Percentile Queue Length [ft/ln]	147.05	49.85	34.19	0.82	20.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	396.52	5.93	5.58	2.40	5.40
Movement LOS		F	A	A	A	A
d_A, Approach Delay [s/veh]	396.52		5.86		5.31	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	10.04					
Intersection LOS	B					
Intersection V/C	0.945					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	16.21	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.445	0.000
Crosswalk LOS	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	768	1920	1920
d_b, Bicycle Delay [s]	9.89	0.04	0.04
I_b,int, Bicycle LOS Score for Intersection	1.560	2.264	3.228
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	52.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.716

**Intersection Setup**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	255	395	196	766	277	423	90	10	111	42	24	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	255	395	196	766	277	423	90	10	111	42	24	84
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	101	50	195	71	108	23	3	28	11	6	21
Total Analysis Volume [veh/h]	260	403	200	782	283	432	92	10	113	43	24	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing in	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing mi	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	17	59	0	9	51	0	0	31	31	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	20	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	88	88	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	30	23	38	13	13	6	6
g / C, Green / Cycle	0.17	0.34	0.26	0.43	0.14	0.14	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.15	0.36	0.23	0.43	0.06	0.08	0.04	0.05
s, saturation flow rate [veh/h]	1767	1658	3431	1676	1775	1462	1760	1577
c, Capacity [veh/h]	305	564	901	722	256	211	125	112
d1, Uniform Delay [s]	35.40	29.07	31.03	24.91	34.26	34.78	39.80	39.89
k, delay calibration	0.11	0.50	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.76	57.51	2.70	31.21	1.00	2.12	5.09	6.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	1.07	0.87	0.99	0.40	0.54	0.63	0.66
d, Delay for Lane Group [s/veh]	42.16	86.58	33.74	56.12	35.26	36.90	44.89	46.33
Lane Group LOS	D	F	C	E	D	D	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.86	20.33	8.01	20.00	2.02	2.32	1.81	1.74
50th-Percentile Queue Length [ft/ln]	146.58	508.29	200.24	499.98	50.61	58.01	45.34	43.59
95th-Percentile Queue Length [veh/ln]	9.83	28.96	12.65	27.33	3.64	4.18	3.26	3.14
95th-Percentile Queue Length [ft/ln]	245.86	724.00	316.28	683.34	91.09	104.42	81.62	78.47



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	42.16	86.58	86.58	33.74	56.12	56.12	35.26	35.26	36.90	44.89	44.89	46.17
Movement LOS	D	F	F	C	E	E	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	73.20			44.43			36.12			45.59		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	52.94											
Intersection LOS	D											
Intersection V/C	0.716											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.69	33.69	33.69	33.69
I_p,int, Pedestrian LOS Score for Intersection	2.362	2.703	2.241	2.409
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1250	1068	614	614
d_b, Bicycle Delay [s]	6.19	9.55	21.14	21.14
I_b,int, Bicycle LOS Score for Intersection	2.984	4.030	1.914	1.812
Bicycle LOS	C	D	A	A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	359.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.661

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
	197	333	118	190	301	335	39	34	191	0	252	24
Base Volume Input [veh/h]	197	333	118	190	301	335	39	34	191	0	252	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80	0.00	17.90	100.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	333	118	190	301	335	39	34	191	0	252	24
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	93	33	53	84	93	11	9	53	0	70	7
Total Analysis Volume [veh/h]	219	370	131	211	334	372	43	38	212	0	280	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		13			14			5			5	
v_di, Inbound Pedestrian Volume crossing in		14			13			5			5	
v_co, Outbound Pedestrian Volume crossing		0			1			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	25	0	0	19	0	0	46	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	30
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.92	0.16	0.46	0.28	0.11	0.12
s, saturation flow rate [veh/h]	781	1357	1552	1030	1371	1290
c, Capacity [veh/h]	276	399	457	302	439	380
d1, Uniform Delay [s]	43.16	30.03	35.95	35.54	28.39	28.70
k, delay calibration	0.50	0.11	0.50	0.43	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	733.57	1.08	256.29	40.58	0.49	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.61	0.53	1.55	0.97	0.36	0.40
d, Delay for Lane Group [s/veh]	776.73	31.12	292.24	76.12	28.88	29.36
Lane Group LOS	F	C	F	E	C	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	63.30	4.39	43.58	10.41	3.06	2.98
50th-Percentile Queue Length [ft/ln]	1582.53	109.82	1089.60	260.36	76.53	74.43
95th-Percentile Queue Length [veh/ln]	103.77	7.83	67.47	15.71	5.51	5.36
95th-Percentile Queue Length [ft/ln]	2594.13	195.75	1686.87	392.68	137.76	133.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	776.73	776.73	776.73	31.12	292.24	292.24	76.12	76.12	76.12	28.88	29.09	29.36
Movement LOS	F	F	F	C	F	F	E	E	E	C	C	C
d_A, Approach Delay [s/veh]	776.73			232.15			76.12			29.12		
Approach LOS	F			F			E			C		
d_I, Intersection Delay [s/veh]	359.13											
Intersection LOS	F											
Intersection V/C	1.661											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.56	40.56	40.56	40.56
I_p,int, Pedestrian LOS Score for Intersection	2.408	2.299	2.458	2.301
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	824	412	294	824
d_b, Bicycle Delay [s]	17.62	32.13	37.07	17.62
I_b,int, Bicycle LOS Score for Intersection	2.748	3.073	2.043	1.813
Bicycle LOS	B	C	B	A

**Sequence**




Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	62.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.497

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	49	95	179	220	343	126
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	95	179	220	343	126
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	31	58	71	111	41
Total Analysis Volume [veh/h]	64	123	232	286	445	164
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.50	0.23	0.24	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	62.37	41.00	9.98	0.00	0.00	0.00
Movement LOS	F	E	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.02	5.02	0.95	0.95	0.00	0.00
95th-Percentile Queue Length [ft/ln]	125.46	125.46	23.83	23.83	0.00	0.00
d_A, Approach Delay [s/veh]	48.31		4.47		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	8.64					
Intersection LOS	F					



**Intersection Level Of Service Report  
Intersection 265: Adam Court/Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	20.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.057

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	230	42	60	103	13	108
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.50	12.50	15.60	15.60	46.80	46.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	42	60	103	13	108
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	12	18	30	4	32
Total Analysis Volume [veh/h]	271	49	71	121	15	127
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.21	0.00	0.00	0.00	0.06	0.16
d_M, Delay for Movement [s/veh]	8.43	0.00	0.00	0.00	20.11	10.90
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.77	0.77	0.00	0.00	0.80	0.80
95th-Percentile Queue Length [ft/ln]	19.25	19.25	0.00	0.00	20.11	20.11
d_A, Approach Delay [s/veh]	7.14		0.00		11.87	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	6.07					
Intersection LOS	C					

**Intersection Level Of Service Report**  
**Intersection 267: Willow Road(SR114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↑↑↑		↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	0	0	0	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	0	0
Maximum Green [s]	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk						
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall						
Maximum Recall						
Pedestrian Recall						
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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**Lane Group Calculations**

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**Lane Group Results**

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**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS						
d_A, Approach Delay [s/veh]	0.00		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					
Intersection V/C	0.000					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.00	45.00	45.00
I_p,int, Pedestrian LOS Score for Intersection	2.141	2.463	2.141
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
I_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560
Bicycle LOS	A	A	A

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**Intersection Level Of Service Report**  
**Intersection 269: O'Brien Drive/Loop Road**

Control Type:	Roundabout	Delay (sec / veh):	2.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	0			0			0			0		
Exiting Flow Rate [veh/h]	0			0			0			0		
Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0	0	
Adjusted Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0	0	

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.98			0.98		
Entry Flow Rate [veh/h]	0			0			0			0		
Capacity of Entry and Bypass Lanes [veh/h]	1380			1380			1380			1380		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1353			1353			1353			1353		
X, volume / capacity	0.00			0.00			0.00			0.00		

**Movement, Approach, & Intersection Results**

Lane LOS	A			A			A			A		
95th-Percentile Queue Length [veh]	0.00			0.00			0.00			0.00		
95th-Percentile Queue Length [ft]	0.00			0.00			0.00			0.00		
Approach Delay [s/veh]	2.66			2.66			2.66			2.66		
Approach LOS	A			A			A			A		
Intersection Delay [s/veh]	2.66											
Intersection LOS	A											



Vistro File: P:\...\Vistro\_AllScenarios\_AM - 12.9.2021.vistro

Scenario 19 Cumulative AM (2040 vols)

Report File: P:\...\Cumulative AM.pdf

12/30/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	1037		1481		1341	539	4398

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	42	1324	7	448	1259	338	13	4	68	353	19	0	3875

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	220	983	124	29	1031	413	622	76	230	39	21	25	3813

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	0	836	82	425	755	47	339	68	2	45	52	339	2990

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	87	569	520	508	501	104	2289

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	6	11	9	129	28	344	21	684	206	288	747	56	2529

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84)/University Ave (SR 109)	829	110	1297	2940	333	416	5925

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	249	596	277	38	76	72	391	475	195	1133	2572	72	6146

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	99	820	379	190	1297	48	47	56	48	56	431	373	3844

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	237	1304	1231	31	88	95	2986

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1395	878	42	1187	237	259	3998

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	160	1808	351	40	1347	7	95	142	458	298	167	241	5114

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1402	1226	655	441	60	3849

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	23	913	7	36	931	108	67	14	32	59	12	360	2562

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	37	783	7	4	878	186	283	6	64	1	2	6	2257

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	7	686	151	52	919	0	21	111	11	153	95	93	2299

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	27	297	156	374	138	445	132	456	170	343	331	20	2889

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road and US 101 NB Ramps	1821		906		771	1251	4749

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	493	10	52	183	35	37	41	23	22	55	131	1095

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	162	27	1371	10	30	7	8	481	296	2095	761	34	5282

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	1357	623	1321	919	1097	394	5711

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1718	748	1931	424	391	789	6001

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	324	292	1225	756	625	1963	5185

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	438	93	1790	486	160	2354	5321

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	66	51	1116	396	247	2478	4354

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	428	390	10	408	337	21	1594

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	48		970	234	86	2766	4104

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	255	395	196	766	277	423	90	10	111	42	24	84	2673

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	197	333	118	190	301	335	39	34	191	0	252	24	2014

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	49	95	179	220	343	126	1012

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	230	42	60	103	13	108	556



**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	1037		1481		1341	539	4398
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>1037</b>		<b>1481</b>		<b>1341</b>	<b>539</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	42	1324	7	448	1259	338	13	4	68	353	19	0	3875	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>42</b>	<b>1324</b>	<b>7</b>	<b>448</b>	<b>1259</b>	<b>338</b>	<b>13</b>	<b>4</b>	<b>68</b>	<b>353</b>	<b>19</b>	<b>0</b>	<b>3875</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	220	983	124	29	1031	413	622	76	230	39	21	25	3813	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>220</b>	<b>983</b>	<b>124</b>	<b>29</b>	<b>1031</b>	<b>413</b>	<b>622</b>	<b>76</b>	<b>230</b>	<b>39</b>	<b>21</b>	<b>25</b>	<b>3813</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	0	836	82	425	755	47	339	68	2	45	52	339	2990	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>0</b>	<b>836</b>	<b>82</b>	<b>425</b>	<b>755</b>	<b>47</b>	<b>339</b>	<b>68</b>	<b>2</b>	<b>45</b>	<b>52</b>	<b>339</b>	<b>2990</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	87	569	520	508	501	104	2289
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>87</b>	<b>569</b>	<b>520</b>	<b>508</b>	<b>501</b>	<b>104</b>	<b>2289</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	Final Base	6	11	9	129	28	344	21	684	206	288	747	56	2529
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>6</b>	<b>11</b>	<b>9</b>	<b>129</b>	<b>28</b>	<b>344</b>	<b>21</b>	<b>684</b>	<b>206</b>	<b>288</b>	<b>747</b>	<b>56</b>	<b>2529</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	829	110	1297	2940	333	416	5925
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>829</b>	<b>110</b>	<b>1297</b>	<b>2940</b>	<b>333</b>	<b>416</b>	<b>5925</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	249	596	277	38	76	72	391	475	195	1133	2572	72	6146
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>249</b>	<b>596</b>	<b>277</b>	<b>38</b>	<b>76</b>	<b>72</b>	<b>391</b>	<b>475</b>	<b>195</b>	<b>1133</b>	<b>2572</b>	<b>72</b>	<b>6146</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	99	820	379	190	1297	48	47	56	48	56	431	373	3844	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>99</b>	<b>820</b>	<b>379</b>	<b>190</b>	<b>1297</b>	<b>48</b>	<b>47</b>	<b>56</b>	<b>48</b>	<b>56</b>	<b>431</b>	<b>373</b>	<b>3844</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	237	1304	1231	31	88	95	2986
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>237</b>	<b>1304</b>	<b>1231</b>	<b>31</b>	<b>88</b>	<b>95</b>	<b>2986</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1395	878	42	1187	237	259	3998
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1395</b>	<b>878</b>	<b>42</b>	<b>1187</b>	<b>237</b>	<b>259</b>	<b>3998</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
20	Willow Rd (SR 114)/Newbridge St	Final Base	160	1808	351	40	1347	7	95	142	458	298	167	241	5114	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>160</b>	<b>1808</b>	<b>351</b>	<b>40</b>	<b>1347</b>	<b>7</b>	<b>95</b>	<b>142</b>	<b>458</b>	<b>298</b>	<b>167</b>	<b>241</b>	<b>5114</b>	



ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1402	1226	655	441	60	3849
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1402</b>	<b>1226</b>	<b>655</b>	<b>441</b>	<b>60</b>	<b>3849</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	23	913	7	36	931	108	67	14	32	59	12	360	2562
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>23</b>	<b>913</b>	<b>7</b>	<b>36</b>	<b>931</b>	<b>108</b>	<b>67</b>	<b>14</b>	<b>32</b>	<b>59</b>	<b>12</b>	<b>360</b>	<b>2562</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	37	783	7	4	878	186	283	6	64	1	2	6	2257
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>37</b>	<b>783</b>	<b>7</b>	<b>4</b>	<b>878</b>	<b>186</b>	<b>283</b>	<b>6</b>	<b>64</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>2257</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	7	686	151	52	919	0	21	111	11	153	95	93	2299
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>7</b>	<b>686</b>	<b>151</b>	<b>52</b>	<b>919</b>	<b>0</b>	<b>21</b>	<b>111</b>	<b>11</b>	<b>153</b>	<b>95</b>	<b>93</b>	<b>2299</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd- Willow Rd	Final Base	27	297	156	374	138	445	132	456	170	343	331	20	2889
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>27</b>	<b>297</b>	<b>156</b>	<b>374</b>	<b>138</b>	<b>445</b>	<b>132</b>	<b>456</b>	<b>170</b>	<b>343</b>	<b>331</b>	<b>20</b>	<b>2889</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road and US 101 NB Ramps	Final Base	1821		906		771	1251	4749
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1821</b>		<b>906</b>		<b>771</b>	<b>1251</b>	<b>4749</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	13	493	10	52	183	35	37	41	23	22	55	131	1095
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>493</b>	<b>10</b>	<b>52</b>	<b>183</b>	<b>35</b>	<b>37</b>	<b>41</b>	<b>23</b>	<b>22</b>	<b>55</b>	<b>131</b>	<b>1095</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	162	27	1371	10	30	7	8	481	296	2095	761	34	5282
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>162</b>	<b>27</b>	<b>1371</b>	<b>10</b>	<b>30</b>	<b>7</b>	<b>8</b>	<b>481</b>	<b>296</b>	<b>2095</b>	<b>761</b>	<b>34</b>	<b>5282</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1357	623	1321	919	1097	394	5711
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1357</b>	<b>623</b>	<b>1321</b>	<b>919</b>	<b>1097</b>	<b>394</b>	<b>5711</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1718	748	1931	424	391	789	6001
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1718</b>	<b>748</b>	<b>1931</b>	<b>424</b>	<b>391</b>	<b>789</b>	<b>6001</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	324	292	1225	756	625	1963	5185
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>324</b>	<b>292</b>	<b>1225</b>	<b>756</b>	<b>625</b>	<b>1963</b>	<b>5185</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	438	93	1790	486	160	2354	5321
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>438</b>	<b>93</b>	<b>1790</b>	<b>486</b>	<b>160</b>	<b>2354</b>	<b>5321</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	Final Base	66	51	1116	396	247	2478	4354
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>66</b>	<b>51</b>	<b>1116</b>	<b>396</b>	<b>247</b>	<b>2478</b>	<b>4354</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	428	390	10	408	337	21	1594
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>428</b>	<b>390</b>	<b>10</b>	<b>408</b>	<b>337</b>	<b>21</b>	<b>1594</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	48	970	234	86	2766	4104	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>48</b>	<b>970</b>	<b>234</b>	<b>86</b>	<b>2766</b>	<b>4104</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	255	395	196	766	277	423	90	10	111	42	24	84	2673
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>255</b>	<b>395</b>	<b>196</b>	<b>766</b>	<b>277</b>	<b>423</b>	<b>90</b>	<b>10</b>	<b>111</b>	<b>42</b>	<b>24</b>	<b>84</b>	<b>2673</b>





## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	516	270	208	101
2	501	262	202	98
3	490	257	198	96
4	459	240	185	90
5	408	213	164	80
6	402	211	162	79
7	397	208	160	78
8	361	189	146	71
9	356	186	144	70
10	351	184	141	69
11	304	159	123	60
12	284	149	114	56
13	279	146	112	55
14	206	108	83	40
15	206	108	83	40
16	144	76	58	28
17	83	43	33	16
18	83	43	33	16
19	46	24	19	9
20	26	14	10	5
21	15	8	6	3
22	5	3	2	1
23	5	3	2	1
24	5	3	2	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	786	1	208	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	763	1	202	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	747	1	198	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	699	1	185	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	1	621	1	164	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	613	1	162	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	605	1	160	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	550	1	146	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
9	1	542	1	144	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
10	1	535	1	141	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
11	1	463	1	123	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	433	1	114	No	No	Yes	Yes	No	No	No	Yes	No	No
13	1	425	1	112	No	No	Yes	Yes	No	No	No	Yes	No	No
14	1	314	1	83	No	No	No	No	No	No	No	No	No	No
15	1	314	1	83	No	No	No	No	No	No	No	No	No	No
16	1	220	1	58	No	No	No	No	No	No	No	No	No	No
17	1	126	1	33	No	No	No	No	No	No	No	No	No	No
18	1	126	1	33	No	No	No	No	No	No	No	No	No	No
19	1	70	1	19	No	No	No	No	No	No	No	No	No	No
20	1	40	1	10	No	No	No	No	No	No	No	No	No	No
21	1	23	1	6	No	No	No	No	No	No	No	No	No	No
22	1	8	1	2	No	No	No	No	No	No	No	No	No	No
23	1	8	1	2	No	No	No	No	No	No	No	No	No	No
24	1	8	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	13	2	7	10	13	4	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14	12.6
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:48	0:21
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	208	101
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1095	1095
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	



## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	418	818	358
2	405	793	347
3	397	777	340
4	372	728	319
5	330	646	283
6	326	638	279
7	322	630	276
8	293	573	251
9	288	564	247
10	284	556	243
11	247	483	211
12	230	450	197
13	226	442	193
14	167	327	143
15	167	327	143
16	117	229	100
17	67	131	57
18	67	131	57
19	38	74	32
20	21	41	18
21	13	25	11
22	4	8	4
23	4	8	4
24	4	8	4

### Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1236	1	358	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1198	1	347	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1174	1	340	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1100	1	319	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	976	1	283	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	964	1	279	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	952	1	276	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	866	1	251	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	852	1	247	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	840	1	243	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	730	1	211	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	680	1	197	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	668	1	193	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	494	1	143	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	494	1	143	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	346	1	100	No	No	No	Yes	No	No	No	No	No	No
17	1	198	1	57	No	No	No	No	No	No	No	No	No	No
18	1	198	1	57	No	No	No	No	No	No	No	No	No	No
19	1	112	1	32	No	No	No	No	No	No	No	No	No	No
20	1	62	1	18	No	No	No	No	No	No	No	No	No	No
21	1	38	1	11	No	No	No	No	No	No	No	No	No	No
22	1	12	1	4	No	No	No	No	No	No	No	No	No	No
23	1	12	1	4	No	No	No	No	No	No	No	No	No	No
24	1	12	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	13	4

### Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	32
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	3:11
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	358
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1594
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	469	399	144
2	455	387	140
3	446	379	137
4	417	355	128
5	371	315	114
6	366	311	112
7	361	307	111
8	328	279	101
9	324	275	99
10	319	271	98
11	277	235	85
12	258	219	79
13	253	215	78
14	188	160	58
15	188	160	58
16	131	112	40
17	75	64	23
18	75	64	23
19	42	36	13
20	23	20	7
21	14	12	4
22	5	4	1
23	5	4	1
24	5	4	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	868	1	144	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	842	1	140	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	825	1	137	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
4	1	772	1	128	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
5	1	686	1	114	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	677	1	112	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	668	1	111	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	607	1	101	No	No	No	Yes	No	Yes	Yes	Yes	No	No
9	1	599	1	99	No	No	No	Yes	No	No	Yes	Yes	No	No
10	1	590	1	98	No	No	No	Yes	No	No	Yes	Yes	No	No
11	1	512	1	85	No	No	No	Yes	No	No	No	Yes	No	No
12	1	477	1	79	No	No	No	No	No	No	No	Yes	No	No
13	1	468	1	78	No	No	No	No	No	No	No	Yes	No	No
14	1	348	1	58	No	No	No	No	No	No	No	No	No	No
15	1	348	1	58	No	No	No	No	No	No	No	No	No	No
16	1	243	1	40	No	No	No	No	No	No	No	No	No	No
17	1	139	1	23	No	No	No	No	No	No	No	No	No	No
18	1	139	1	23	No	No	No	No	No	No	No	No	No	No
19	1	78	1	13	No	No	No	No	No	No	No	No	No	No
20	1	43	1	7	No	No	No	No	No	No	No	No	No	No
21	1	26	1	4	No	No	No	No	No	No	No	No	No	No
22	1	9	1	1	No	No	No	No	No	No	No	No	No	No
23	1	9	1	1	No	No	No	No	No	No	No	No	No	No
24	1	9	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	11	4	8	10	13	2	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	48.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	1:55
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	144
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1012
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 265: Adam Court/Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	272	163	121
2	264	158	117
3	258	155	115
4	242	145	108
5	215	129	96
6	212	127	94
7	209	126	93
8	190	114	85
9	188	112	83
10	185	111	82
11	160	96	71
12	150	90	67
13	147	88	65
14	109	65	48
15	109	65	48
16	76	46	34
17	44	26	19
18	44	26	19
19	24	15	11
20	14	8	6
21	8	5	4
22	3	2	1
23	3	2	1
24	3	2	1

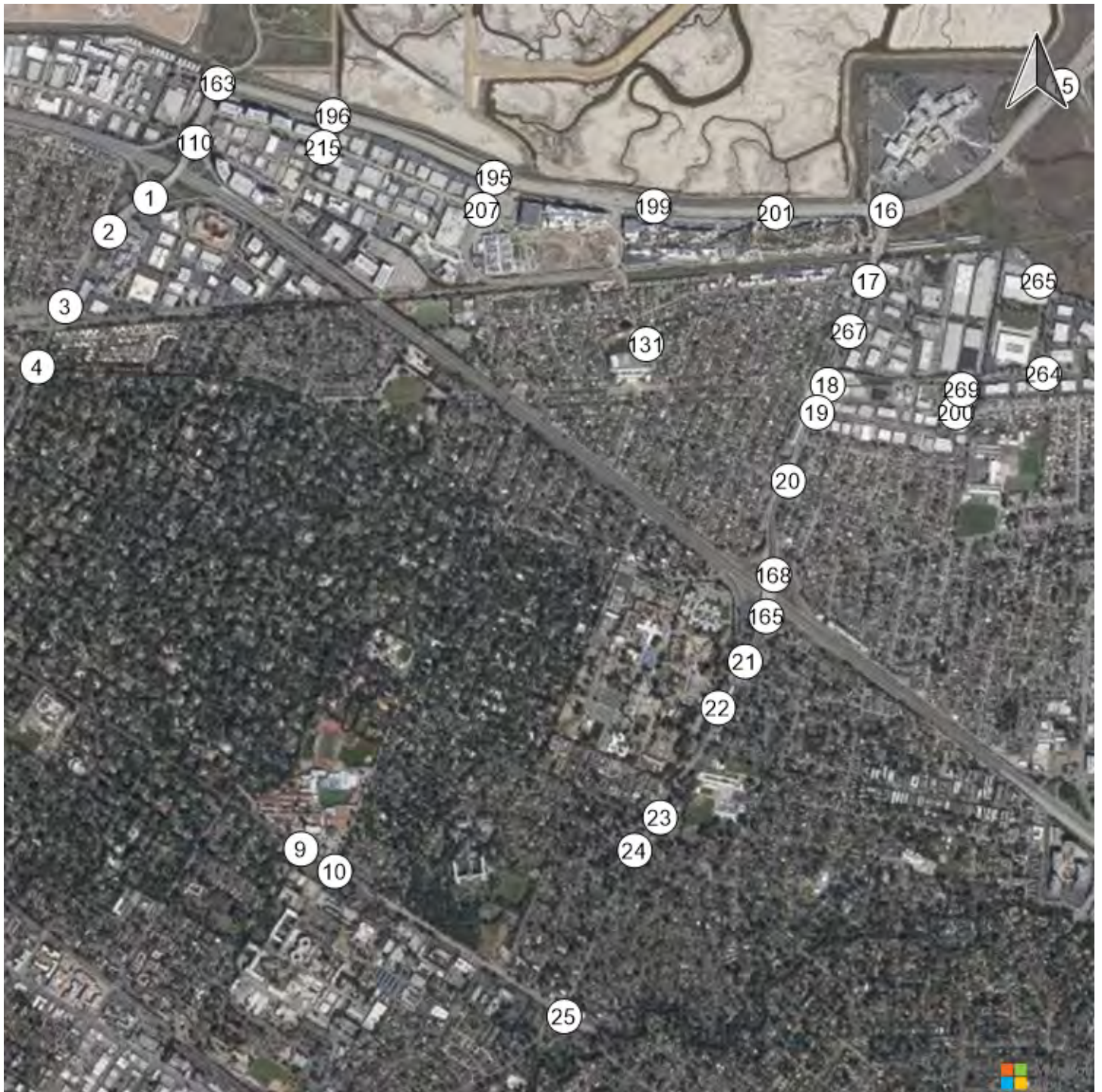
## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	435	1	121	No	Yes	Yes	Yes	No	No	No	Yes	No	No
2	1	422	1	117	No	No	Yes	Yes	No	No	No	Yes	No	No
3	1	413	1	115	No	No	Yes	Yes	No	No	No	No	No	No
4	1	387	1	108	No	No	Yes	Yes	No	No	No	No	No	No
5	1	344	1	96	No	No	No	Yes	No	No	No	No	No	No
6	1	339	1	94	No	No	No	Yes	No	No	No	No	No	No
7	1	335	1	93	No	No	No	Yes	No	No	No	No	No	No
8	1	304	1	85	No	No	No	Yes	No	No	No	No	No	No
9	1	300	1	83	No	No	No	No	No	No	No	No	No	No
10	1	296	1	82	No	No	No	No	No	No	No	No	No	No
11	1	256	1	71	No	No	No	No	No	No	No	No	No	No
12	1	240	1	67	No	No	No	No	No	No	No	No	No	No
13	1	235	1	65	No	No	No	No	No	No	No	No	No	No
14	1	174	1	48	No	No	No	No	No	No	No	No	No	No
15	1	174	1	48	No	No	No	No	No	No	No	No	No	No
16	1	122	1	34	No	No	No	No	No	No	No	No	No	No
17	1	70	1	19	No	No	No	No	No	No	No	No	No	No
18	1	70	1	19	No	No	No	No	No	No	No	No	No	No
19	1	39	1	11	No	No	No	No	No	No	No	No	No	No
20	1	22	1	6	No	No	No	No	No	No	No	No	No	No
21	1	13	1	4	No	No	No	No	No	No	No	No	No	No
22	1	5	1	1	No	No	No	No	No	No	No	No	No	No
23	1	5	1	1	No	No	No	No	No	No	No	No	No	No
24	1	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	1	4	8	0	0	0	2	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:23
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	121
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	556
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections

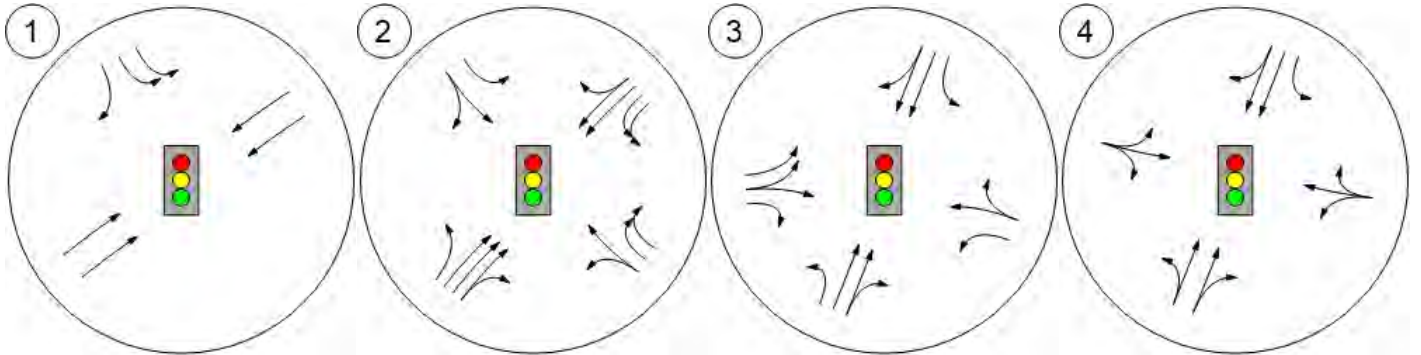


Lane Configuration and Traffic Control

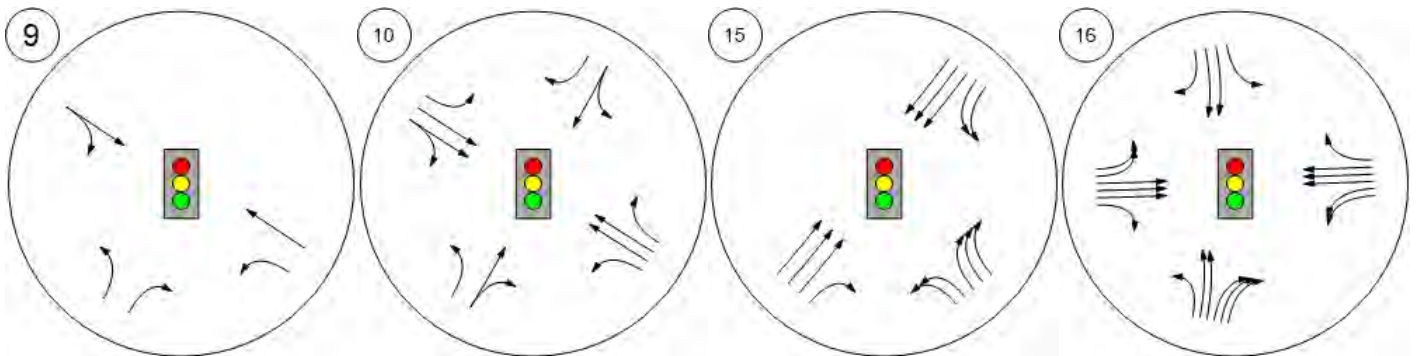


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow

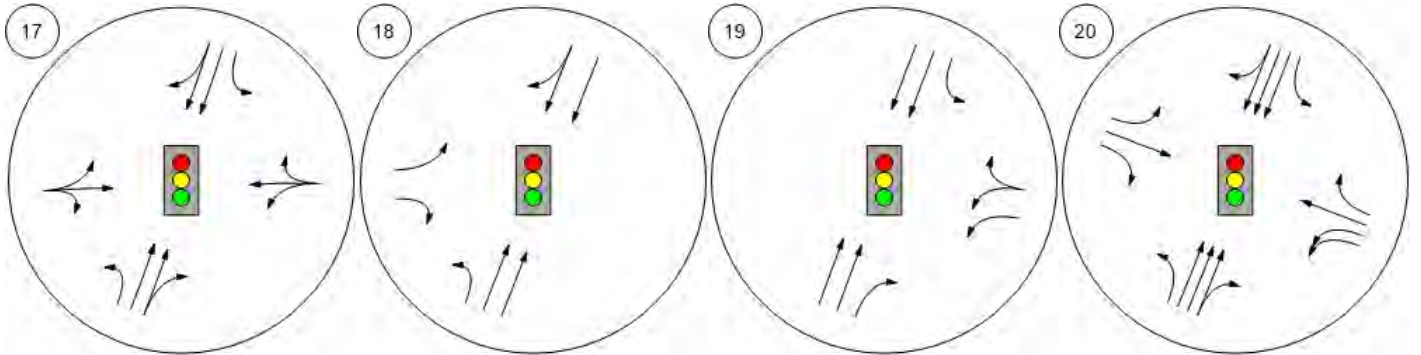




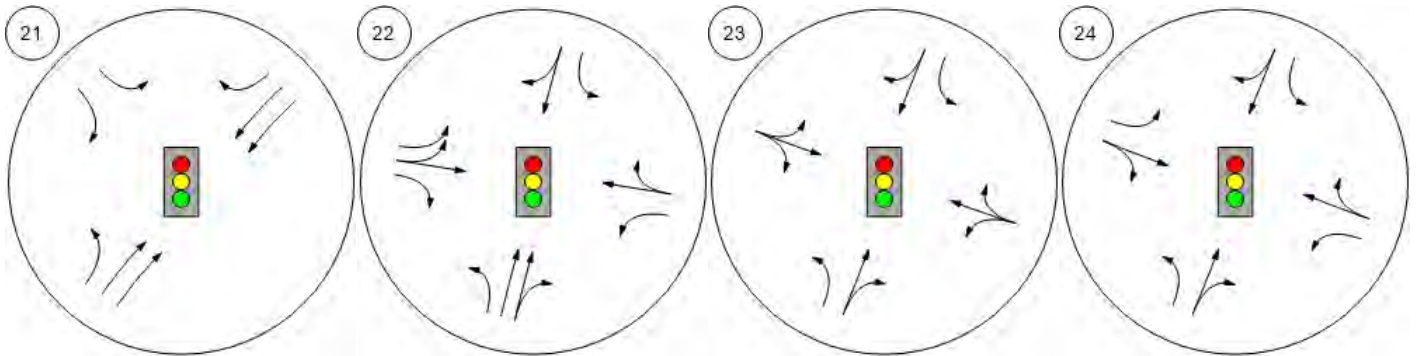
Lane Configuration and Traffic Control



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



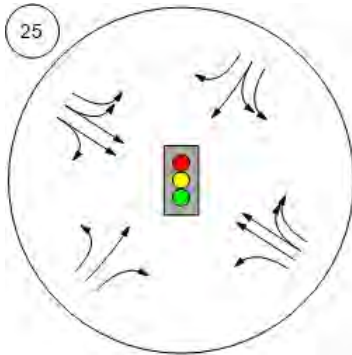
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



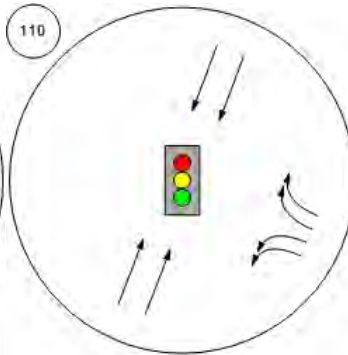
Lane Configuration and Traffic Control



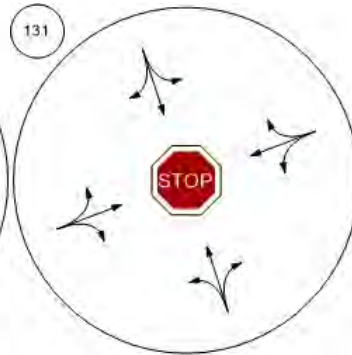
Middlefield Rd-Willow Rd



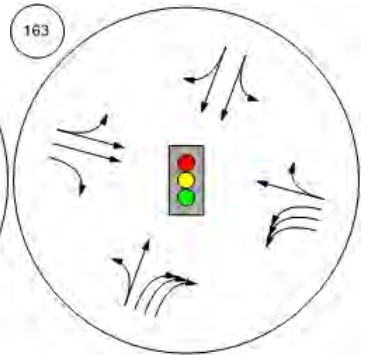
Marsh Road and US 101 NB



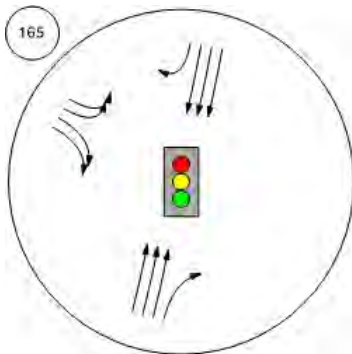
Chilco Street/Hamilton Avenue



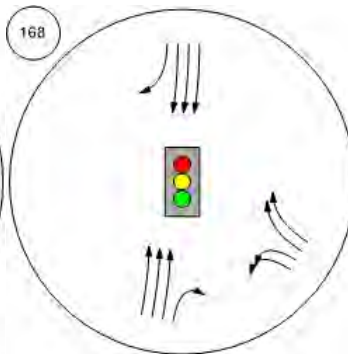
Bayfront Expy/Marsh Rd



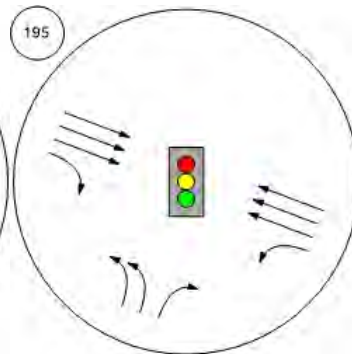
Willow Rd/US-101 SB Ramps



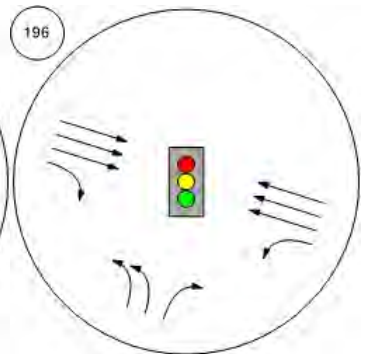
Willow Rd/US-101 NB Ramp



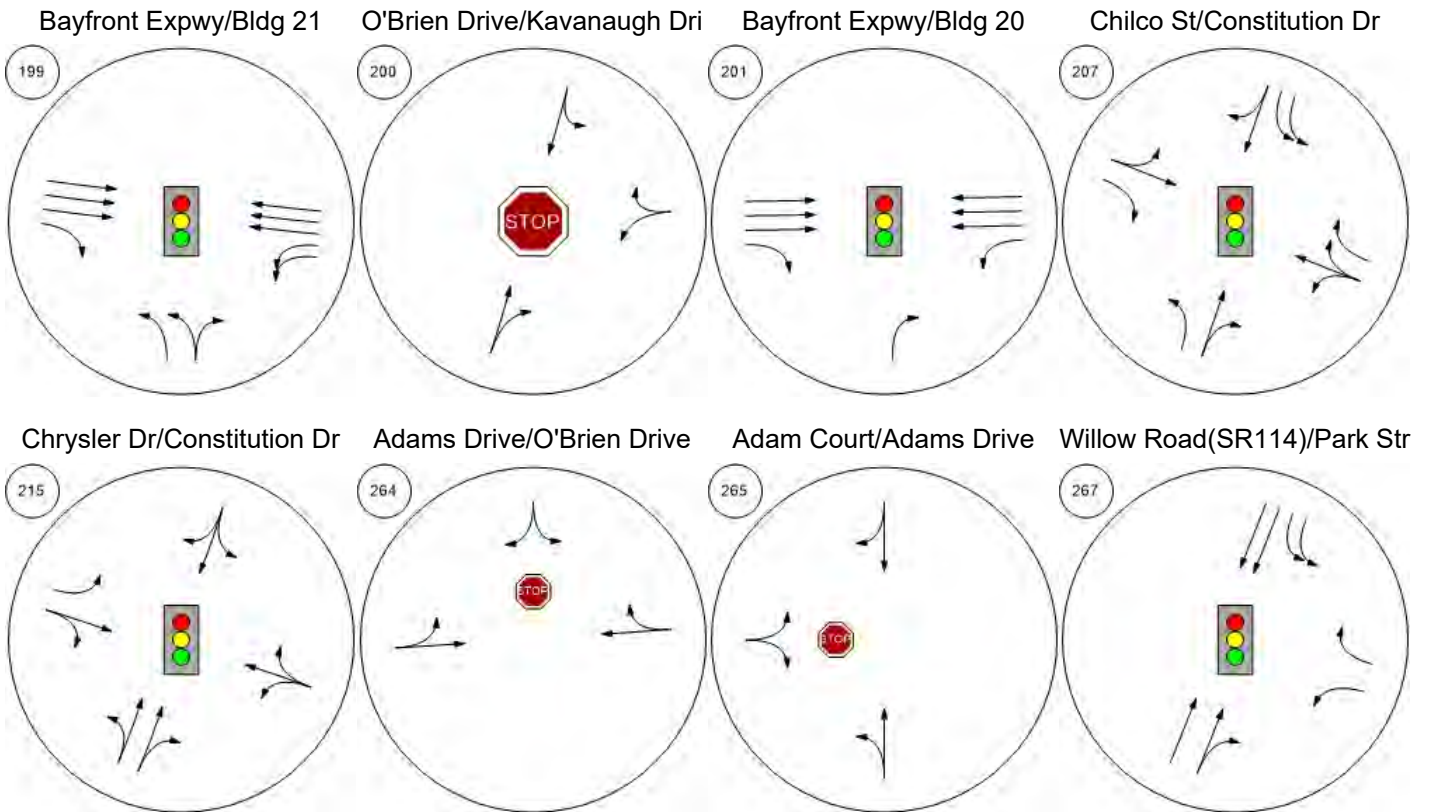
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



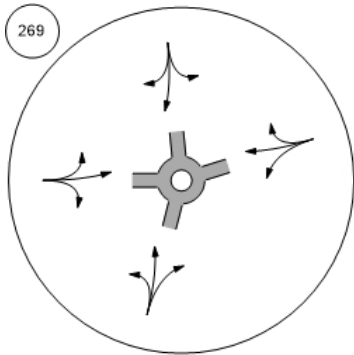
Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



O'Brien Drive/Loop Road

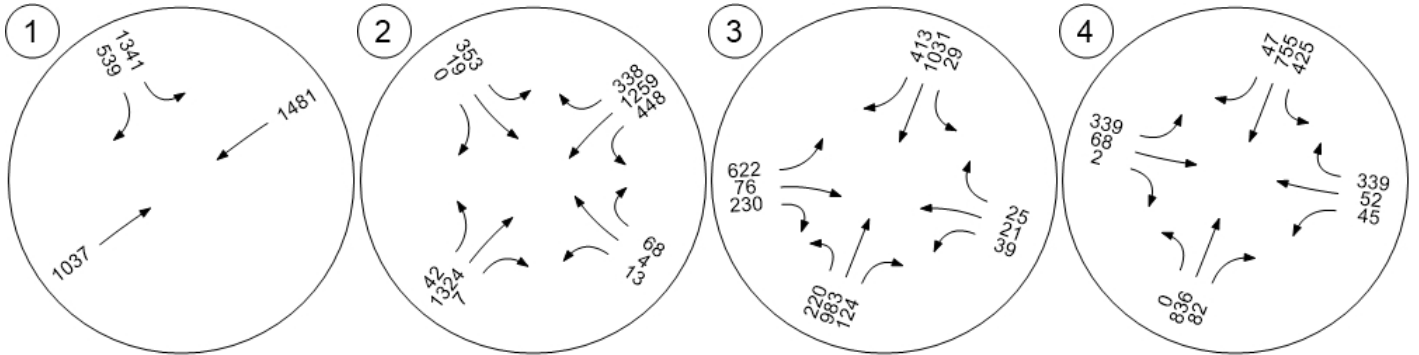


Traffic Volume - Base Volume

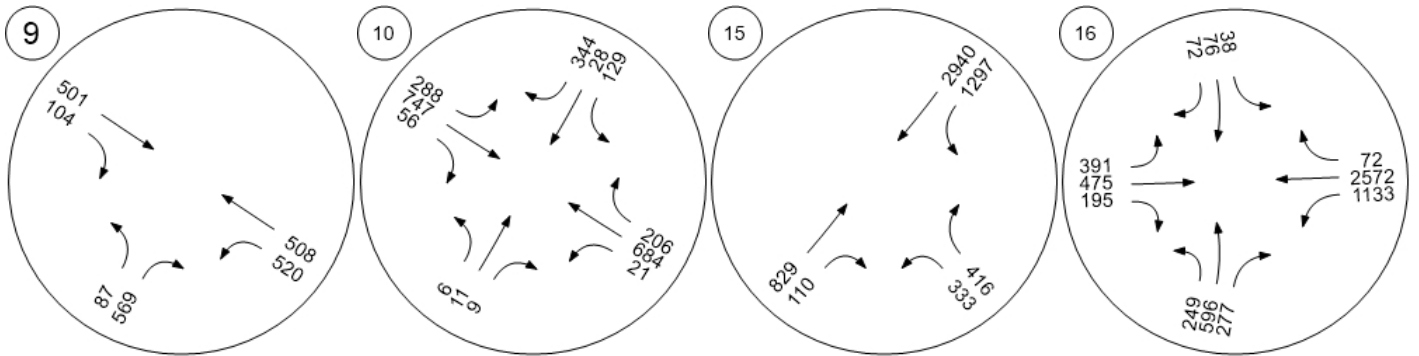


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



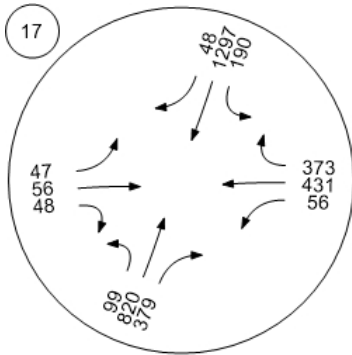
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



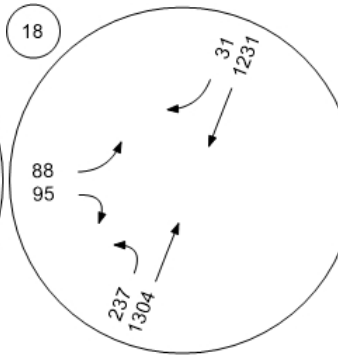
Traffic Volume - Base Volume



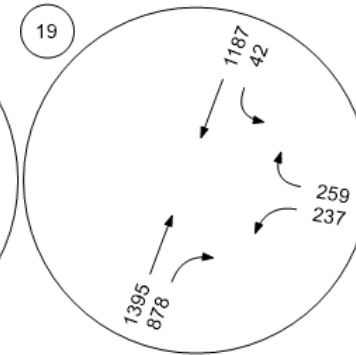
Willow Rd (SR 114)/Hamilton



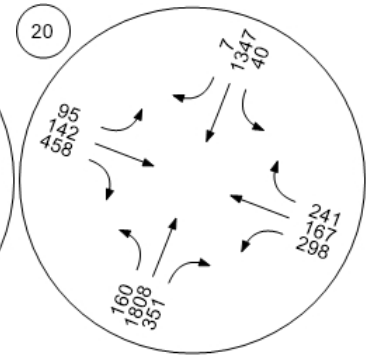
Willow Rd (SR 114)/Ivy Dr



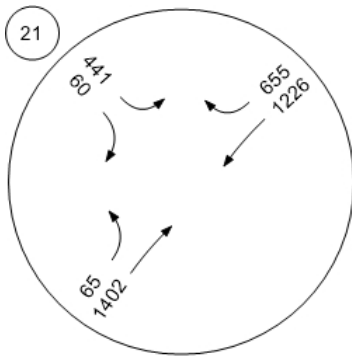
Willow Rd (SR 114)/O'Brien



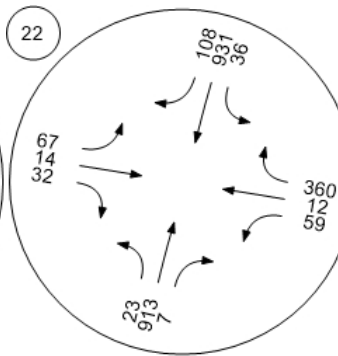
Willow Rd (SR 114)/Newbrid



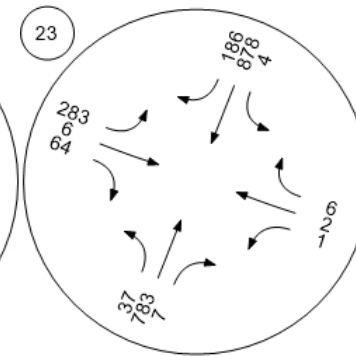
Willow Rd/Bay Rd



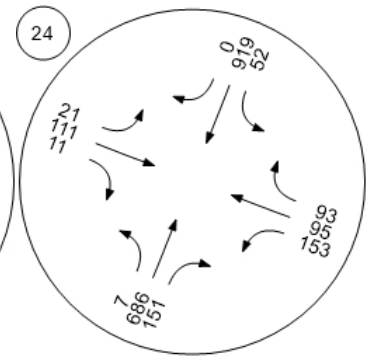
Willow Rd/Durham St-VA Me



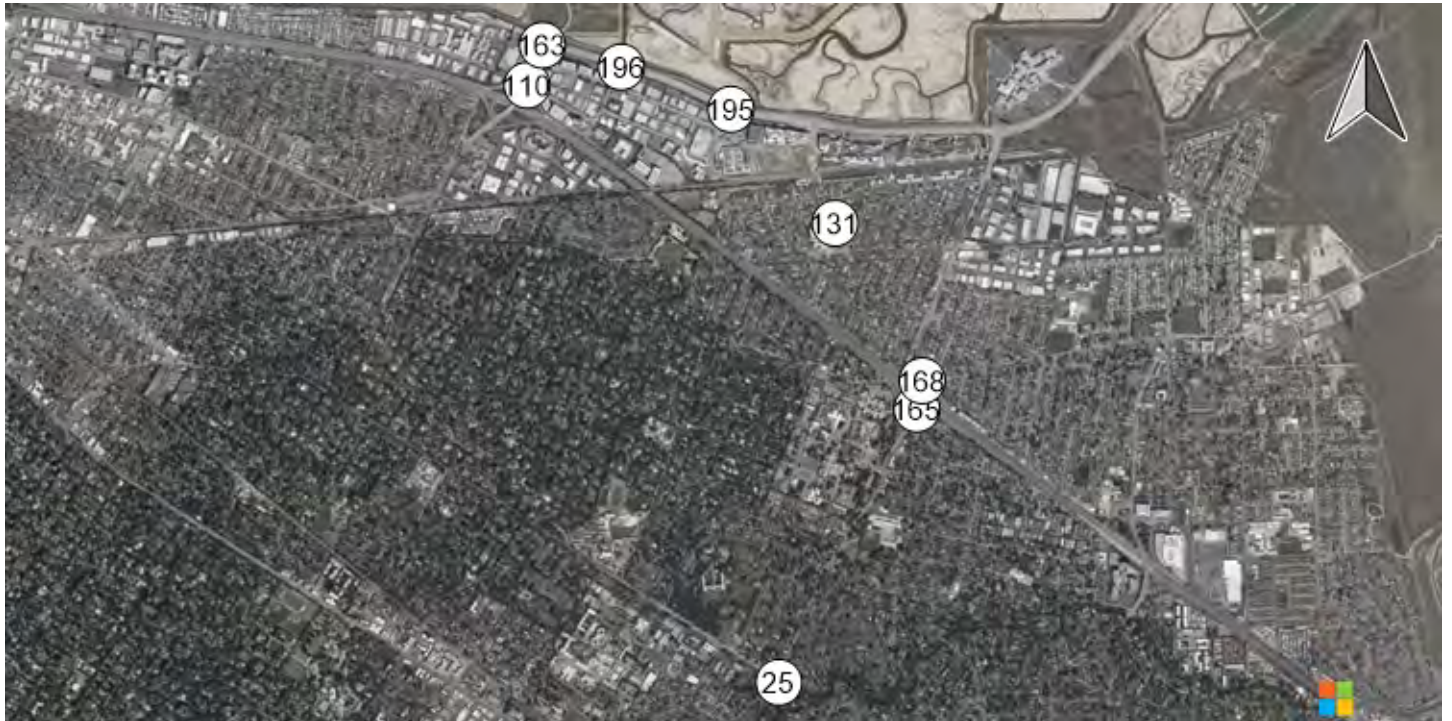
Willow Rd/Coleman Ave



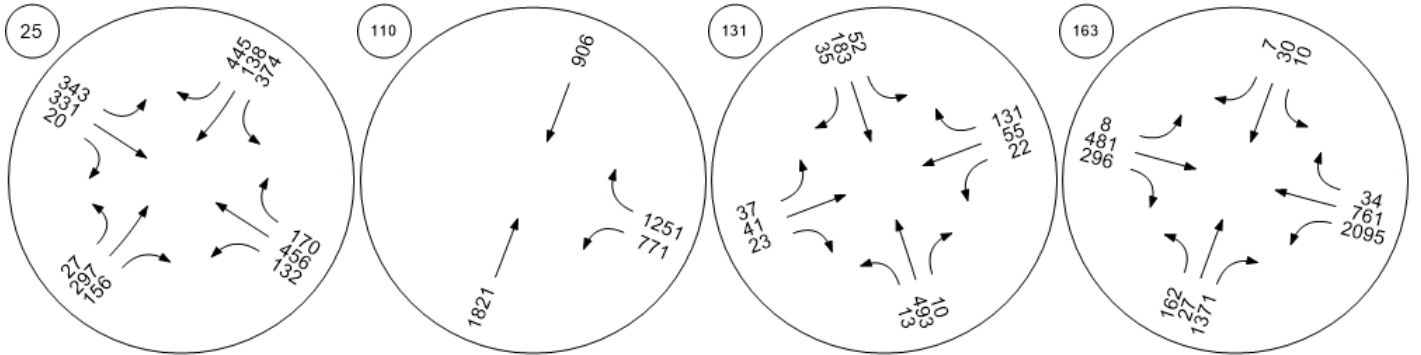
Willow Rd/Gilbert Ave



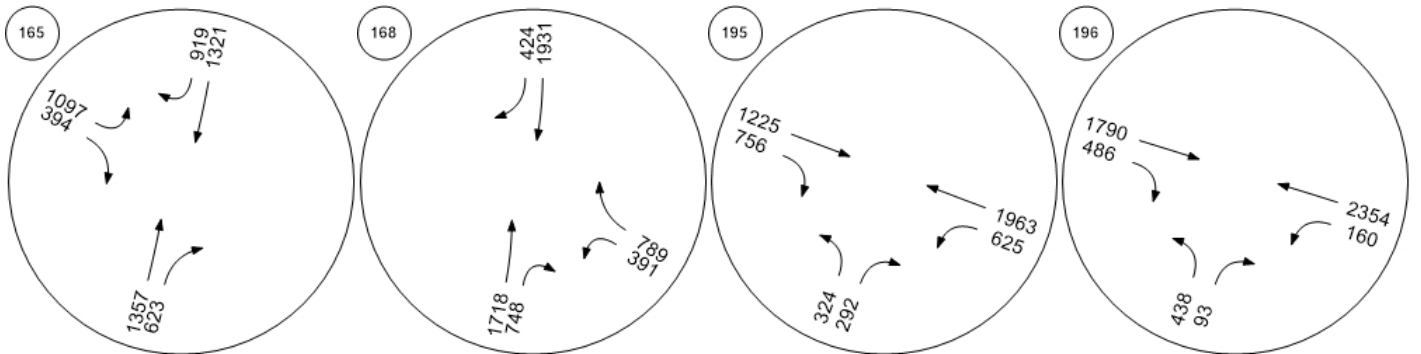
Traffic Volume - Base Volume



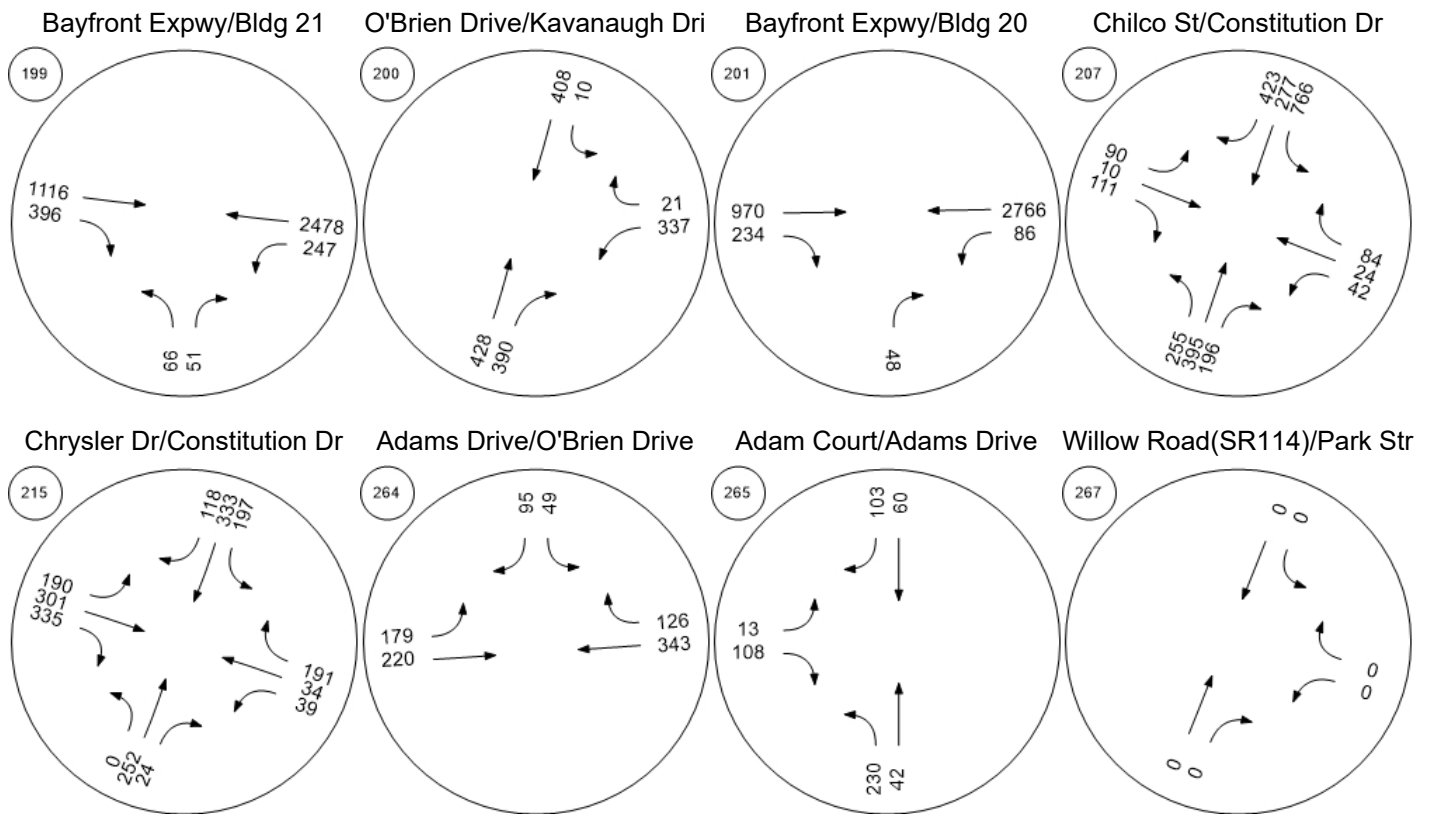
Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



Traffic Volume - Base Volume

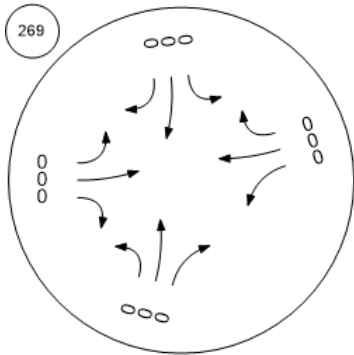




Traffic Volume - Base Volume



O'Brien Drive/Loop Road

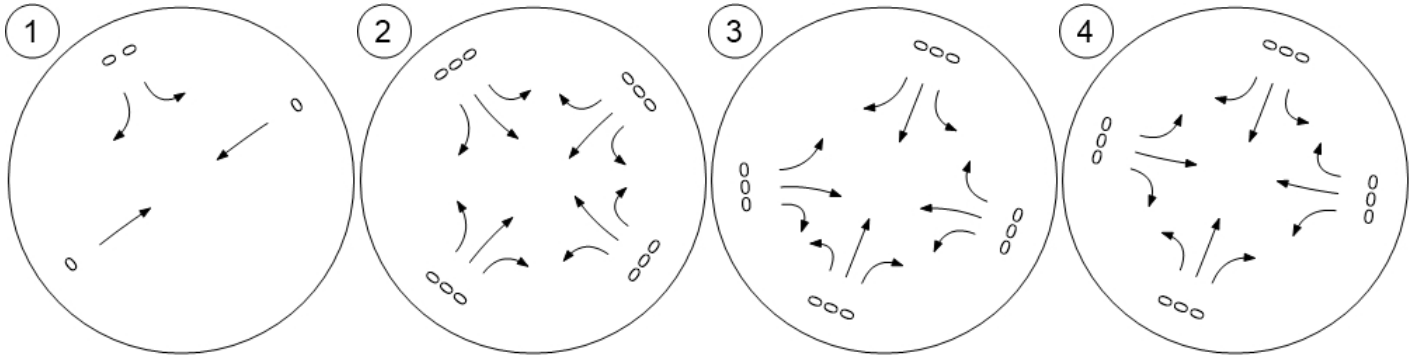


Traffic Volume - In-Process Volume

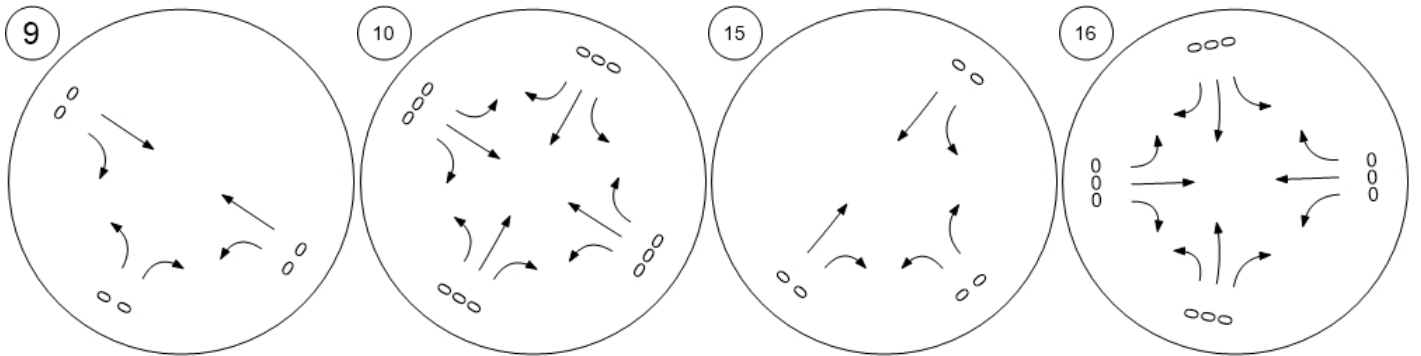


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



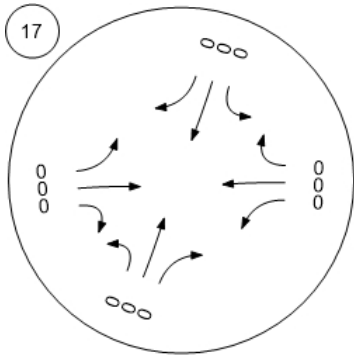
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



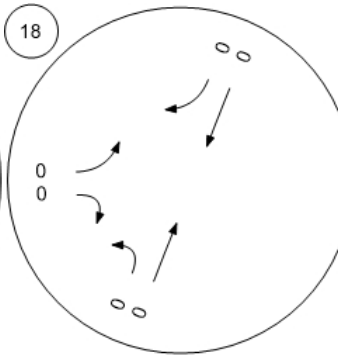
Traffic Volume - In-Process Volume



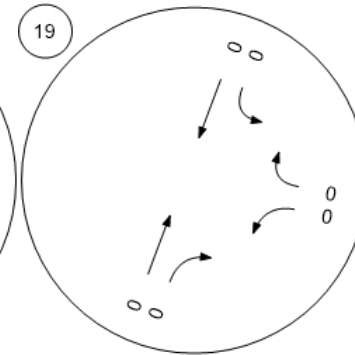
Willow Rd (SR 114)/Hamilton



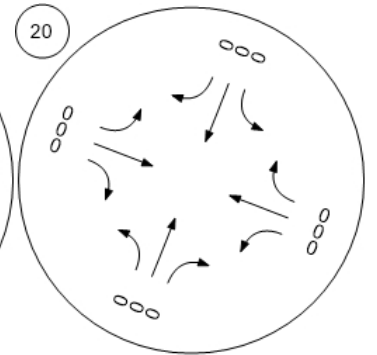
Willow Rd (SR 114)/Ivy Dr



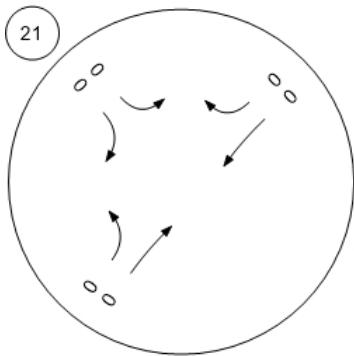
Willow Rd (SR 114)/O'Brien



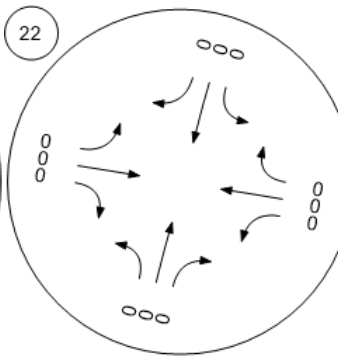
Willow Rd (SR 114)/Newbrid



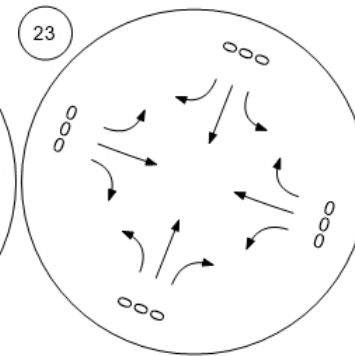
Willow Rd/Bay Rd



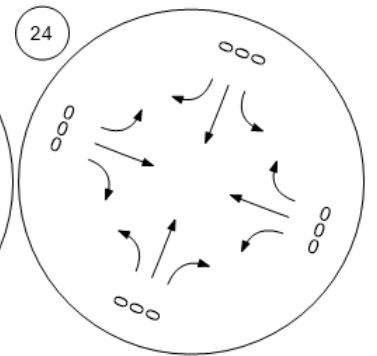
Willow Rd/Durham St-VA Me



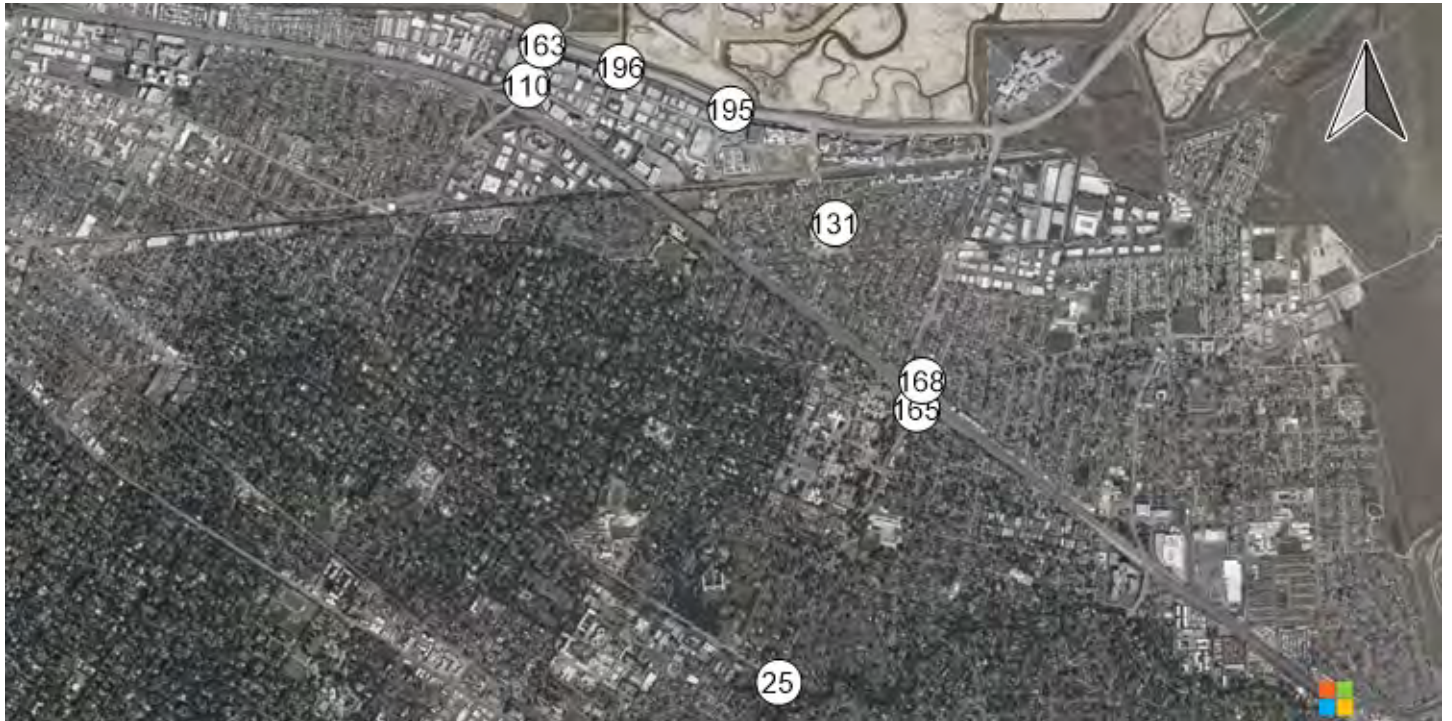
Willow Rd/Coleman Ave



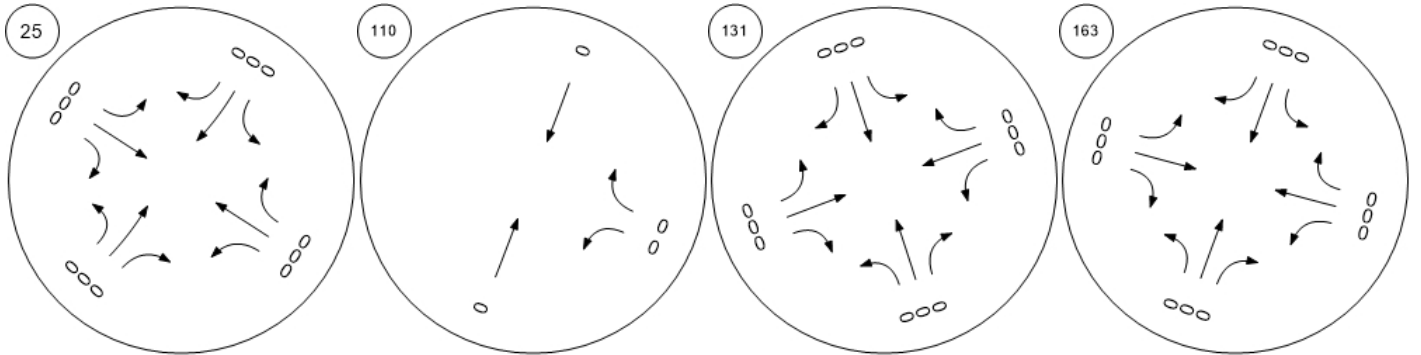
Willow Rd/Gilbert Ave



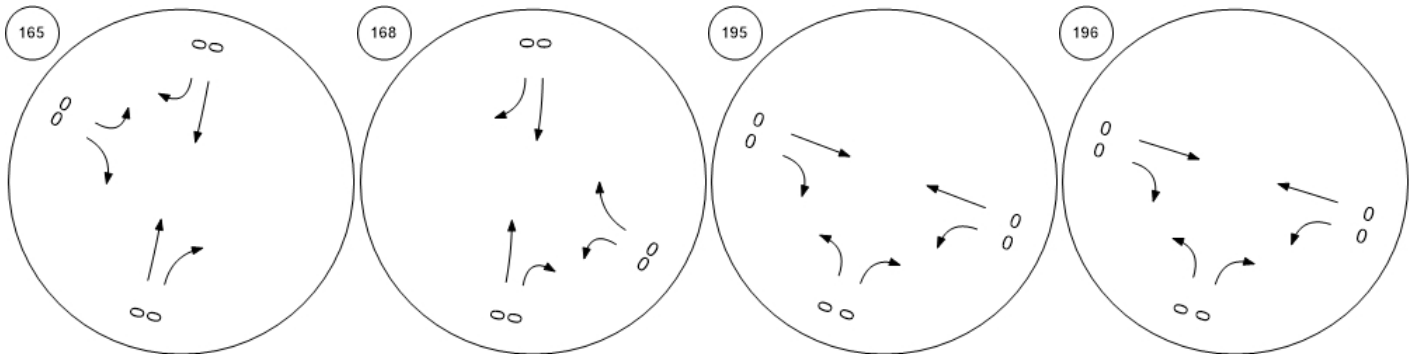
Traffic Volume - In-Process Volume



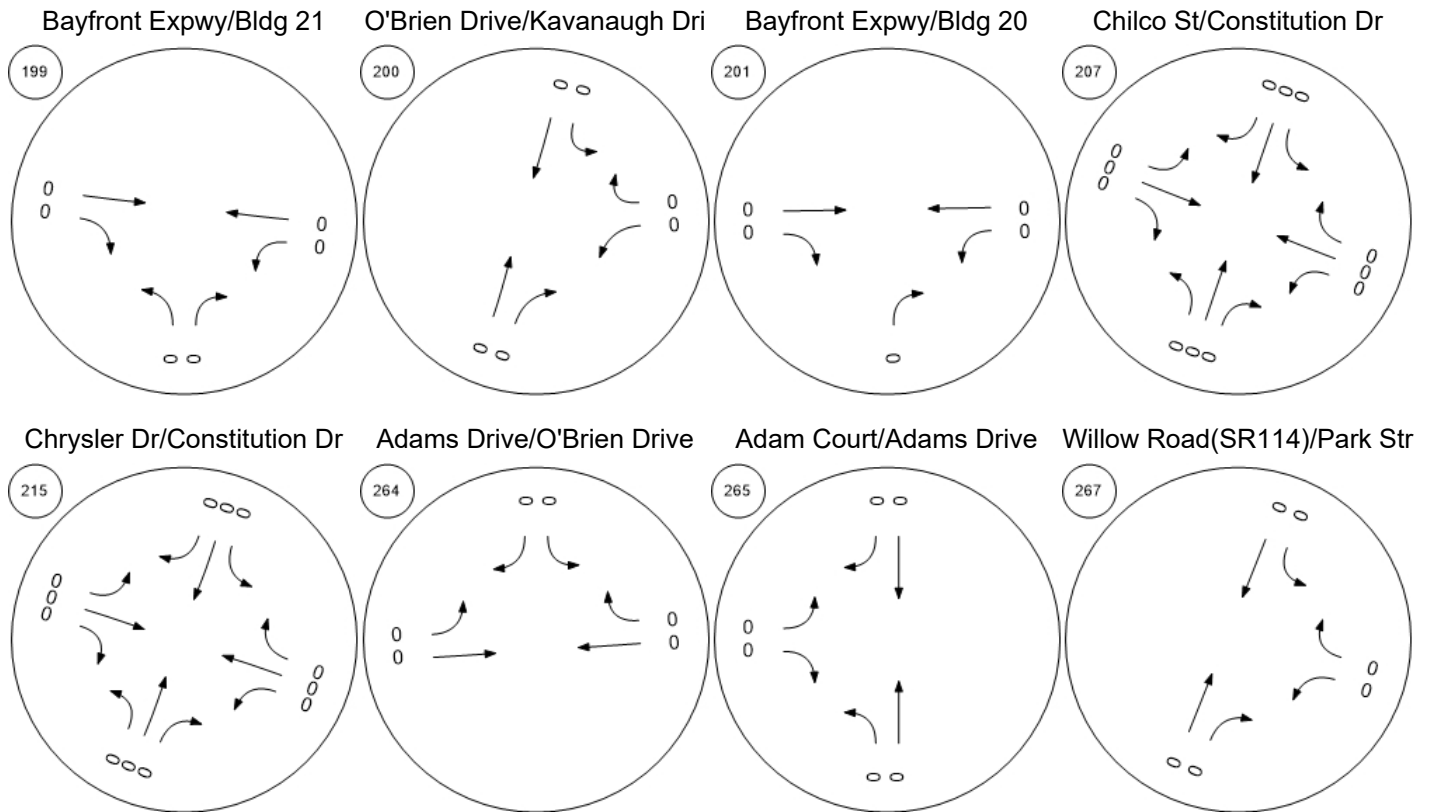
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



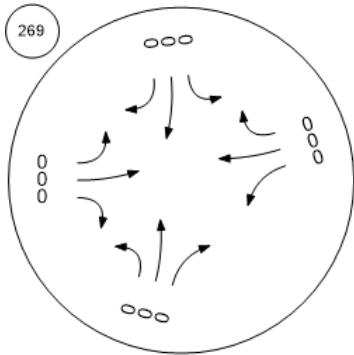
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

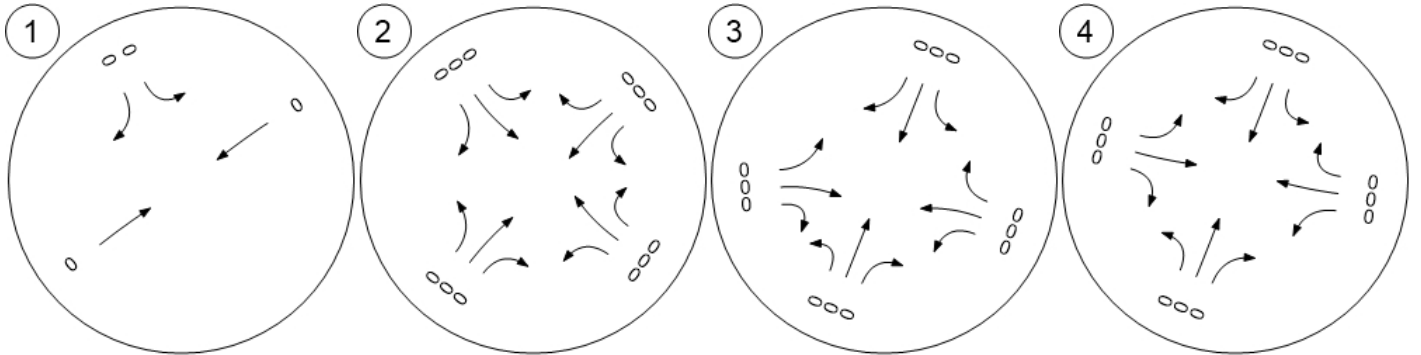


Traffic Volume - Net New Site Trips

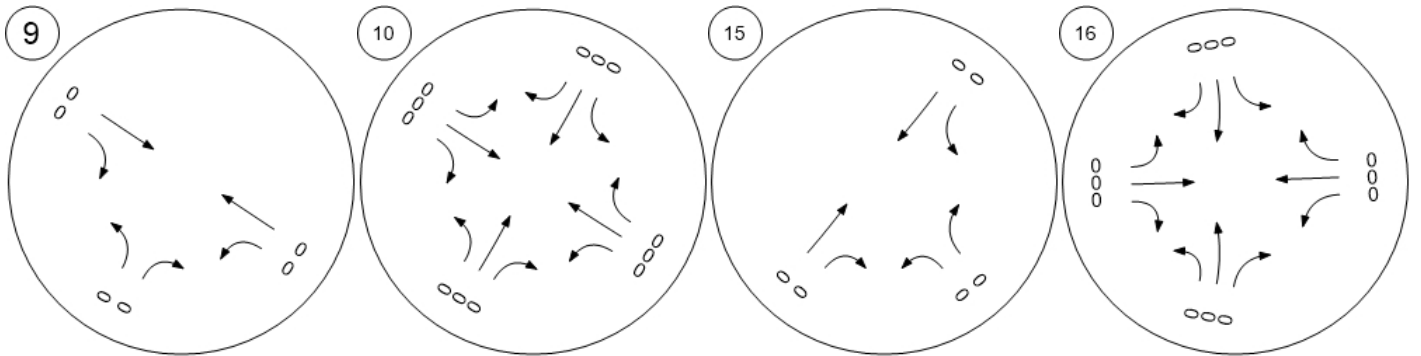


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



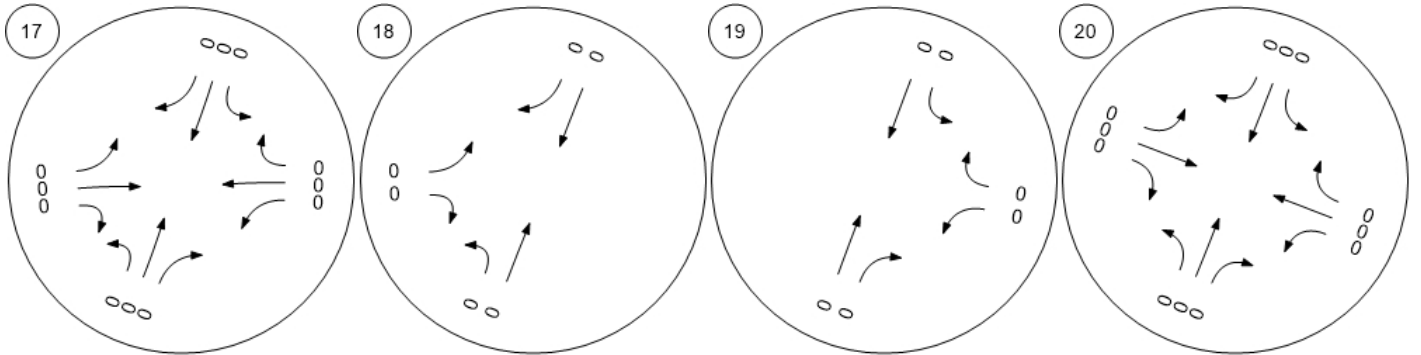
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



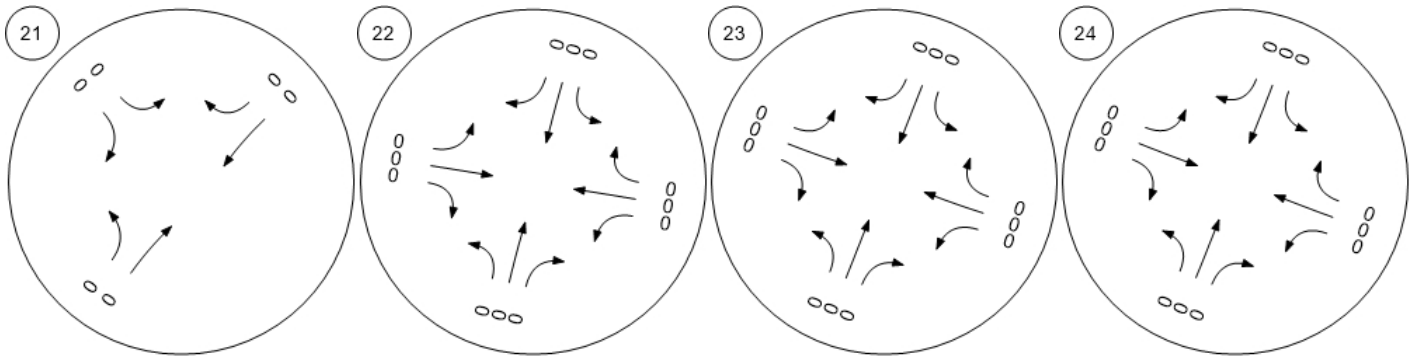
Traffic Volume - Net New Site Trips



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid

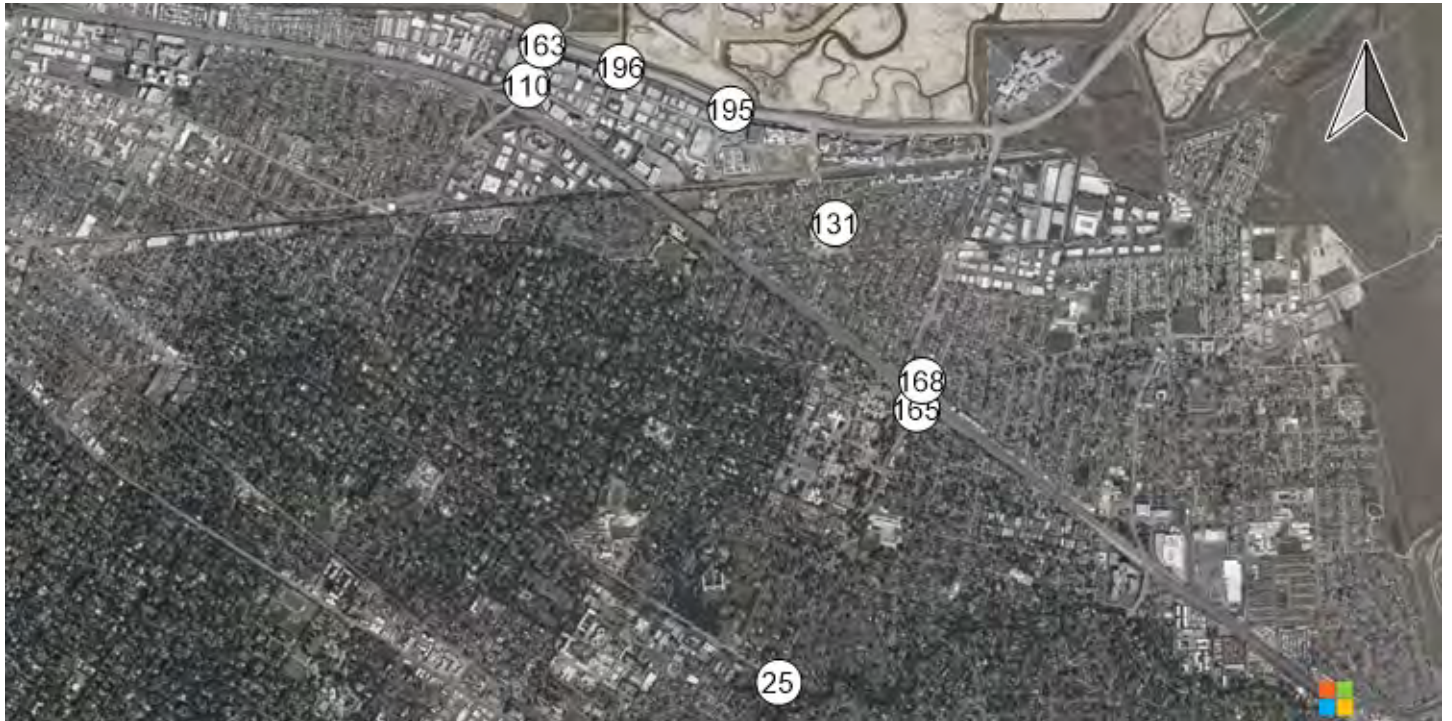


Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave

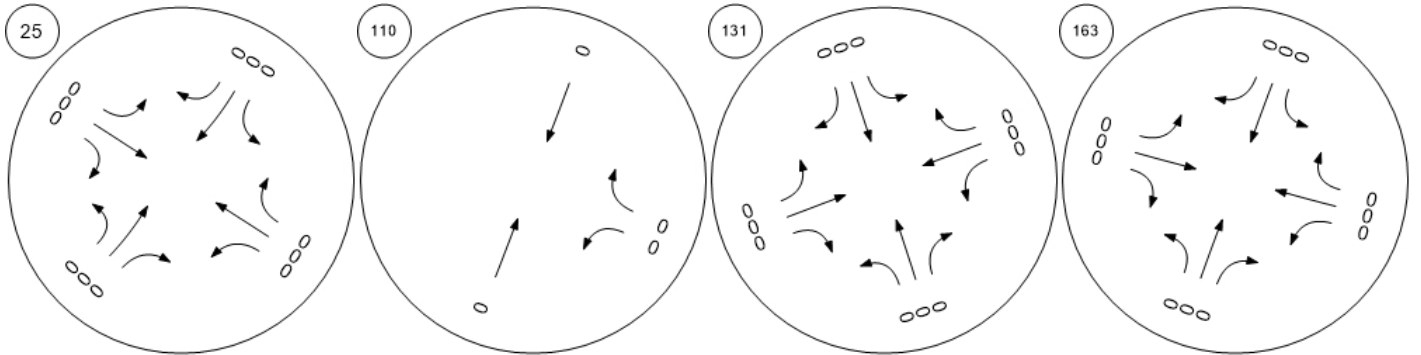




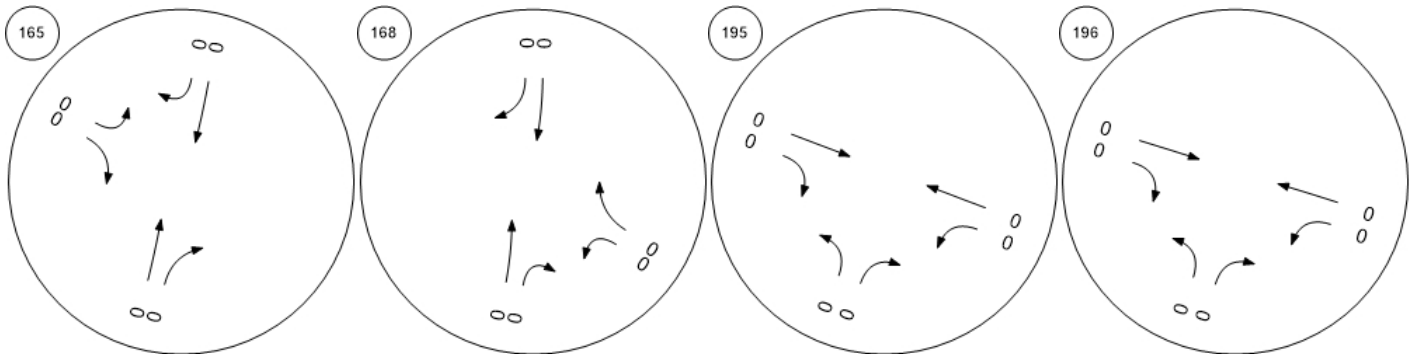
Traffic Volume - Net New Site Trips



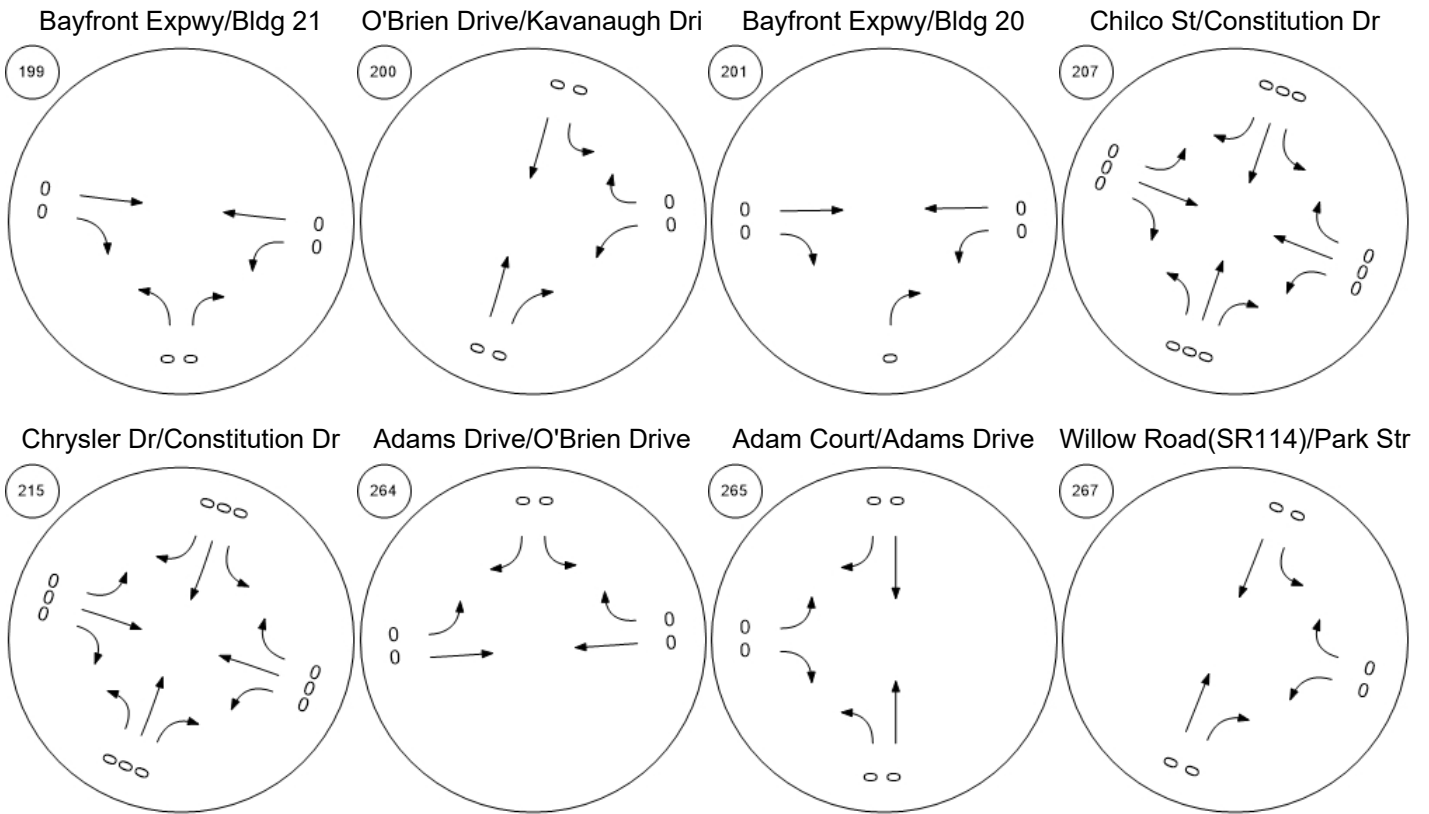
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



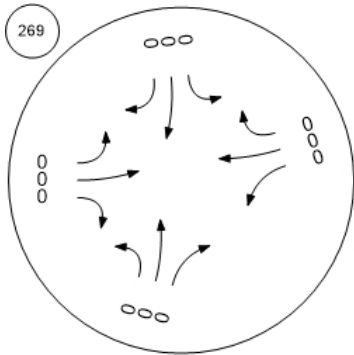
Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road

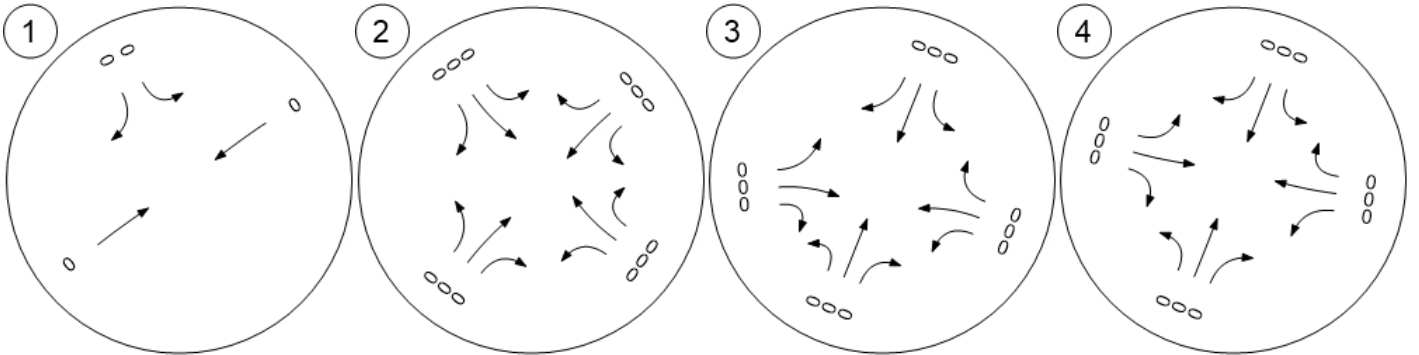


Traffic Volume - Other Volume

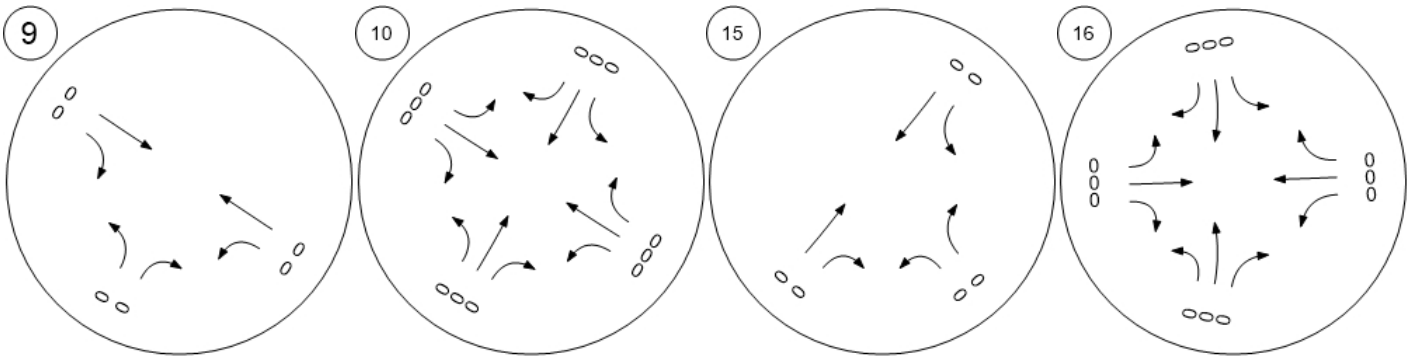


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



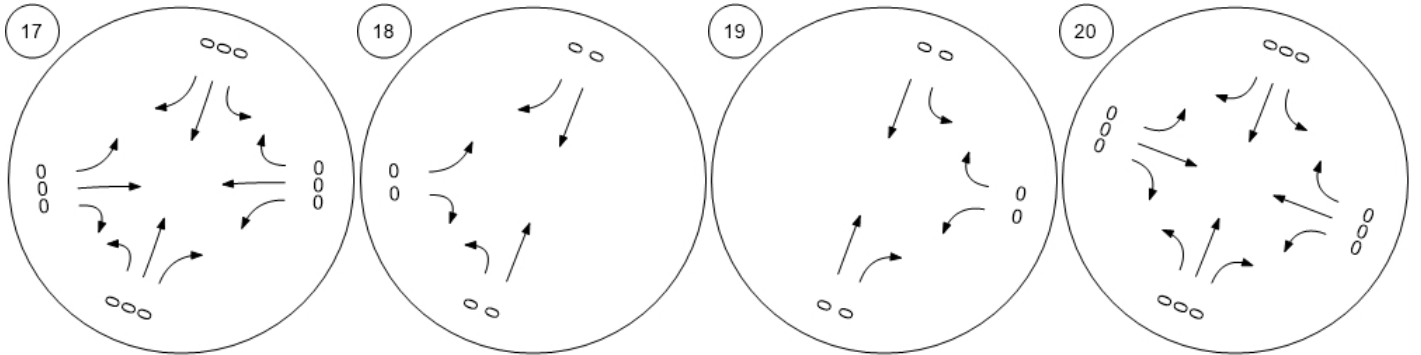
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



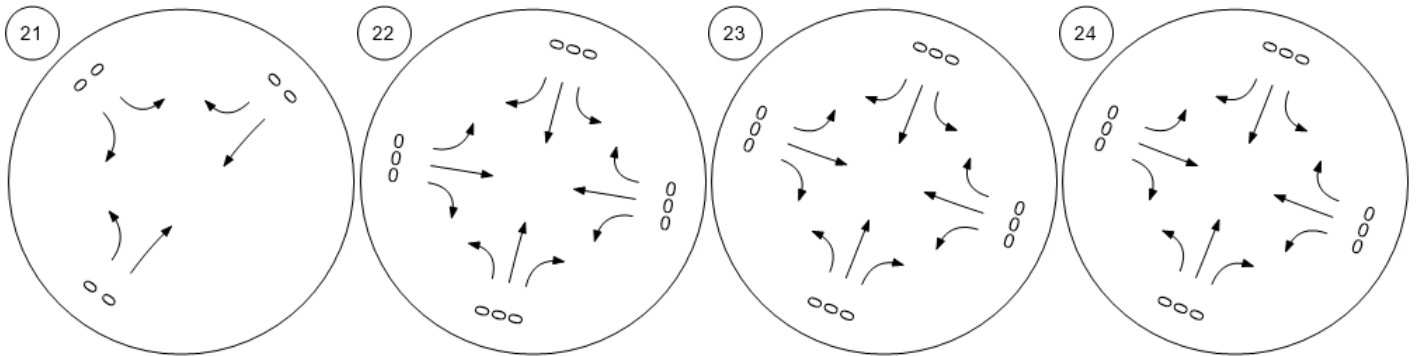
Traffic Volume - Other Volume



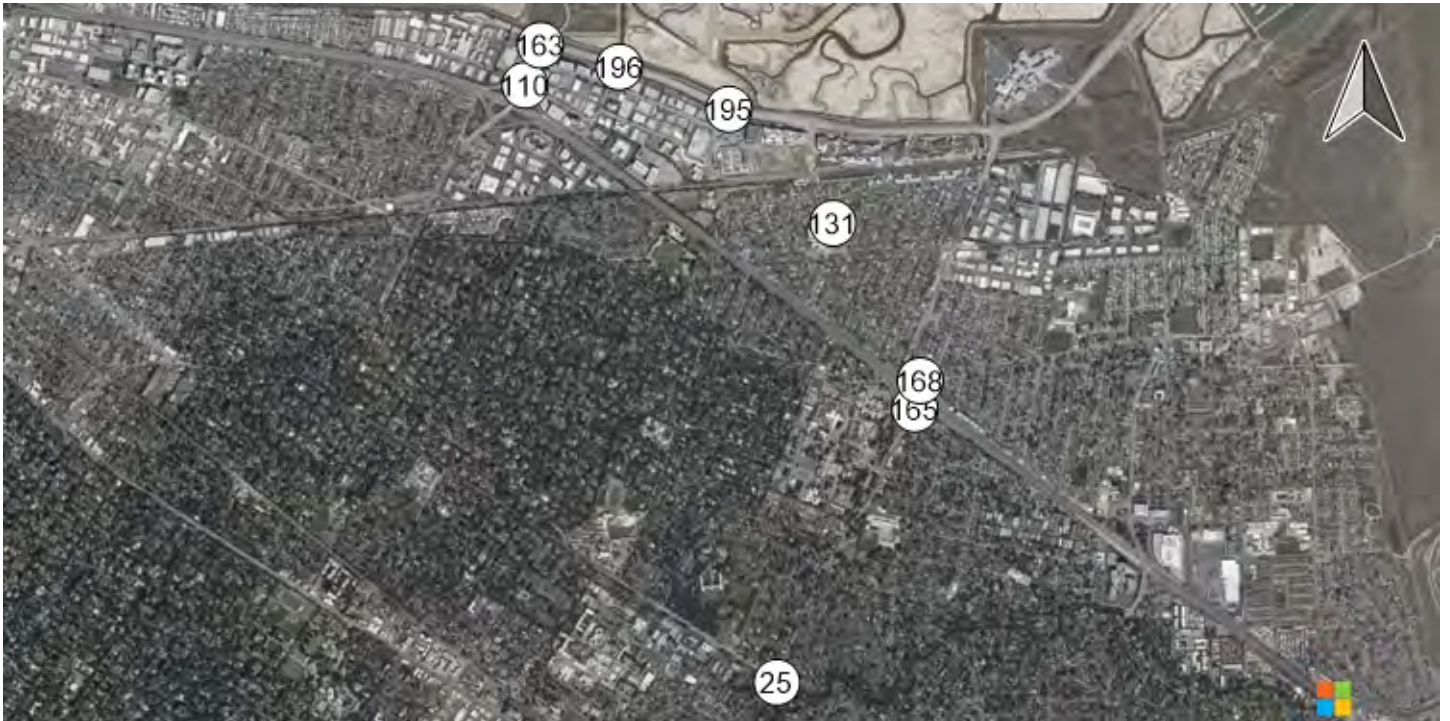
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



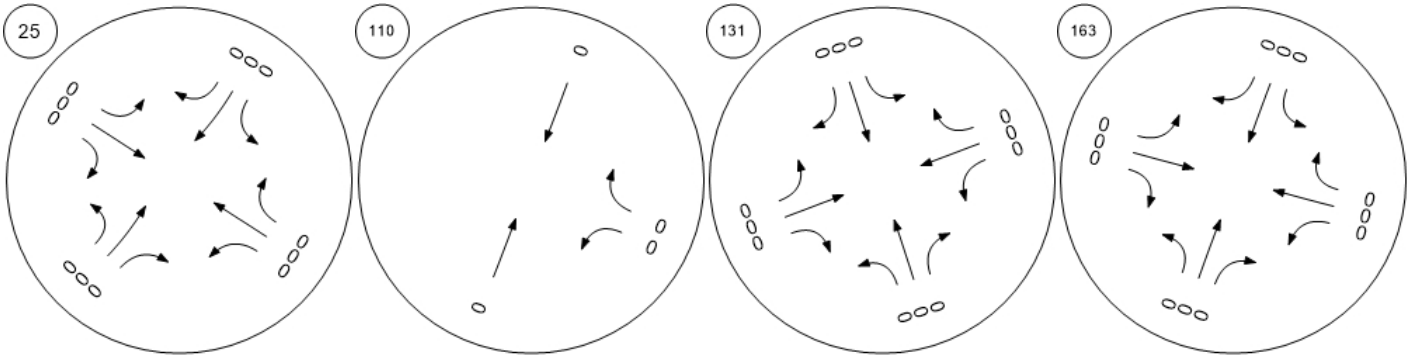
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



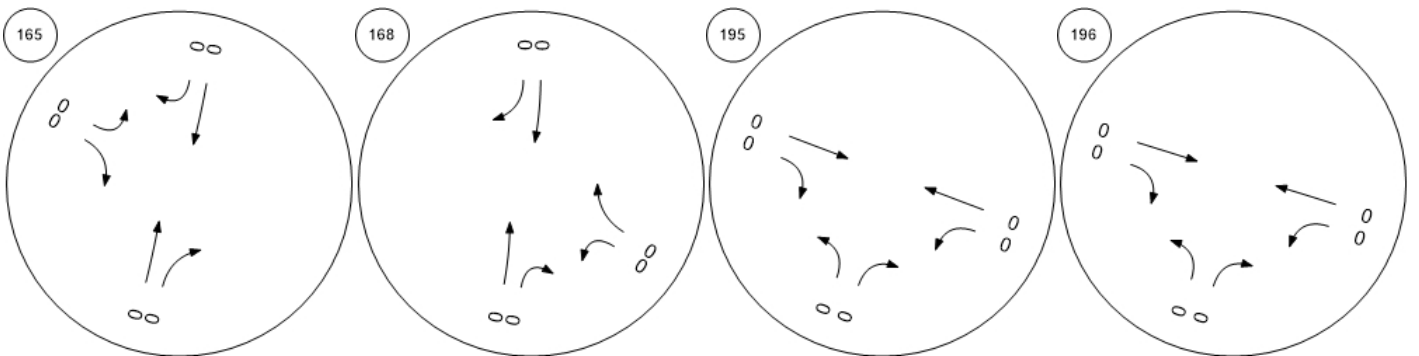
Traffic Volume - Other Volume



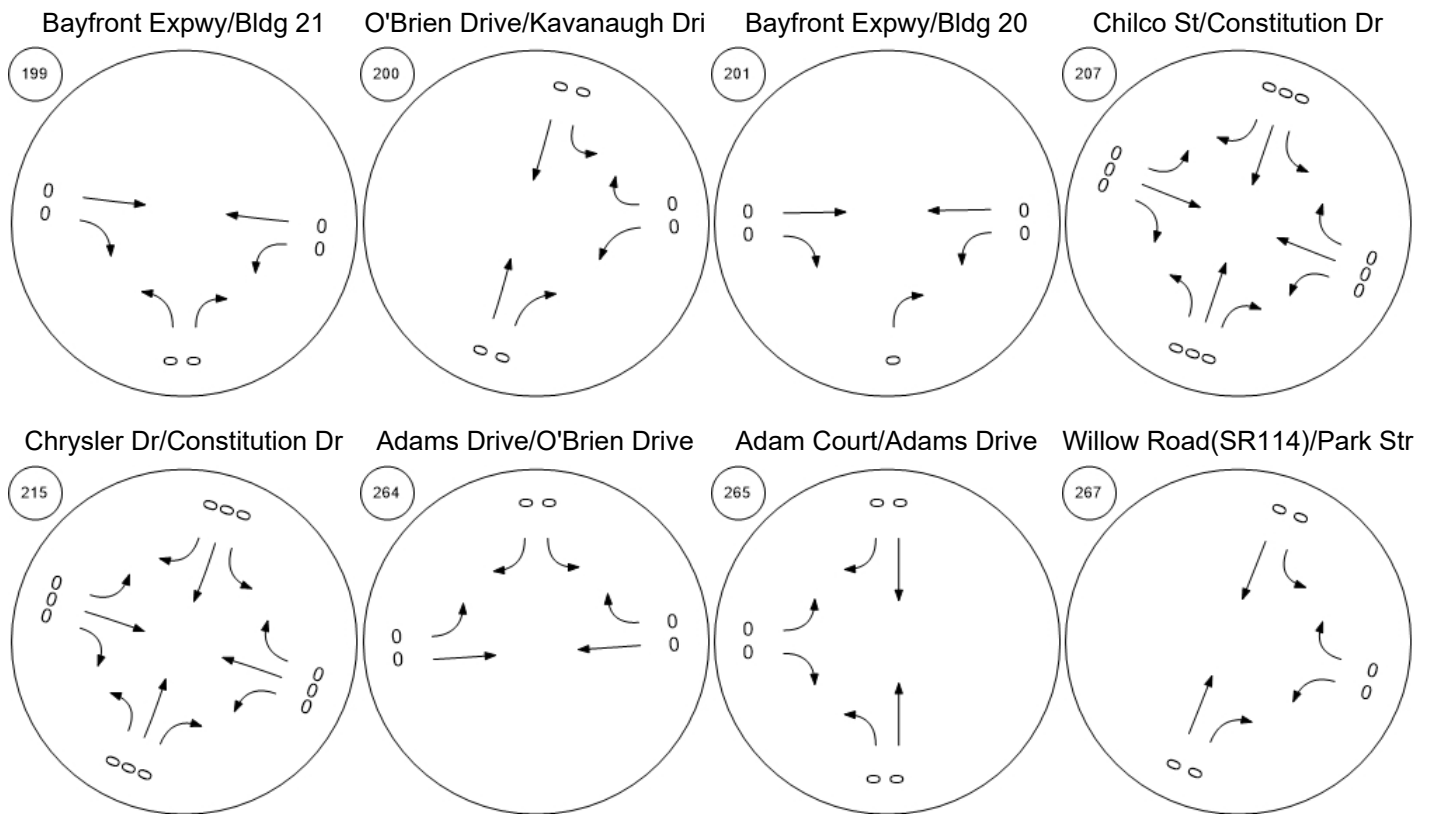
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



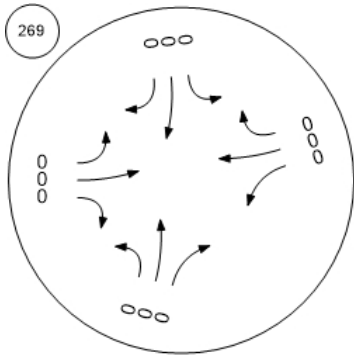
Traffic Volume - Other Volume



Traffic Volume - Other Volume



O'Brien Drive/Loop Road



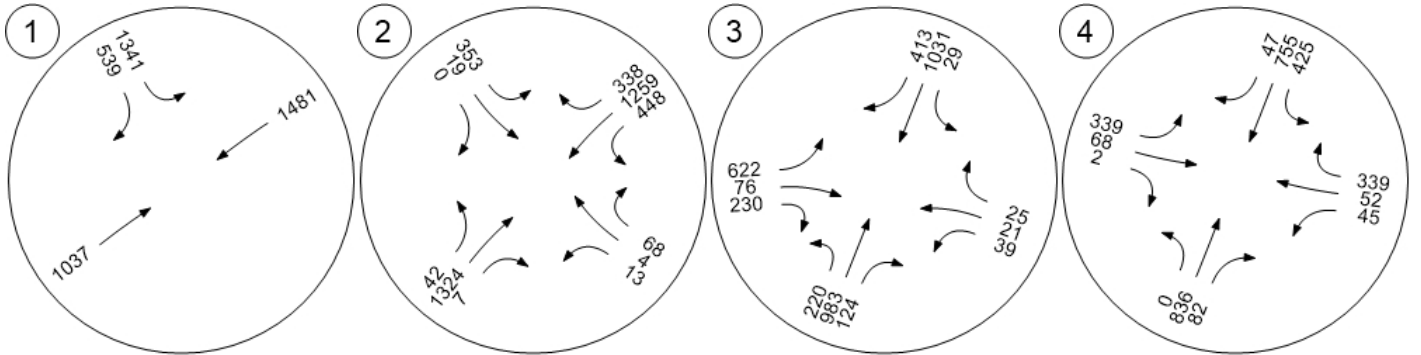


Traffic Volume - Future Total Volume

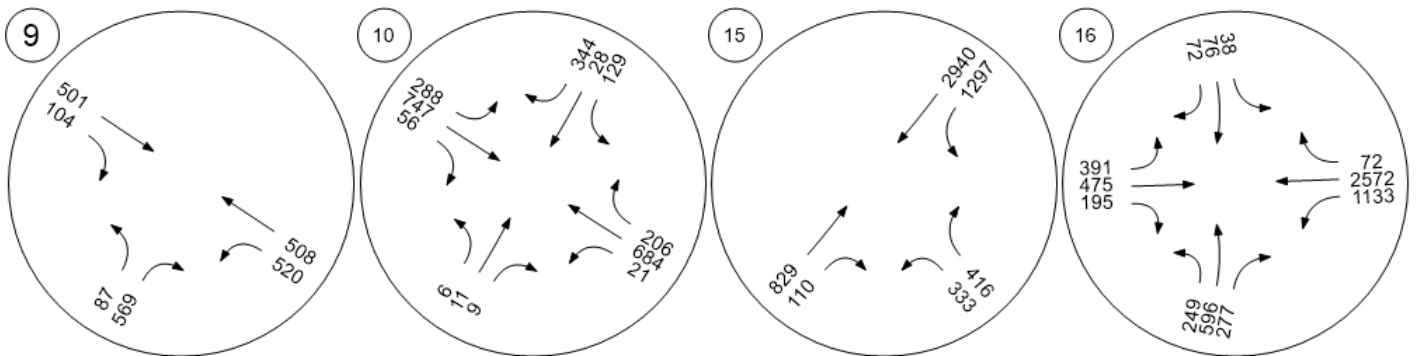


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



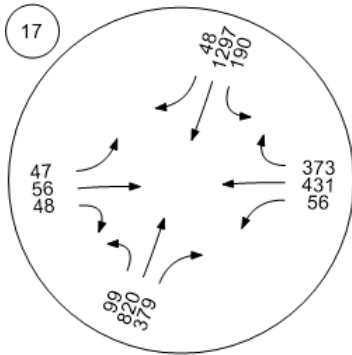
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



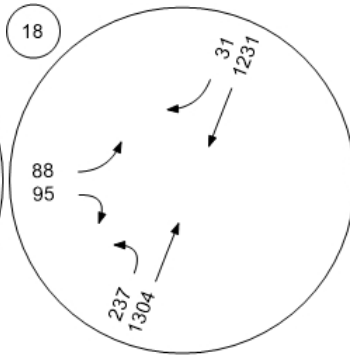
Traffic Volume - Future Total Volume



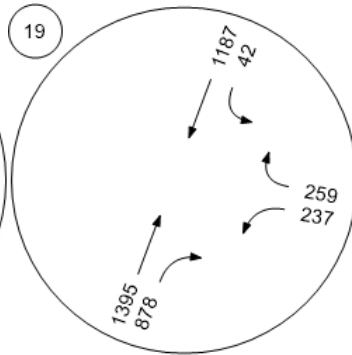
Willow Rd (SR 114)/Hamilton



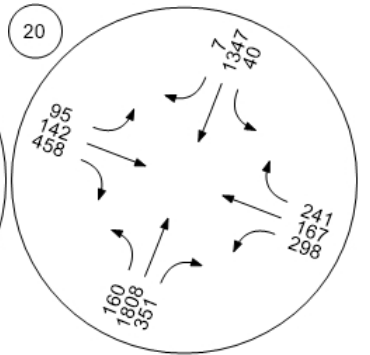
Willow Rd (SR 114)/Ivy Dr



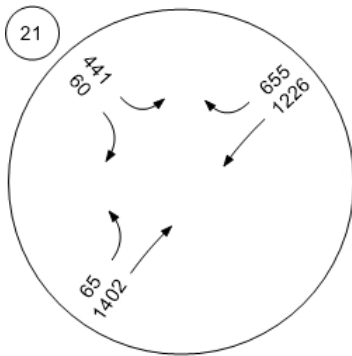
Willow Rd (SR 114)/O'Brien



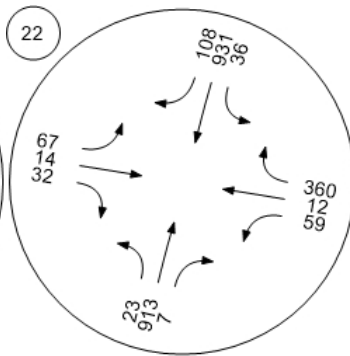
Willow Rd (SR 114)/Newbrid



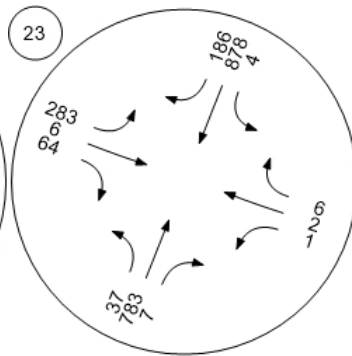
Willow Rd/Bay Rd



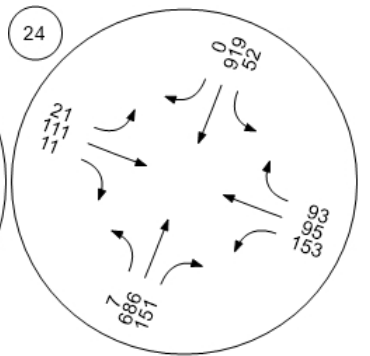
Willow Rd/Durham St-VA Me



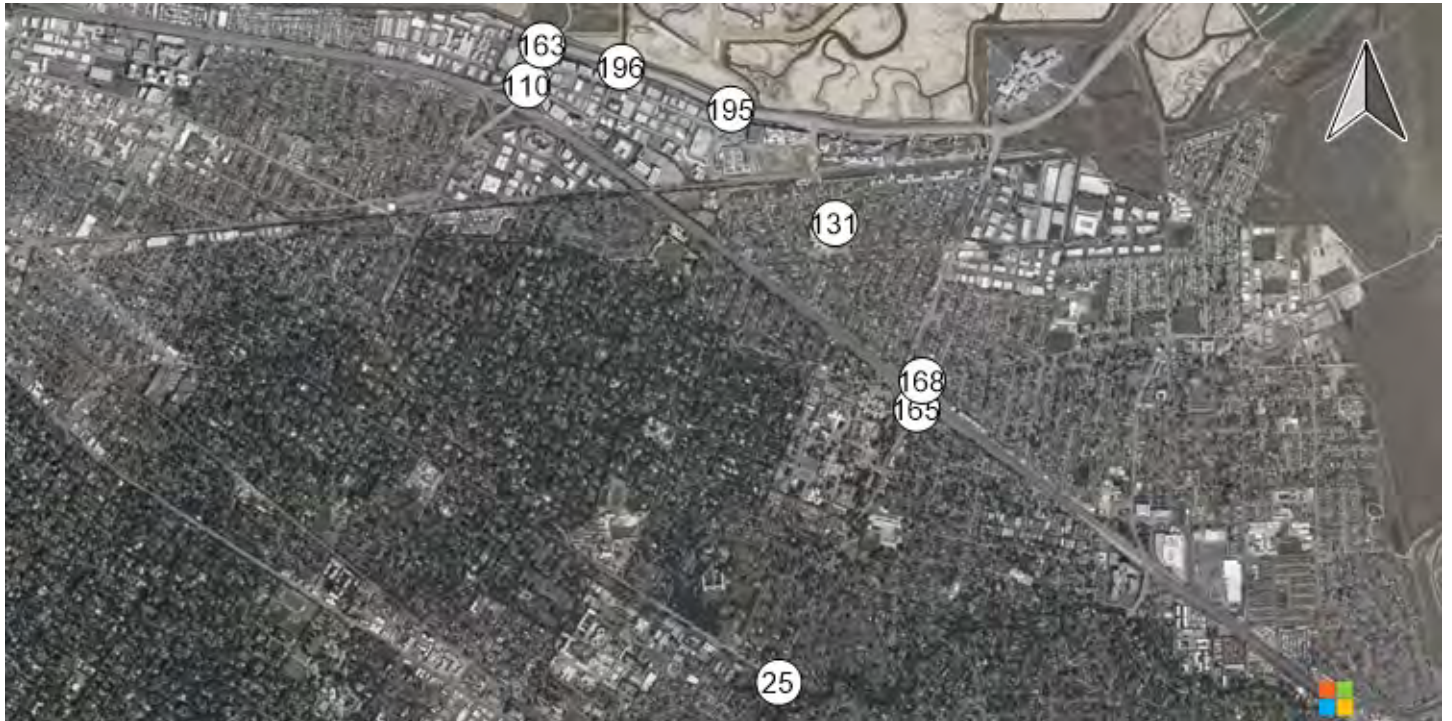
Willow Rd/Coleman Ave



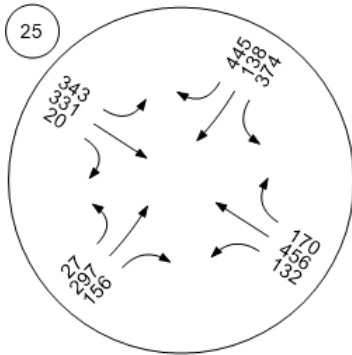
Willow Rd/Gilbert Ave



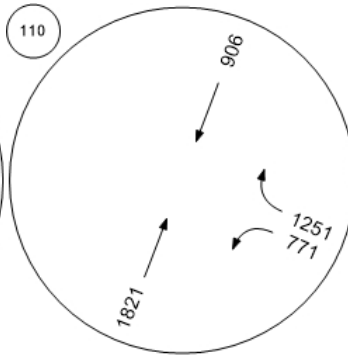
Traffic Volume - Future Total Volume



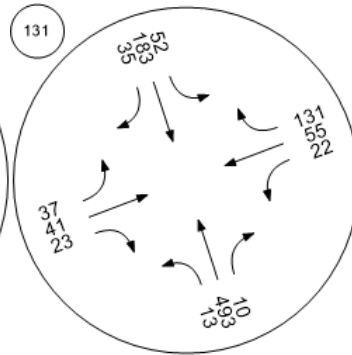
Middlefield Rd-Willow Rd



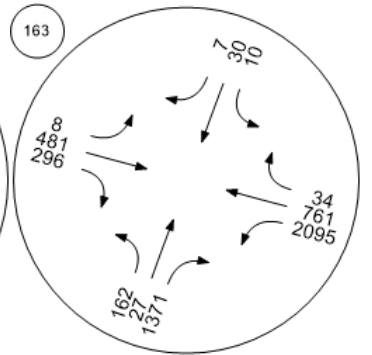
Marsh Road and US 101 NB



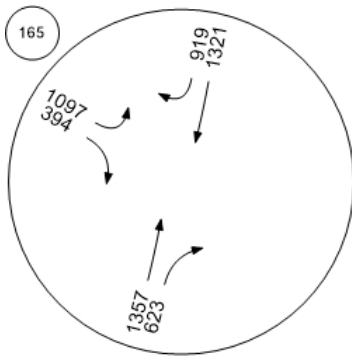
Chilco Street/Hamilton Avenue



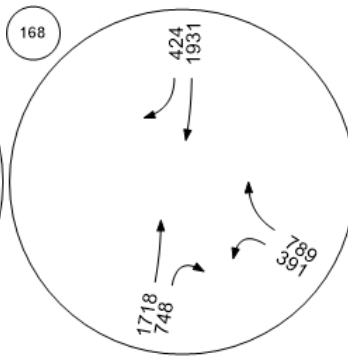
Bayfront Expy/Marsh Rd



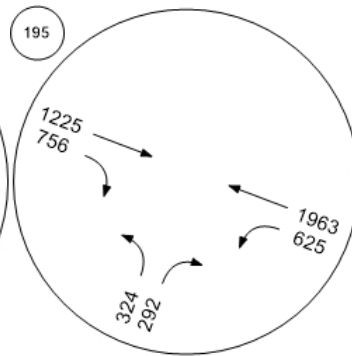
Willow Rd/US-101 SB Ramps



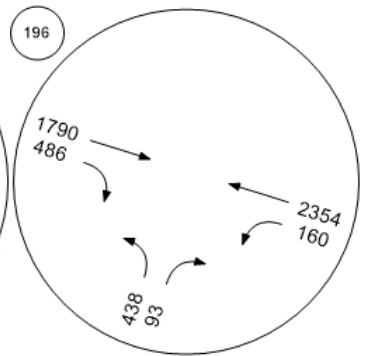
Willow Rd/US-101 NB Ramp



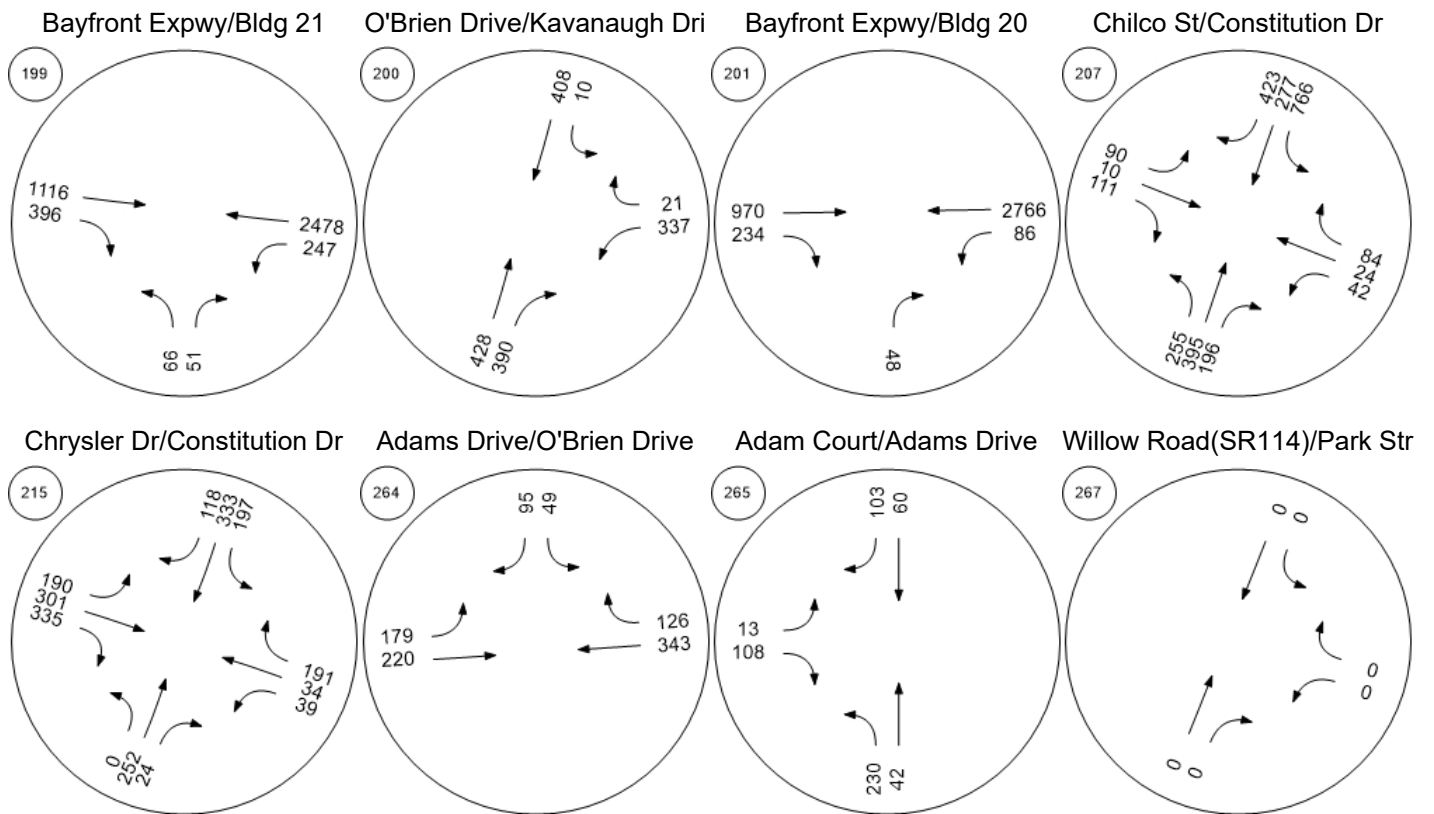
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



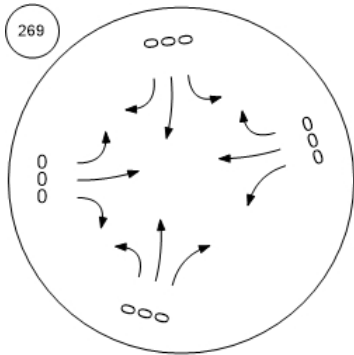
Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road

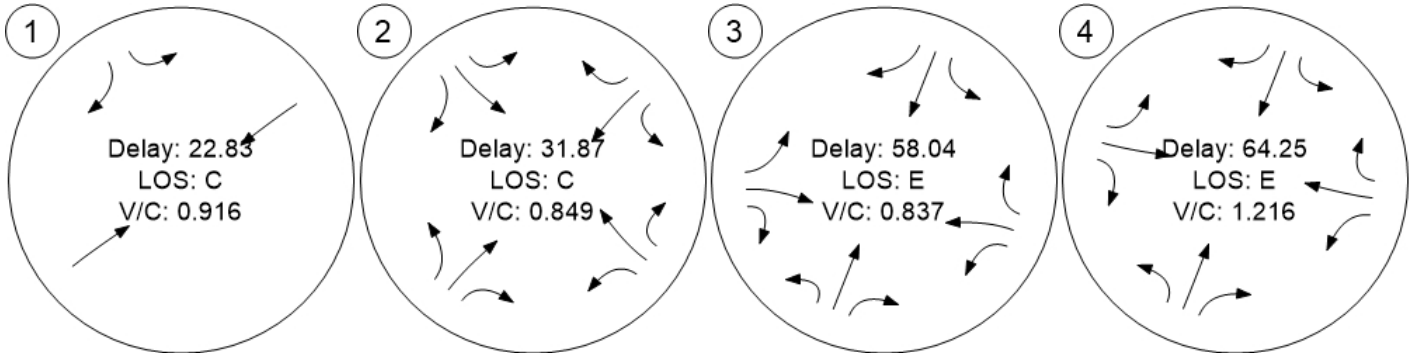


Traffic Conditions

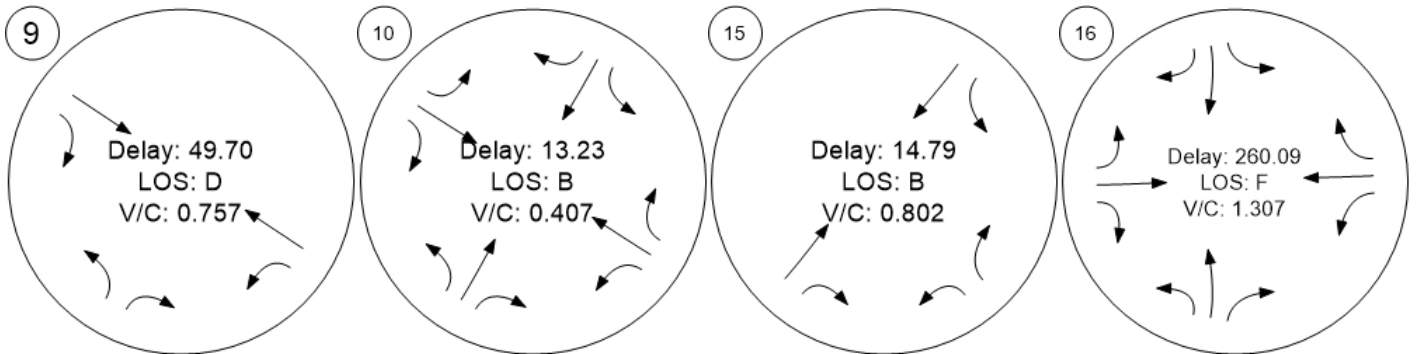


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



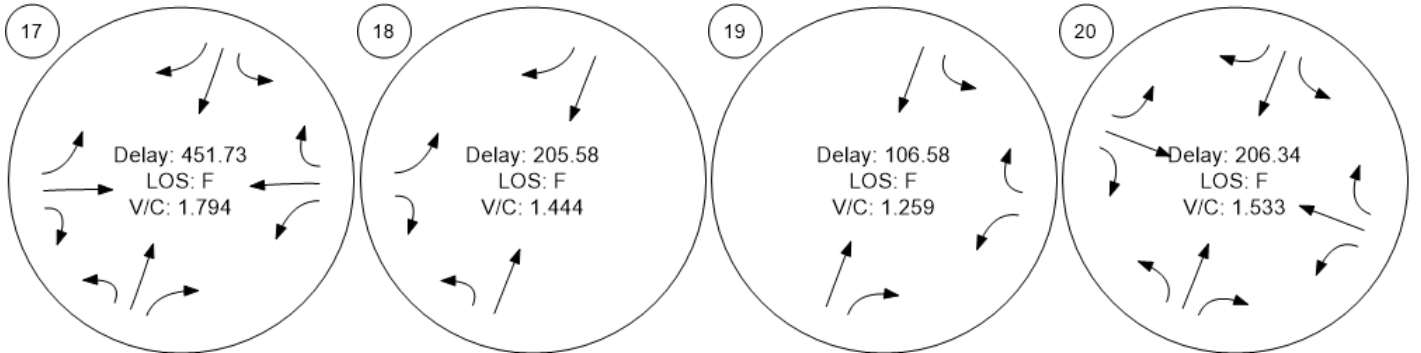
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



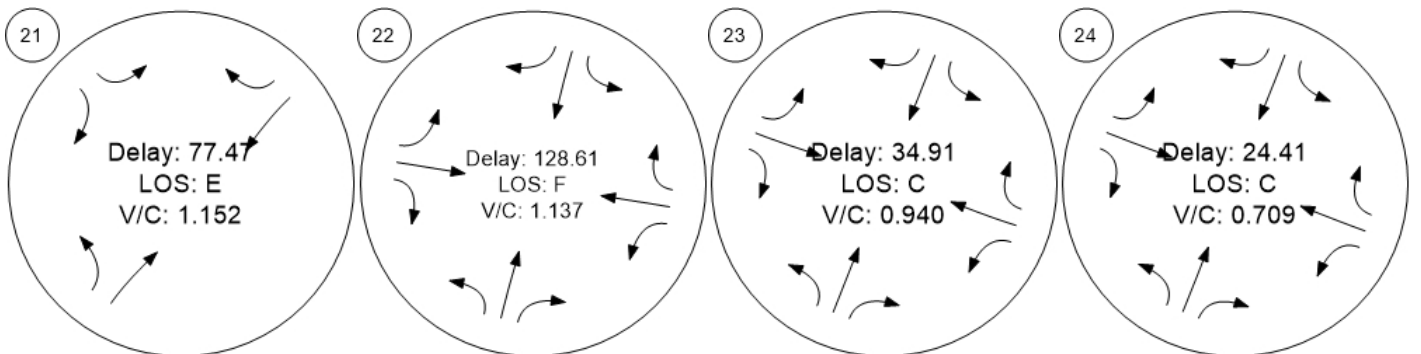
Traffic Conditions



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



Traffic Conditions

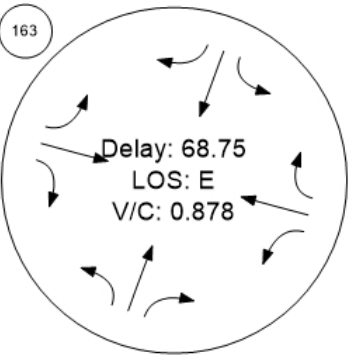
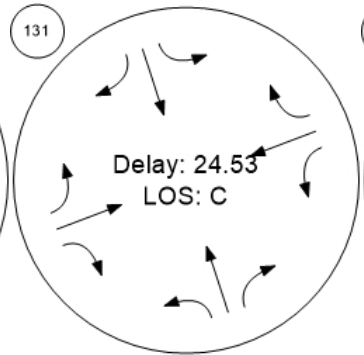
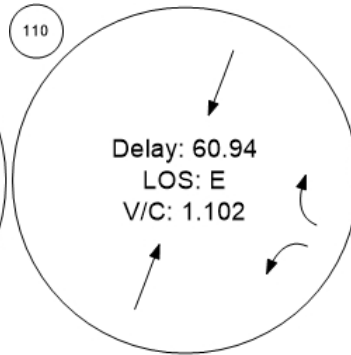
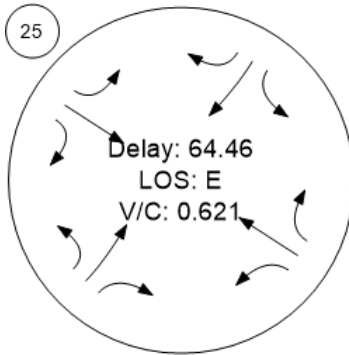


Middlefield Rd-Willow Rd

Marsh Road and US 101 NB

Chilco Street/Hamilton Avenue

Bayfront Expy/Marsh Rd

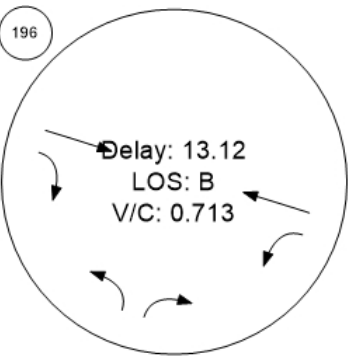
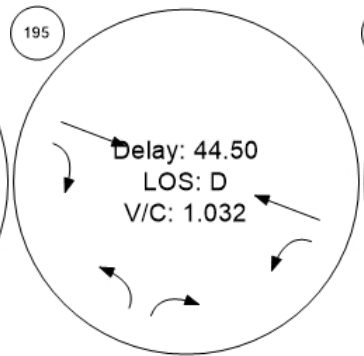
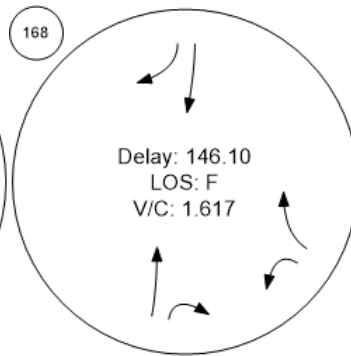
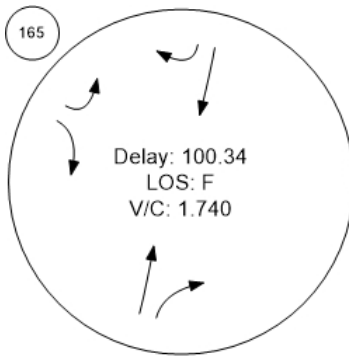


Willow Rd/US-101 SB Ramps

Willow Rd/US-101 NB Ramp

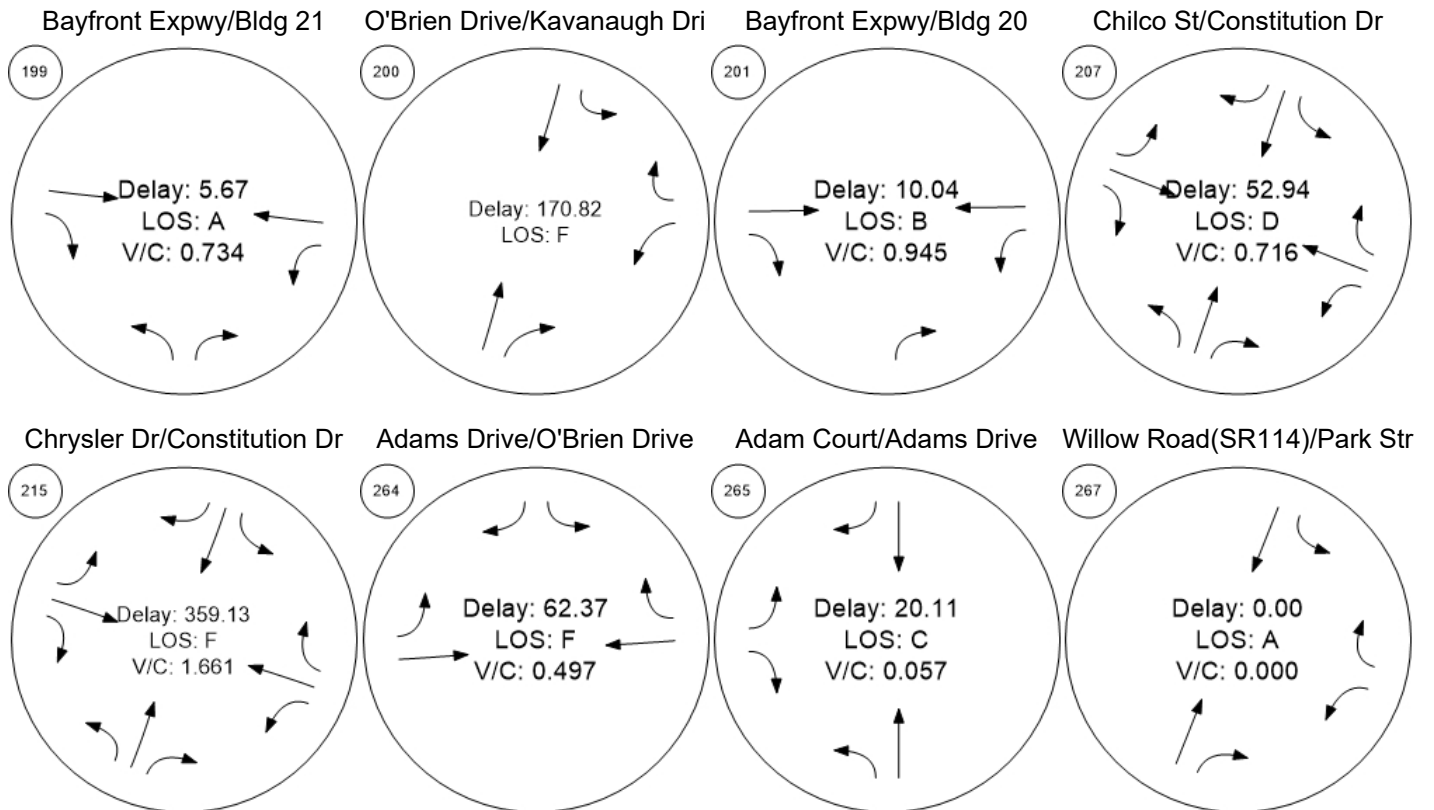
Bayfront Expy/Chilco St

Bayfront Expy/Chrysler Drive





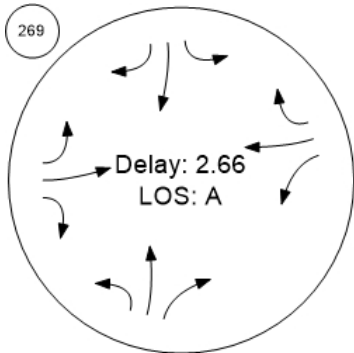
Traffic Conditions

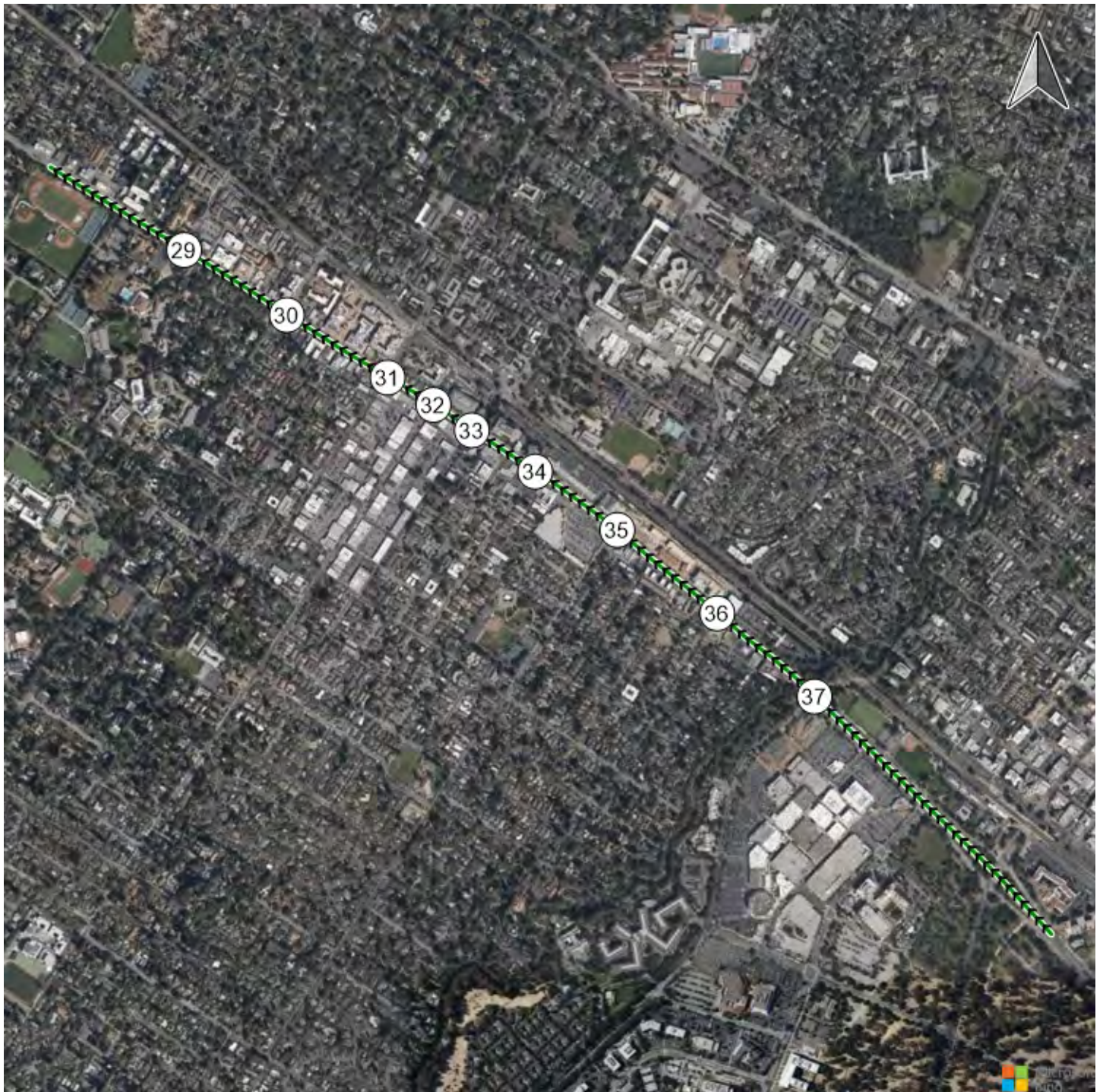


Traffic Conditions



O'Brien Drive/Loop Road





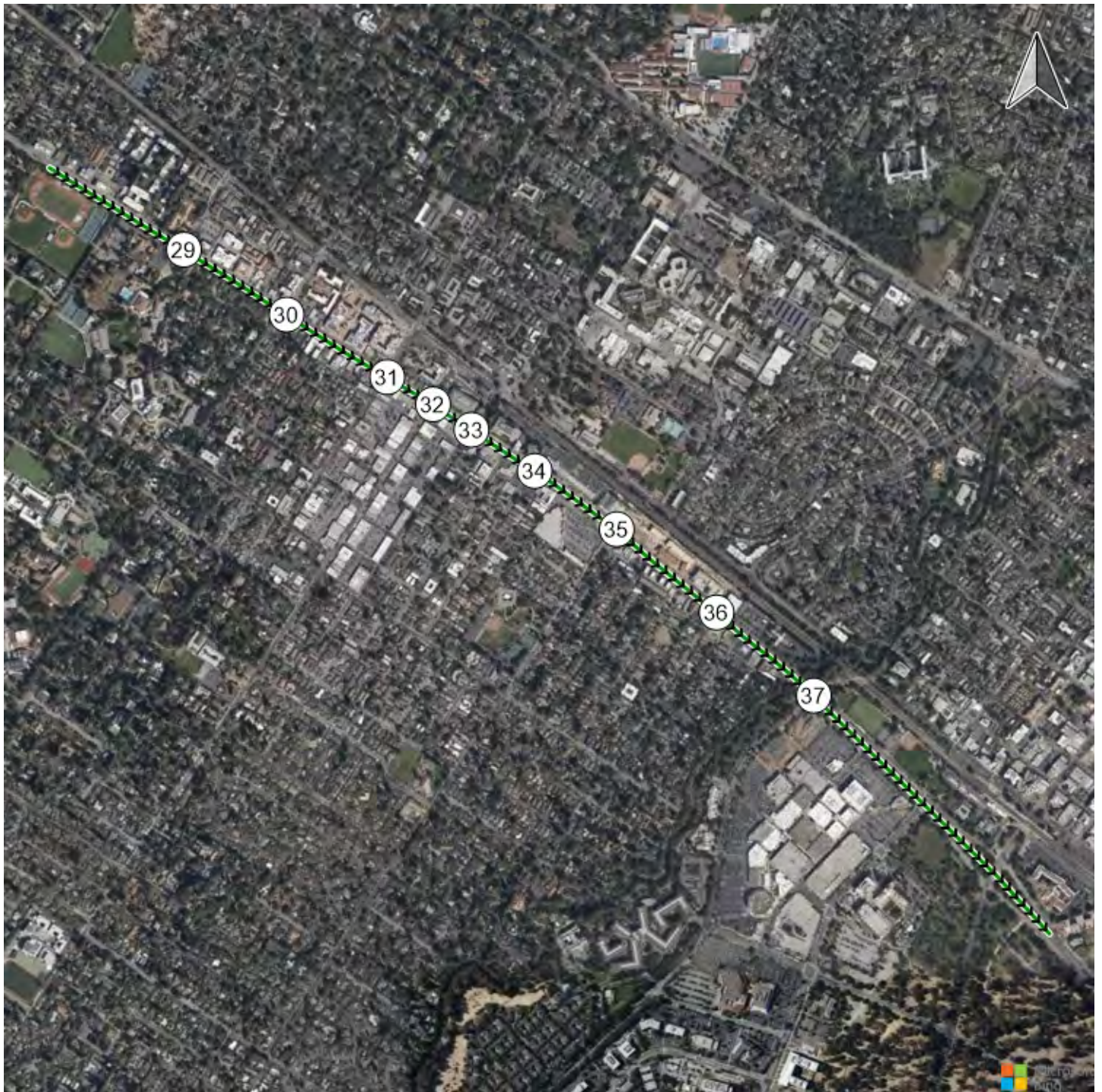
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Version 2021 (SP 0-6)

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Route 1: ECR NB

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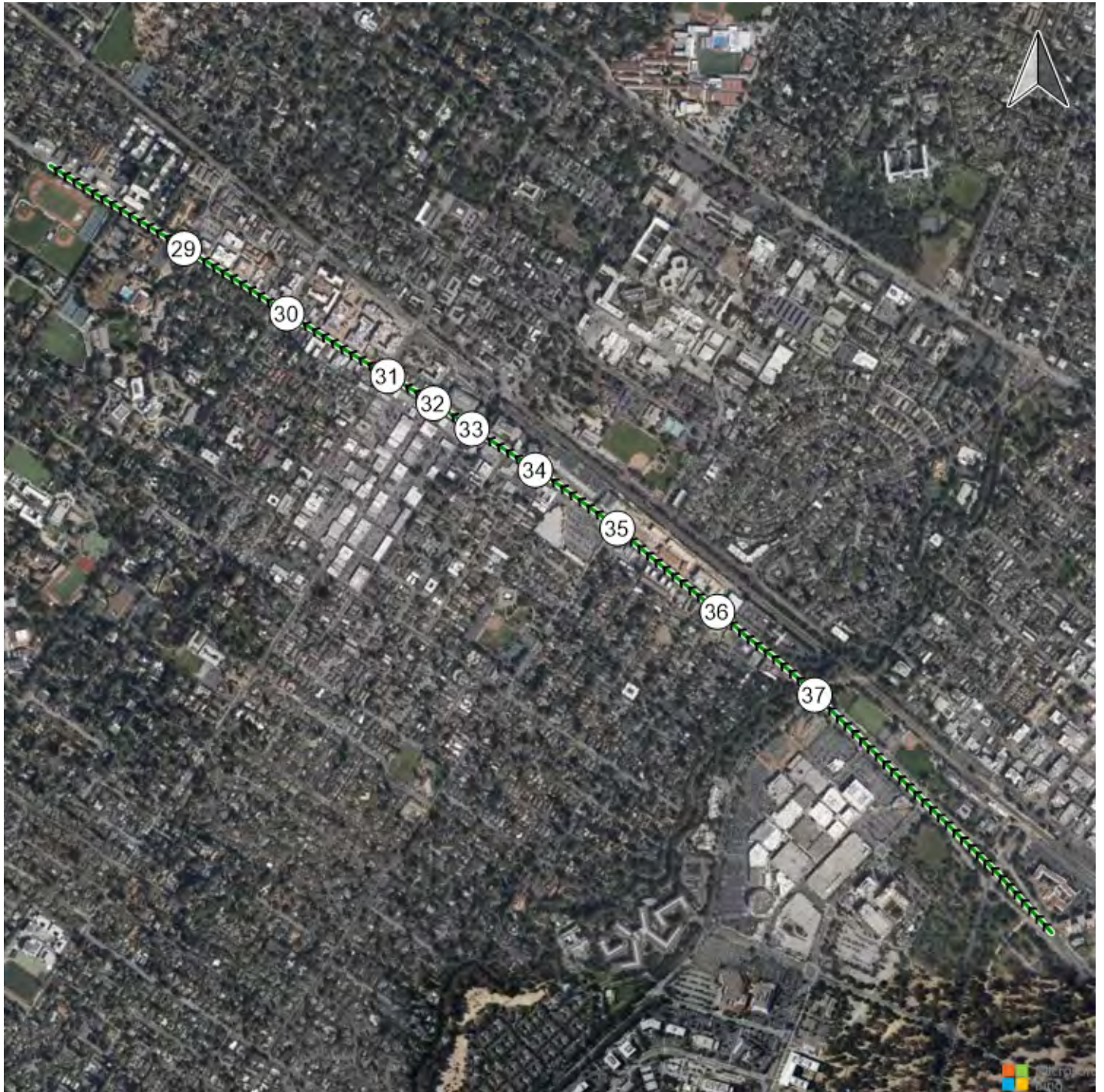
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



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Version 2021 (SP 0-6)

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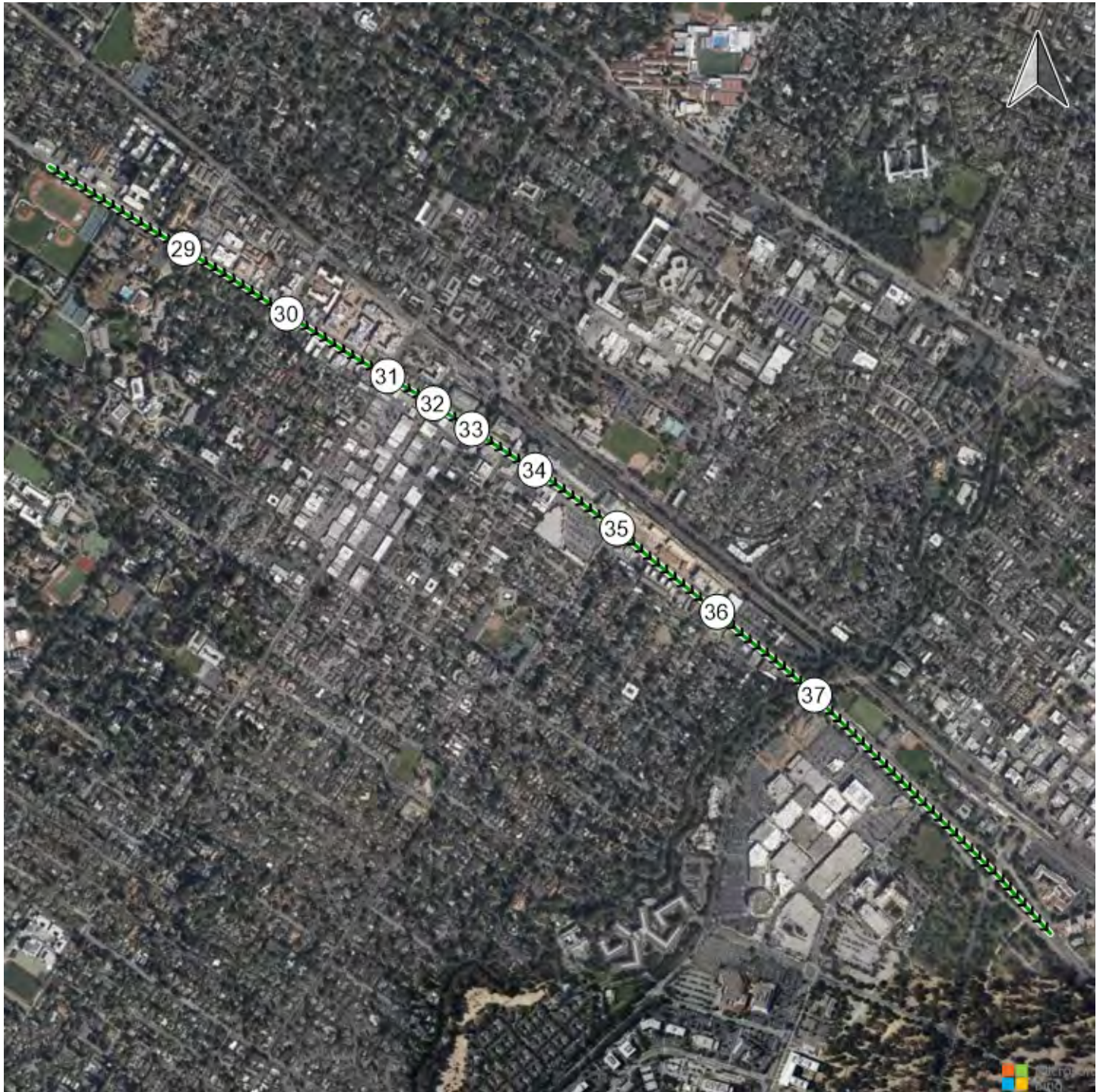
Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



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Version 2021 (SP 0-6)

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Route 2: ECR SB

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Vistro File: P:\...\Vistro\_AllScenarios\_PM\_2021-12-29\_ChilconConstitution\_OZ.vistro

Scenario 19 Cumulative PM (2040 vols)

Report File: P:\...\Cumulative PM.pdf

12/30/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Left	0.806	19.2	B
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.591	17.9	B
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.848	52.5	D
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.876	47.6	D
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NEB Left	2.289	20.2	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 6th Edition	NEB Left	0.534	21.0	C
15	Bayfront Expy (SR 84)/University Ave (SR 109)	Signalized	HCM 6th Edition	NEB Thru	1.162	138.7	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	SB Thru	1.435	284.1	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	WB Right	2.183	570.4	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	SB Right	1.274	131.3	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	WB Right	2.564	522.9	F
20	Willow Rd (SR 114)/Newbridge St	Signalized	HCM 6th Edition	NB Left	1.608	274.4	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.408	226.4	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.276	221.9	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.693	13.1	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.565	14.2	B
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.713	42.5	D
			HCM 6th				

110	Marsh Road/101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	0.994	22.9	C
131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	SB Thru	1.489	151.1	F
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	WB Left	1.071	65.0	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	2.089	162.6	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.264	239.8	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.118	69.6	E
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	NB Left	0.979	39.5	D
199	Bafront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.940	36.3	D
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	1.636	189.8	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.888	18.7	B
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	WB Right	1.240	113.5	F
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	WB Right	1.403	148.7	F
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	1.739	512.7	F
265	Adam Court/ Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.089	16.4	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.806

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↶↷↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	959	1163	279	1338	444
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	959	1163	279	1338	444
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	245	297	70	341	113
Total Analysis Volume [veh/h]	0	979	1187	279	1365	453
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	7	0	5	0
Pedestrian Clearance [s]	0	0	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.24	0.34	0.40	0.28
s, saturation flow rate [veh/h]	4000	3540	3414	1609
c, Capacity [veh/h]	2122	1785	1411	665
d1, Uniform Delay [s]	11.66	14.77	22.92	19.15
k, delay calibration	0.50	0.50	0.04	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.72	1.98	2.59	2.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.46	0.66	0.97	0.68
d, Delay for Lane Group [s/veh]	12.38	16.75	25.51	21.73
Lane Group LOS	B	B	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.95	7.53	12.06	6.88
50th-Percentile Queue Length [ft/ln]	123.73	188.36	301.38	172.00
95th-Percentile Queue Length [veh/ln]	8.60	12.04	17.75	11.18
95th-Percentile Queue Length [ft/ln]	214.94	300.90	443.73	279.55



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.38	16.75	0.00	25.51	21.73
Movement LOS		B	B		C	C
d_A, Approach Delay [s/veh]	12.38		16.75		24.57	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	19.24					
Intersection LOS	B					
Intersection V/C	0.806					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	29.73
I_p,int, Pedestrian LOS Score for Intersection	2.871	0.000	2.524
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.81	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.367	2.539	1.560
Bicycle LOS	B	B	A

**Sequence**


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Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	49	1326	7	75	1046	249	15	6	412	304	6	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	3.70	0.00	1.70	1.30	7.70	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	326	0	0	0
Total Hourly Volume [veh/h]	49	1326	7	75	1046	249	15	6	86	304	6	4
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	345	2	20	272	65	4	2	22	79	2	1
Total Analysis Volume [veh/h]	51	1381	7	78	1090	259	16	6	90	317	6	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing in	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	51	0	12	48	0	0	41	0	0	36	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	99	99	98	98	98	9	9	18	18
g / C, Green / Cycle	0.05	0.71	0.71	0.70	0.70	0.70	0.06	0.06	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.26	0.09	0.37	0.38	0.01	0.03	0.09	0.09
s, saturation flow rate [veh/h]	1761	3549	1859	899	1877	1739	1833	2820	1791	1697
c, Capacity [veh/h]	90	2519	1320	650	1315	1218	114	176	231	219
d1, Uniform Delay [s]	64.84	7.92	7.92	8.29	9.96	10.10	62.26	63.54	58.54	58.54
k, delay calibration	0.08	0.50	0.50	0.14	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	0.40	0.77	0.10	1.51	1.72	0.60	1.72	3.22	3.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.36	0.36	0.12	0.53	0.54	0.19	0.51	0.73	0.73
d, Delay for Lane Group [s/veh]	68.92	8.33	8.70	8.39	11.47	11.81	62.86	65.25	61.76	61.94
Lane Group LOS	E	A	A	A	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.88	5.14	5.52	0.38	9.92	9.59	0.77	1.61	5.99	5.68
50th-Percentile Queue Length [ft/ln]	46.90	128.62	138.12	9.59	247.99	239.75	19.29	40.32	149.63	142.09
95th-Percentile Queue Length [veh/ln]	3.38	8.86	9.38	0.69	15.08	14.67	1.39	2.90	10.00	9.59
95th-Percentile Queue Length [ft/ln]	84.42	221.62	234.49	17.26	377.12	366.71	34.73	72.58	249.93	239.84

**Movement, Approach, & Intersection Results**

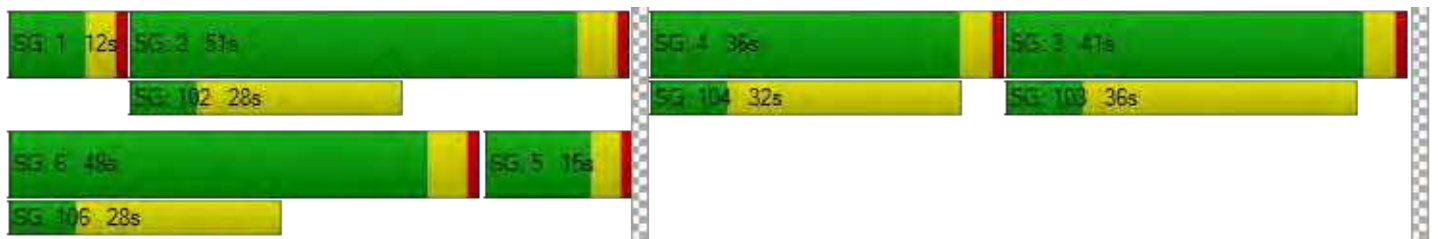
d_M, Delay for Movement [s/veh]	68.92	8.45	8.70	8.39	11.59	11.81	62.86	62.86	65.25	61.84	61.94	61.94
Movement LOS	E	A	A	A	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	10.60			11.46			64.78			61.85		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	17.88											
Intersection LOS	B											
Intersection V/C	0.591											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	58.49			58.49			59.41			59.41		
I_p,int, Pedestrian LOS Score for Intersection	2.957			3.190			2.944			2.135		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	657			615			526			454		
d_b, Bicycle Delay [s]	31.53			33.60			38.01			41.79		
I_b,int, Bicycle LOS Score for Intersection	2.351			2.737			2.282			2.099		
Bicycle LOS	B			B			B			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	52.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	293	675	54	13	996	354	462	34	236	128	85	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	174	0	0	0
Total Hourly Volume [veh/h]	293	675	54	13	996	354	462	34	62	128	85	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	181	15	3	268	95	124	9	17	34	23	11
Total Analysis Volume [veh/h]	315	726	58	14	1071	381	497	37	67	138	91	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			1			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			2			1	
v_co, Outbound Pedestrian Volume crossing		0			3			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			2			3			1	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	55	55	12	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	86	86	4	70	70	26	26	26	16	16
g / C, Green / Cycle	0.14	0.62	0.62	0.03	0.50	0.50	0.18	0.18	0.18	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.22	0.01	0.40	0.42	0.15	0.15	0.04	0.08	0.08
s, saturation flow rate [veh/h]	1771	1852	1797	1714	1867	1676	1774	1821	1572	1751	1786
c, Capacity [veh/h]	252	1147	1113	45	939	843	325	334	288	200	204
d1, Uniform Delay [s]	59.92	12.91	12.92	66.82	28.90	29.70	54.75	54.74	48.65	59.52	59.27
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	140.34	0.83	0.86	1.45	7.11	9.40	3.64	3.55	0.30	3.14	2.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.25	0.35	0.35	0.31	0.80	0.83	0.81	0.81	0.23	0.69	0.66
d, Delay for Lane Group [s/veh]	200.26	13.74	13.78	68.27	36.01	39.10	58.39	58.29	48.95	62.65	61.93
Lane Group LOS	F	B	B	E	D	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	18.72	6.19	6.05	0.51	22.27	21.78	9.32	9.56	2.06	4.93	4.75
50th-Percentile Queue Length [ft/ln]	468.07	154.75	151.20	12.71	556.76	544.55	233.04	238.97	51.40	123.24	118.74
95th-Percentile Queue Length [veh/ln]	28.42	10.27	10.08	0.91	30.01	29.44	14.33	14.63	3.70	8.57	8.32
95th-Percentile Queue Length [ft/ln]	710.60	256.76	252.04	22.87	750.25	735.90	358.21	365.73	92.51	214.28	208.09

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	200.26	13.76	13.78	68.27	36.94	39.10	58.35	58.29	48.95	62.65	61.93	61.93
Movement LOS	F	B	B	E	D	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	67.21			37.80			57.29			62.30		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	52.55											
Intersection LOS	D											
Intersection V/C	0.848											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	59.37			59.37			59.37			59.37		
I_p,int, Pedestrian LOS Score for Intersection	2.957			3.059			2.717			2.064		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	721			578			458			469		
d_b, Bicycle Delay [s]	28.63			35.41			41.66			41.01		
I_b,int, Bicycle LOS Score for Intersection	2.466			2.769			2.838			2.008		
Bicycle LOS	B			C			C			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	47.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	745	61	416	703	81	96	26	2	65	76	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	745	61	416	703	81	96	26	2	65	76	339
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	209	17	117	197	23	27	7	1	18	21	95
Total Analysis Volume [veh/h]	2	837	69	467	790	91	108	29	2	73	85	381
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			6			0			6	
v_di, Inbound Pedestrian Volume crossing in		0			6			0			6	
v_co, Outbound Pedestrian Volume crossing		0			3			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			1			5			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	29	29
g / C, Green / Cycle	0.34	0.34	0.20	0.58	0.58	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.26	0.24	0.24	0.24	0.31
s, saturation flow rate [veh/h]	1860	1644	1795	1885	1806	584	1727
c, Capacity [veh/h]	679	560	361	1092	1046	292	679
d1, Uniform Delay [s]	23.50	23.55	32.07	9.32	9.36	21.66	23.55
k, delay calibration	0.50	0.50	0.24	0.50	0.50	0.30	0.41
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.16	9.44	142.67	1.14	1.21	3.36	7.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.71	0.76	1.29	0.41	0.41	0.48	0.79
d, Delay for Lane Group [s/veh]	29.66	33.00	174.74	10.46	10.57	25.02	31.28
Lane Group LOS	C	C	F	B	B	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.65	8.13	20.92	4.01	3.92	2.45	10.22
50th-Percentile Queue Length [ft/ln]	216.24	203.29	523.02	100.37	98.06	61.25	255.50
95th-Percentile Queue Length [veh/ln]	13.47	12.81	32.13	7.23	7.06	4.41	15.46
95th-Percentile Queue Length [ft/ln]	336.82	320.20	803.19	180.67	176.51	110.24	386.57

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.66	31.09	33.00	174.74	10.51	10.57	25.02	25.02	25.02	31.28	31.28	31.28
Movement LOS	C	C	C	F	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	31.23			67.41			25.02			31.28		
Approach LOS	C			E			C			C		
d_I, Intersection Delay [s/veh]	47.57											
Intersection LOS	D											
Intersection V/C	0.876											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	29.82	29.82	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.055	1.840	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	596	1071	681	681
d_b, Bicycle Delay [s]	19.74	8.66	17.46	17.43
I_b,int, Bicycle LOS Score for Intersection	2.309	2.672	1.789	2.449
Bicycle LOS	B	B	A	B

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.289

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	137	544	481	639	476	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.10	1.30	0.60	1.40	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	137	0	481	639	476	104
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	0	124	165	123	27
Total Analysis Volume [veh/h]	141	0	496	659	491	107
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing in	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	58.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	5	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.0	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	83	83	83	83	83
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	12	12	27	64	38
g / C, Green / Cycle	0.15	0.15	0.32	0.77	0.45
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.28	0.35	0.33
s, saturation flow rate [veh/h]	1781	1588	1791	1891	1806
c, Capacity [veh/h]	267	239	582	1457	818
d1, Uniform Delay [s]	32.56	0.00	26.18	3.36	18.58
k, delay calibration	0.08	0.08	0.23	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.20	0.00	7.45	0.22	5.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.53	0.00	0.85	0.45	0.73
d, Delay for Lane Group [s/veh]	33.76	0.00	33.64	3.58	24.29
Lane Group LOS	C	A	C	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.64	0.00	9.74	2.29	9.76
50th-Percentile Queue Length [ft/ln]	66.11	0.00	243.60	57.13	244.03
95th-Percentile Queue Length [veh/ln]	4.76	0.00	14.86	4.11	14.89
95th-Percentile Queue Length [ft/ln]	119.00	0.00	371.59	102.84	372.13

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.76	0.00	33.64	3.58	24.29	24.29
Movement LOS	C	A	C	A	C	C
d_A, Approach Delay [s/veh]	33.76		16.49		24.29	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	20.24					
Intersection LOS	C					
Intersection V/C	2.289					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.17	31.17	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.925	2.879	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1105	1578	734
d_b, Bicycle Delay [s]	8.34	1.87	16.69
I_b,int, Bicycle LOS Score for Intersection	1.560	3.465	2.546
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringwood Ave**

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.534

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↑			↑↵			↵↵↵			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	34	32	32	214	0	289	2	770	136	328	718	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	0.00	0.00	0.00	0.00	2.20	0.00	1.70	0.00	2.10	1.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	8	0	0	57	0	0	0
Total Hourly Volume [veh/h]	34	32	32	214	0	281	2	770	79	328	718	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	8	8	56	0	74	1	203	21	86	189	1
Total Analysis Volume [veh/h]	36	34	34	225	0	296	2	811	83	345	756	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing in	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	58.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.0	2.9	3.0	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	34	34	34	34	82	65	65	80	75	75
g / C, Green / Cycle	0.28	0.28	0.28	0.28	0.69	0.54	0.54	0.66	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.20	0.19	0.00	0.23	0.05	0.39	0.20	0.20
s, saturation flow rate [veh/h]	1421	1719	1128	1540	748	3569	1559	881	1873	1871
c, Capacity [veh/h]	156	482	376	431	535	1944	849	583	1179	1177
d1, Uniform Delay [s]	53.51	32.37	42.14	38.22	7.31	16.10	13.12	10.67	10.34	10.34
k, delay calibration	0.10	0.10	0.25	0.23	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.13	3.49	4.07	0.00	0.66	0.23	4.37	0.72	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.23	0.14	0.60	0.69	0.00	0.42	0.10	0.59	0.32	0.32
d, Delay for Lane Group [s/veh]	54.22	32.50	45.63	42.28	7.31	16.76	13.35	15.04	11.06	11.06
Lane Group LOS	D	C	D	D	A	B	B	B	B	B
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.09	1.54	6.47	8.17	0.02	6.51	1.11	4.16	4.64	4.63
50th-Percentile Queue Length [ft/ln]	27.21	38.57	161.81	204.15	0.41	162.73	27.74	104.03	115.88	115.79
95th-Percentile Queue Length [veh/ln]	1.96	2.78	10.64	12.85	0.03	10.69	2.00	7.49	8.17	8.16
95th-Percentile Queue Length [ft/ln]	48.98	69.43	266.12	321.31	0.75	267.33	49.94	187.25	204.15	204.02

**Movement, Approach, & Intersection Results**

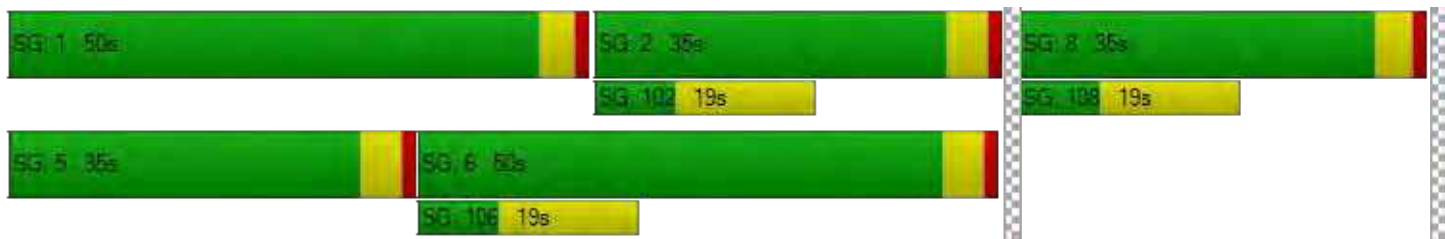
d_M, Delay for Movement [s/veh]	54.22	32.50	32.50	45.63	45.63	42.28	7.31	16.76	13.35	15.04	11.06	11.06
Movement LOS	D	C	C	D	D	D	A	B	B	B	B	B
d_A, Approach Delay [s/veh]	40.01			43.73			16.42			12.31		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	21.05											
Intersection LOS	C											
Intersection V/C	0.534											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	1.979			2.571			3.241			2.878		
Crosswalk LOS	A			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	513			513			757			507		
d_b, Bicycle Delay [s]	33.24			33.50			23.40			33.69		
I_b,int, Bicycle LOS Score for Intersection	1.731			2.432			2.346			2.470		
Bicycle LOS	A			B			B			B		

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	138.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.162

**Intersection Setup**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3685	27	390	970	68	1942
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	16.10	4.90	3.80	9.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3685	27	390	970	68	1942
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	940	7	99	247	17	495
Total Analysis Volume [veh/h]	3760	28	398	990	69	1982
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	90	140	50	140	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	5.8	1.5	5.8	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	159	159	159	159	159	159
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	7.80	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	5.80	2.00	0.00
g_i, Effective Green Time [s]	90	90	40	132	15	59
g / C, Green / Cycle	0.57	0.57	0.25	0.83	0.09	0.37
(v / s)_i Volume / Saturation Flow Rate	0.74	0.02	0.12	0.20	0.02	0.47
s, saturation flow rate [veh/h]	5077	1398	3378	5020	3264	4237
c, Capacity [veh/h]	2881	794	854	4172	309	1579
d1, Uniform Delay [s]	34.30	15.14	50.18	2.82	66.42	49.75
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	137.96	0.02	0.15	0.04	0.13	115.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.31	0.04	0.47	0.24	0.22	1.26
d, Delay for Lane Group [s/veh]	172.26	15.16	50.33	2.86	66.55	165.05
Lane Group LOS	F	B	D	A	E	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	70.15	0.43	6.54	1.42	1.30	37.44
50th-Percentile Queue Length [ft/ln]	1753.71	10.85	163.39	35.52	32.54	935.91
95th-Percentile Queue Length [veh/ln]	101.84	0.78	10.73	2.56	2.34	54.77
95th-Percentile Queue Length [ft/ln]	2546.00	19.52	268.21	63.94	58.57	1369.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	172.26	15.16	50.33	2.86	66.55	165.05
Movement LOS	F	B	D	A	E	F
d_A, Approach Delay [s/veh]	171.10		16.47		161.74	
Approach LOS	F		B		F	
d_I, Intersection Delay [s/veh]	138.75					
Intersection LOS	F					
Intersection V/C	1.162					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	70.53	0.00	70.53
I_p,int, Pedestrian LOS Score for Intersection	3.860	0.000	3.106
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	530	555	189
d_b, Bicycle Delay [s]	42.83	41.40	64.98
I_b,int, Bicycle LOS Score for Intersection	3.643	2.323	1.670
Bicycle LOS	D	B	A

**Sequence**

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	284.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.435

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		



**Volumes**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	220	95	1112	159	332	146	76	2469	310	559	829	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	70	0	0	45	0	0	1
Total Hourly Volume [veh/h]	220	95	1112	159	332	76	76	2469	265	559	829	33
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	24	287	41	86	20	20	636	68	144	214	9
Total Analysis Volume [veh/h]	227	98	1146	164	342	78	78	2545	273	576	855	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			11			11			0	
v_di, Inbound Pedestrian Volume crossing in		0			11			11			0	
v_co, Outbound Pedestrian Volume crossing		8			0			8			0	
v_ci, Inbound Pedestrian Volume crossing mi		8			0			8			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			3			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.0	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	0	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	2.5	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	106	106	106	106	106	106	106	106	106	106	106	106
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	4.50	4.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	2.50	2.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	16	14	41	9	9	9	67	40	40	67	58	58
g / C, Green / Cycle	0.15	0.14	0.39	0.08	0.08	0.08	0.63	0.38	0.38	0.63	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.13	0.07	0.28	0.09	0.21	0.05	0.08	0.83	0.31	0.41	0.17	0.02
s, saturation flow rate [veh/h]	1749	1479	4141	1748	1606	1442	965	3084	889	1400	4959	1615
c, Capacity [veh/h]	261	201	1616	148	136	122	622	1162	335	929	2714	884
d1, Uniform Delay [s]	44.20	42.48	27.17	48.60	48.60	46.77	8.05	33.10	29.77	24.36	13.15	11.11
k, delay calibration	0.17	0.11	0.16	0.36	0.49	0.11	0.11	0.24	0.30	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.21	1.83	0.85	94.53	701.89	5.44	0.09	537.00	12.30	0.68	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.87	0.49	0.71	1.11	2.51	0.64	0.13	2.19	0.82	0.62	0.31	0.04
d, Delay for Lane Group [s/veh]	57.41	44.31	28.02	143.13	750.49	52.21	8.14	570.10	42.08	25.04	13.21	11.13
Lane Group LOS	E	D	C	F	F	D	A	F	D	C	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.63	1.21	7.83	7.86	15.09	2.20	0.33	67.39	7.24	2.84	3.62	0.37
50th-Percentile Queue Length [ft/ln]	165.72	30.32	195.82	196.50	377.18	54.92	8.33	1684.65	180.99	71.07	90.38	9.18
95th-Percentile Queue Length [veh/ln]	10.85	2.18	12.42	12.91	25.75	3.95	0.60	110.80	11.65	5.12	6.51	0.66
95th-Percentile Queue Length [ft/ln]	271.27	54.57	310.57	322.80	643.87	98.85	15.00	2769.94	291.30	127.93	162.68	16.53

**Movement, Approach, & Intersection Results**

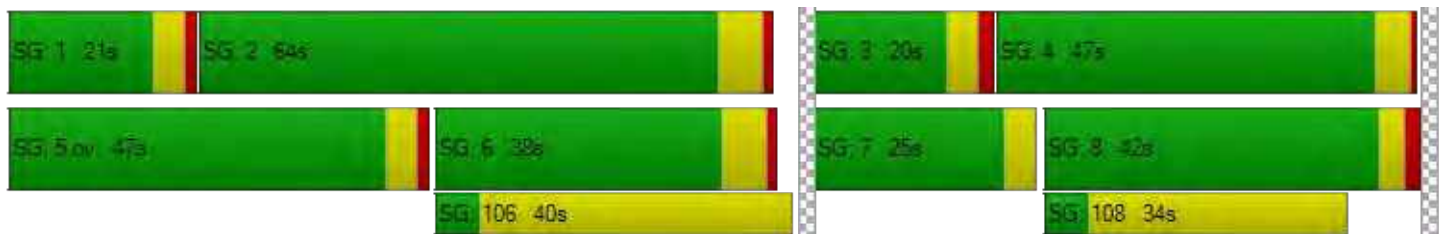
d_M, Delay for Movement [s/veh]	57.41	44.31	28.02	143.13	750.49	52.21	8.14	570.10	42.08	25.04	13.21	11.13
Movement LOS	E	D	C	F	F	D	A	F	D	C	B	B
d_A, Approach Delay [s/veh]	33.64			486.67			505.18			17.81		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	284.10											
Intersection LOS	F											
Intersection V/C	1.435											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.42	0.00	44.42	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.465	0.000	3.256	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	803	707	603	1094
d_b, Bicycle Delay [s]	19.00	22.20	25.87	10.90
I_b,int, Bicycle LOS Score for Intersection	2.773	2.099	3.177	2.366
Bicycle LOS	C	B	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	570.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.183

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	43	1065	302	138	994	54	123	201	35	193	195	299
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.50	33.30	7.70	3.50	0.00	0.60	26.70	5.10	0.70	5.90	1.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	1065	302	138	994	54	123	201	35	193	195	299
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	303	86	39	282	15	35	57	10	55	55	85
Total Analysis Volume [veh/h]	49	1210	343	157	1130	61	140	228	40	219	222	340
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			86			11			85	
v_di, Inbound Pedestrian Volume crossing in		11			85			12			86	
v_co, Outbound Pedestrian Volume crossing		13			14			14			13	
v_ci, Inbound Pedestrian Volume crossing mi		13			14			14			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			18			7			15	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	90	73	73	90	83	83	33	33
g / C, Green / Cycle	0.69	0.56	0.56	0.69	0.64	0.64	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.09	0.96	1.01	0.40	0.73	0.73	0.93	1.31
s, saturation flow rate [veh/h]	545	826	749	391	826	806	438	594
c, Capacity [veh/h]	164	464	420	161	526	514	148	174
d1, Uniform Delay [s]	33.67	28.46	28.46	42.79	23.56	23.56	53.62	45.22
k, delay calibration	0.22	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.09	329.28	371.83	64.68	83.84	88.20	810.48	1582.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	1.71	1.81	0.98	1.14	1.15	2.76	4.49
d, Delay for Lane Group [s/veh]	35.76	357.74	400.29	107.47	107.39	111.76	864.11	1627.82
Lane Group LOS	D	F	F	F	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.49	55.64	55.38	4.52	27.06	27.03	38.23	81.90
50th-Percentile Queue Length [ft/ln]	12.16	1391.12	1384.44	112.98	676.61	675.77	955.67	2047.43
95th-Percentile Queue Length [veh/ln]	0.88	91.47	92.33	8.01	39.44	39.64	64.28	131.90
95th-Percentile Queue Length [ft/ln]	21.90	2286.63	2308.30	200.14	986.01	991.09	1606.94	3297.62



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	35.76	372.36	400.29	107.47	109.44	111.76	864.11	864.11	864.11	1627.82	1627.82	1627.82
Movement LOS	D	F	F	F	F	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	368.05			109.32			864.11			1627.82		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	570.39											
Intersection LOS	F											
Intersection V/C	2.183											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.41	54.41
I_p,int, Pedestrian LOS Score for Intersection	3.366	3.165	2.079	2.474
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1124	1078	505	508
d_b, Bicycle Delay [s]	12.47	13.93	36.42	36.41
I_b,int, Bicycle LOS Score for Intersection	2.881	2.672	2.233	2.848
Bicycle LOS	C	B	B	C

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	131.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.274

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↵		↵		↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	207	933	1212	87	115	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	3.30	2.80	0.00	0.00	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	207	933	1212	87	115	122
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	251	326	23	31	33
Total Analysis Volume [veh/h]	223	1003	1303	94	124	131
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing in	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	24	106	90	90	24	24
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	21	102	78	78	21	21
g / C, Green / Cycle	0.16	0.79	0.60	0.60	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.18	0.64	0.84	0.86	0.12	0.15
s, saturation flow rate [veh/h]	1270	1576	831	808	1022	897
c, Capacity [veh/h]	205	1239	500	486	164	144
d1, Uniform Delay [s]	54.41	8.17	25.88	25.88	52.12	53.40
k, delay calibration	0.50	0.50	0.50	0.50	0.06	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	87.39	5.78	190.86	208.29	4.18	25.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.09	0.81	1.40	1.44	0.76	0.91
d, Delay for Lane Group [s/veh]	141.80	13.96	216.74	234.18	56.30	78.88
Lane Group LOS	F	B	F	F	E	E
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	11.58	7.06	40.35	41.60	4.06	5.20
50th-Percentile Queue Length [ft/ln]	289.60	176.38	1008.84	1039.90	101.47	130.10
95th-Percentile Queue Length [veh/ln]	17.84	11.41	63.42	66.02	7.31	8.95
95th-Percentile Queue Length [ft/ln]	445.98	285.28	1585.41	1650.59	182.64	223.64

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	141.80	13.96	224.83	234.18	56.30	78.88
Movement LOS	F	B	F	F	E	E
d_A, Approach Delay [s/veh]	37.21		225.46		67.90	
Approach LOS	D		F		E	
d_I, Intersection Delay [s/veh]	131.31					
Intersection LOS	F					
Intersection V/C	1.274					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.010	2.970	2.144
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.00	7.44	45.70
I_b,int, Bicycle LOS Score for Intersection	2.571	2.712	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	522.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.564

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1000	672	57	1178	274	492
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	6.50	2.80	2.70	1.80	6.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1000	672	57	1178	274	492
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	269	181	15	317	74	132
Total Analysis Volume [veh/h]	1075	723	61	1267	295	529
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	16.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	84	84	13	100	23	23
g / C, Green / Cycle	0.65	0.65	0.10	0.77	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.83	1.34	0.09	0.99	0.46	0.95
s, saturation flow rate [veh/h]	1293	540	643	1286	648	555
c, Capacity [veh/h]	838	350	63	989	114	97
d1, Uniform Delay [s]	22.83	21.66	58.46	15.00	53.56	53.56
k, delay calibration	0.50	0.50	0.10	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	136.04	488.66	43.45	134.38	742.76	2016.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.28	2.06	0.97	1.28	2.60	5.43
d, Delay for Lane Group [s/veh]	158.87	510.32	101.91	149.37	796.32	2070.39
Lane Group LOS	F	F	F	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	27.00	56.39	2.73	29.15	27.16	57.73
50th-Percentile Queue Length [ft/ln]	674.98	1409.67	68.17	728.81	678.96	1443.32
95th-Percentile Queue Length [veh/ln]	42.34	97.79	4.91	45.78	45.61	92.15
95th-Percentile Queue Length [ft/ln]	1058.46	2444.84	122.71	1144.45	1140.29	2303.85

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	158.87	510.32	101.91	149.37	796.32	2070.39
Movement LOS	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	300.19		147.19		1614.26	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	522.88					
Intersection LOS	F					
Intersection V/C	2.564					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.480
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.14	3.46	44.22
I_b,int, Bicycle LOS Score for Intersection	3.043	2.655	2.919
Bicycle LOS	C	B	C

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	274.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.608

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑ →			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	414	1318	270	79	1282	27	55	226	574	423	363	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	414	1318	270	79	1282	27	55	226	399	423	363	11
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	362	74	22	352	7	15	62	110	116	100	3
Total Analysis Volume [veh/h]	455	1448	297	87	1409	30	60	248	438	465	399	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	55	55	8	50	50	36	36	36	16	16	16
g / C, Green / Cycle	0.10	0.43	0.43	0.06	0.39	0.39	0.27	0.27	0.27	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.36	0.47	0.48	0.09	0.51	0.51	0.03	0.26	0.28	0.14	0.31	0.01
s, saturation flow rate [veh/h]	1273	2481	1191	952	1853	960	1810	965	1548	3409	1303	1416
c, Capacity [veh/h]	127	1056	507	59	718	372	496	265	425	420	160	174
d1, Uniform Delay [s]	58.50	37.32	37.32	61.00	39.82	39.82	35.41	46.08	46.51	57.00	57.00	50.36
k, delay calibration	0.50	0.50	0.50	0.08	0.50	0.50	0.04	0.33	0.41	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1178.34	61.95	82.37	231.57	153.49	163.32	0.04	31.54	47.73	52.08	687.82	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	3.58	1.11	1.13	1.48	1.32	1.32	0.12	0.94	1.03	1.11	2.49	0.07
d, Delay for Lane Group [s/veh]	1236.84	99.27	119.70	292.57	193.31	203.15	35.45	77.61	94.24	109.08	744.82	50.42
Lane Group LOS	F	F	F	F	F	F	D	E	F	F	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	45.77	25.12	27.00	5.72	26.72	28.69	1.45	10.09	19.06	9.92	35.91	0.35
50th-Percentile Queue Length [ft/ln]	1144.37	627.93	675.06	143.01	667.88	717.30	36.28	252.35	476.59	247.97	897.64	8.77
95th-Percentile Queue Length [veh/ln]	71.25	35.81	38.76	10.30	41.42	44.23	2.61	15.30	26.74	15.74	57.26	0.63
95th-Percentile Queue Length [ft/ln]	1781.31	895.14	969.06	257.42	1035.50	1105.70	65.31	382.61	668.55	393.46	1431.61	15.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	1236.84	103.20	119.70	292.57	196.54	203.15	35.45	77.61	94.24	109.08	744.82	50.42
Movement LOS	F	F	F	F	F	F	D	E	F	F	F	D
d_A, Approach Delay [s/veh]	339.88			202.14			83.98			397.84		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	274.38											
Intersection LOS	F											
Intersection V/C	1.608											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.483	2.972	2.838	2.788
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.31	21.11	38.54	50.14
I_b,int, Bicycle LOS Score for Intersection	2.770	2.399	3.079	3.079
Bicycle LOS	C	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	226.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.408

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	⇐		⇐		⇐⇐	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	41	1329	804	279	342	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	41	1329	804	56	342	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	343	207	14	88	0
Total Analysis Volume [veh/h]	42	1370	829	58	353	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	3	42	36	36	36	36
g / C, Green / Cycle	0.03	0.48	0.41	0.41	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.02	0.82	0.49	0.04	0.42	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	1574	850	1596
c, Capacity [veh/h]	56	806	690	645	348	654
d1, Uniform Delay [s]	42.27	22.85	25.95	15.90	25.95	0.00
k, delay calibration	0.04	0.44	0.19	0.15	0.46	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.43	319.69	96.48	0.09	49.69	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	1.70	1.20	0.09	1.01	0.00
d, Delay for Lane Group [s/veh]	49.70	342.54	122.43	15.98	75.64	0.00
Lane Group LOS	D	F	F	B	F	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.01	43.38	15.83	0.69	11.60	0.00
50th-Percentile Queue Length [ft/ln]	25.21	1084.61	395.82	17.36	290.00	0.00
95th-Percentile Queue Length [veh/ln]	1.82	71.52	25.01	1.25	17.34	0.00
95th-Percentile Queue Length [ft/ln]	45.39	1787.96	625.24	31.25	433.57	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	49.70	342.54	122.43	15.98	75.64	0.00
Movement LOS	D	F	F	B	F	A
d_A, Approach Delay [s/veh]	333.83		115.47		75.64	
Approach LOS	F		F		E	
d_I, Intersection Delay [s/veh]	226.43					
Intersection LOS	F					
Intersection V/C	1.408					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	33.61
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.240
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	820	820	820
d_b, Bicycle Delay [s]	15.38	15.35	15.32
I_b,int, Bicycle LOS Score for Intersection	2.725	2.475	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	221.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.276

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	9	1053	4	29	540	18	142	31	39	21	8	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	2.10	0.00	0.00	2.60	27.60	4.30	0.00	17.90	0.00	0.00	6.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	0
Total Hourly Volume [veh/h]	9	1053	4	29	540	18	142	31	21	21	8	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	293	1	8	150	5	39	9	6	6	2	13
Total Analysis Volume [veh/h]	10	1170	4	32	600	20	158	34	23	23	9	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing in	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	153	153	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	1	100	100	4	102	13	13	13	19	19
g / C, Green / Cycle	0.01	0.65	0.65	0.02	0.67	0.08	0.08	0.08	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.92	0.92	0.02	1.04	0.05	0.05	0.05	0.01	0.11
s, saturation flow rate [veh/h]	1095	688	589	1810	593	1748	1840	444	1810	555
c, Capacity [veh/h]	10	449	384	43	395	144	151	37	225	69
d1, Uniform Delay [s]	75.91	26.66	26.66	74.41	25.58	68.22	68.20	67.79	59.52	66.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	119.64	196.85	199.11	22.85	267.57	4.90	4.60	16.41	0.20	30.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	1.41	1.41	0.75	1.57	0.65	0.65	0.63	0.10	0.88
d, Delay for Lane Group [s/veh]	195.55	223.51	225.77	97.26	293.15	73.12	72.80	84.21	59.71	96.54
Lane Group LOS	F	F	F	F	F	E	E	F	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.74	40.19	34.63	1.54	43.03	3.87	4.04	1.06	0.82	2.96
50th-Percentile Queue Length [ft/ln]	18.58	1004.71	865.80	38.44	1075.87	96.74	100.99	26.55	20.46	73.93
95th-Percentile Queue Length [veh/ln]	1.34	63.76	55.65	2.77	71.06	6.97	7.27	1.91	1.47	5.32
95th-Percentile Queue Length [ft/ln]	33.45	1593.98	1391.14	69.19	1776.53	174.14	181.79	47.79	36.83	133.08

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	195.55	224.55	225.77	97.26	293.15	293.15	72.99	72.80	84.21	59.71	96.54	96.54
Movement LOS	F	F	F	F	F	F	E	E	F	E	F	F
d_A, Approach Delay [s/veh]	224.31			283.54			74.16			86.46		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	221.85											
Intersection LOS	F											
Intersection V/C	1.276											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.98	65.98	65.98	65.98
I_p,int, Pedestrian LOS Score for Intersection	2.532	2.753	2.204	2.007
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	261	261	392	392
d_b, Bicycle Delay [s]	57.98	58.15	49.55	49.55
I_b,int, Bicycle LOS Score for Intersection	2.536	2.635	1.944	1.698
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.693

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue					
Base Volume Input [veh/h]	22	693	5	2	691	112	146	2	48	15	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.10	0.00	0.00	3.70	2.40	3.90	0.00	3.20	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	693	5	2	691	112	146	2	48	15	4	6
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	190	1	1	190	31	40	1	13	4	1	2
Total Analysis Volume [veh/h]	24	762	5	2	759	123	160	2	53	16	4	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	19			15			19			15		
v_di, Inbound Pedestrian Volume crossing in	19			15			19			15		
v_co, Outbound Pedestrian Volume crossing	10			8			8			11		
v_ci, Inbound Pedestrian Volume crossing mi	11			8			8			10		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			4			4			4		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	73	73	73	73	19	19
g / C, Green / Cycle	0.73	0.73	0.73	0.73	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.04	0.41	0.00	0.49	0.15	0.02
s, saturation flow rate [veh/h]	639	1851	712	1790	1412	1536
c, Capacity [veh/h]	357	1355	440	1310	325	343
d1, Uniform Delay [s]	15.96	6.13	11.73	7.07	38.63	33.61
k, delay calibration	0.50	0.50	0.50	0.50	0.17	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	1.72	0.02	2.78	3.63	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.07	0.57	0.00	0.67	0.66	0.08
d, Delay for Lane Group [s/veh]	16.33	7.85	11.75	9.85	42.26	33.70
Lane Group LOS	B	A	B	A	D	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.35	6.90	0.02	8.91	5.31	0.56
50th-Percentile Queue Length [ft/ln]	8.83	172.47	0.59	222.86	132.77	13.91
95th-Percentile Queue Length [veh/ln]	0.64	11.21	0.04	13.81	9.09	1.00
95th-Percentile Queue Length [ft/ln]	15.90	280.16	1.05	345.28	227.26	25.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.33	7.85	7.85	11.75	9.85	9.85	42.26	42.26	42.26	33.70	33.70	33.70
Movement LOS	B	A	A	B	A	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	8.11			9.85			42.26			33.70		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	13.10											
Intersection LOS	B											
Intersection V/C	0.693											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.57			39.57			39.57			39.57		
I_p,int, Pedestrian LOS Score for Intersection	2.406			2.762			1.932			1.737		
Crosswalk LOS	B			C			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1379			1379			458			458		
d_b, Bicycle Delay [s]	4.84			4.83			29.75			29.75		
I_b,int, Bicycle LOS Score for Intersection	2.865			3.018			1.914			1.604		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.565

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	656	125	54	705	10	46	123	5	85	53	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	2.70	0.00	3.30	2.00	10.10	0.00	2.30	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	656	125	54	705	10	46	123	5	85	53	58
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	171	33	14	184	3	12	32	1	22	14	15
Total Analysis Volume [veh/h]	3	683	130	56	734	10	48	128	5	89	55	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing in	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	74	74	74	74	18	18	18	18
g / C, Green / Cycle	0.74	0.74	0.74	0.74	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.08	0.40	0.04	0.07	0.07	0.07
s, saturation flow rate [veh/h]	727	1793	682	1854	1258	1855	1272	1682
c, Capacity [veh/h]	468	1321	415	1366	196	336	194	305
d1, Uniform Delay [s]	10.41	6.34	13.43	5.79	42.20	36.10	43.96	35.97
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	2.15	0.67	1.56	0.64	0.76	1.69	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.62	0.13	0.54	0.24	0.40	0.46	0.38
d, Delay for Lane Group [s/veh]	10.43	8.49	14.10	7.35	42.84	36.86	45.65	36.74
Lane Group LOS	B	A	B	A	D	D	D	D
Critical Lane Group	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.03	7.73	0.76	6.39	1.15	2.95	2.24	2.54
50th-Percentile Queue Length [ft/ln]	0.83	193.21	18.94	159.74	28.77	73.66	55.98	63.57
95th-Percentile Queue Length [veh/ln]	0.06	12.29	1.36	10.54	2.07	5.30	4.03	4.58
95th-Percentile Queue Length [ft/ln]	1.50	307.18	34.10	263.38	51.78	132.59	100.77	114.43

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	10.43	8.49	8.49	14.10	7.35	7.35	42.84	36.86	36.86	45.65	36.74	36.74
Movement LOS	B	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	8.50			7.82			38.45			40.63		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	14.21											
Intersection LOS	B											
Intersection V/C	0.565											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.60			39.60			39.60			39.60		
I_p,int, Pedestrian LOS Score for Intersection	2.517			2.527			2.017			2.165		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.87			4.86			29.79			29.82		
I_b,int, Bicycle LOS Score for Intersection	2.906			2.880			1.858			1.896		
Bicycle LOS	C			C			A			A		

**Sequence**



Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	42.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	30	286	264	372	125	301	135	483	184	277	681	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	1.10	0.00	1.70	0.00	2.40	1.10	0.50	2.30	6.40	0.00	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	120	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	30	286	144	372	125	0	135	483	184	277	681	22
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	75	38	98	33	0	36	127	48	73	179	6
Total Analysis Volume [veh/h]	32	301	152	392	132	0	142	508	194	292	717	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			6			12			6	
v_di, Inbound Pedestrian Volume crossing in		12			6			12			6	
v_co, Outbound Pedestrian Volume crossing		5			5			4			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			4			5			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		50			19			4			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	20	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	20	20	20	20	20	20	18	18	18	18	25	25	25
g / C, Green / Cycle	0.20	0.20	0.20	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.10	0.14	0.14	0.00	0.08	0.13	0.14	0.13	0.17	0.22	0.19
s, saturation flow rate [veh/h]	1778	1883	1452	1785	1853	1584	1794	1892	1892	1541	1718	1900	1699
c, Capacity [veh/h]	349	370	285	344	357	305	325	343	343	279	428	474	423
d1, Uniform Delay [s]	33.48	39.13	36.29	38.79	38.78	0.00	37.07	39.26	39.59	38.89	34.57	36.57	35.64
k, delay calibration	0.11	0.29	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.13	0.24	0.19
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	10.84	1.55	3.27	3.15	0.00	0.93	2.86	3.49	3.10	2.32	10.02	5.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.09	0.81	0.53	0.75	0.75	0.00	0.44	0.72	0.76	0.69	0.68	0.86	0.78
d, Delay for Lane Group [s/veh]	33.59	49.97	37.84	42.05	41.94	0.00	37.99	42.13	43.08	42.00	36.90	46.59	41.15
Lane Group LOS	C	D	D	D	D	A	D	D	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.66	8.20	3.44	6.36	6.59	0.00	3.20	6.03	6.45	4.71	6.72	10.86	8.18
50th-Percentile Queue Length [ft/ln]	16.39	205.05	86.05	159.06	164.80	0.00	80.10	150.6	161.3	117.8	167.97	271.60	204.38
95th-Percentile Queue Length [veh/ln]	1.18	12.90	6.20	10.50	10.80	0.00	5.77	10.05	10.62	8.27	10.97	16.27	12.86
95th-Percentile Queue Length [ft/ln]	29.50	322.47	154.90	262.48	270.06	0.00	144.1	251.2	265.5	206.8	274.24	406.74	321.61



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.59	49.97	37.84	42.01	41.94	0.00	37.99	42.62	42.00	36.90	44.26	41.15
Movement LOS	C	D	D	D	D	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	45.09			41.99			41.70			42.10		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.47											
Intersection LOS	D											
Intersection V/C	0.713											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.51	39.51	39.51	39.51
I_p,int, Pedestrian LOS Score for Intersection	2.526	4.265	4.404	2.806
Crosswalk LOS	B	E	E	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	565	813	537	675
d_b, Bicycle Delay [s]	26.83	18.07	27.23	22.45
I_b,int, Bicycle LOS Score for Intersection	2.558	4.074	3.081	2.411
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road/101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	22.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.994

**Intersection Setup**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	1961	0	0	1480	570	870
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1961	0	0	1480	570	870
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	495	0	0	374	144	220
Total Analysis Volume [veh/h]	1981	0	0	1495	576	879
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	0	5	0
Pedestrian Clearance [s]	12	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.57	0.42	0.17	0.34
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2070	2094	1183	907
d1, Uniform Delay [s]	15.29	11.47	20.28	25.48
k, delay calibration	0.50	0.50	0.04	0.06
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.95	2.11	0.12	5.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	0.71	0.49	0.97
d, Delay for Lane Group [s/veh]	27.24	13.58	20.40	30.89
Lane Group LOS	C	B	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	17.50	8.57	4.02	8.36
50th-Percentile Queue Length [ft/ln]	437.43	214.37	100.62	209.02
95th-Percentile Queue Length [veh/ln]	24.36	13.38	7.24	13.10
95th-Percentile Queue Length [ft/ln]	608.93	334.43	181.11	327.58

**Movement, Approach, & Intersection Results**

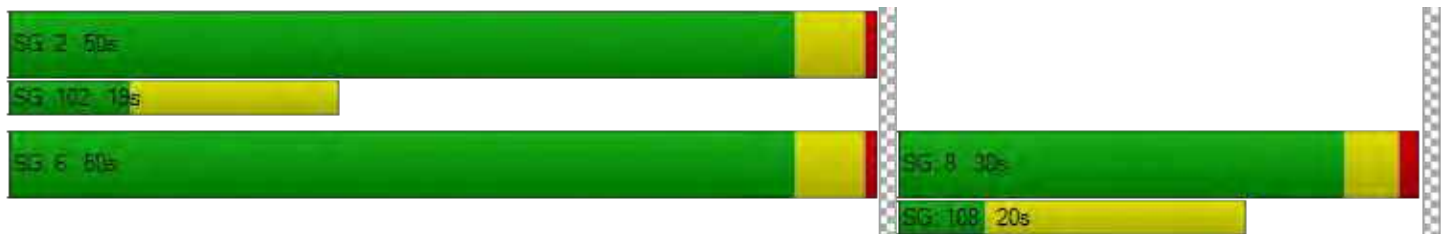
d_M, Delay for Movement [s/veh]	27.24	0.00	0.00	13.58	20.40	30.89
Movement LOS	C			B	C	C
d_A, Approach Delay [s/veh]	27.24		13.58		26.73	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	22.95					
Intersection LOS	C					
Intersection V/C	0.994					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.188	2.479
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.47	18.31
I_b,int, Bicycle LOS Score for Intersection	3.194	2.793	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	151.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.489

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	22	311	18	146	696	36	21	132	21	7	18	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	311	18	146	696	36	21	132	21	7	18	52
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	84	5	40	188	10	6	37	6	2	5	14
Total Analysis Volume [veh/h]	24	336	19	158	753	39	24	149	24	8	20	56
Pedestrian Volume [ped/h]	3			4			2			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	605	950	526	517
Degree of Utilization, x	0.63	1.49	0.37	0.16

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	4.37	46.64	1.73	0.58
95th-Percentile Queue Length [ft]	109.22	1166.05	43.13	14.38
Approach Delay [s/veh]	18.44	244.75	13.89	11.30
Approach LOS	C	F	B	B
Intersection Delay [s/veh]	151.05			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	65.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.071

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	197	40	1766	12	31	5	9	757	239	2568	788	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	40	1766	12	31	5	9	757	239	2568	788	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	10	460	3	8	1	2	197	62	669	205	4
Total Analysis Volume [veh/h]	205	42	1840	13	32	5	9	789	249	2675	821	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			4			4			0	
v_di, Inbound Pedestrian Volume crossing in		0			4			4			0	
v_co, Outbound Pedestrian Volume crossing		0			13			0			13	
v_ci, Inbound Pedestrian Volume crossing mi		0			13			0			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			13			8			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	6	4	6	4	1	4	1	2	8
Auxiliary Signal Groups			2,3									
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	10	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	10	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	58	11	11	25	32	25	32	59	32	59	58	0
Vehicle Extension [s]	4.5	2.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0	4.5	0.0
Walk [s]	5	0	0	10	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	10	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.1	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	26	116	10	10	38	38	38	76	76
g / C, Green / Cycle	0.16	0.73	0.06	0.06	0.24	0.24	0.24	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.14	0.44	0.02	0.01	0.22	0.22	0.16	0.52	0.50
s, saturation flow rate [veh/h]	1824	4190	1707	1588	1892	1724	1556	5150	1678
c, Capacity [veh/h]	302	2949	137	97	450	410	370	2449	798
d1, Uniform Delay [s]	64.44	12.51	71.59	71.56	59.60	59.60	55.09	41.95	41.95
k, delay calibration	0.42	0.50	0.04	0.04	0.15	0.15	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.40	1.01	0.27	0.45	11.35	12.22	0.80	48.85	44.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	0.62	0.20	0.23	0.93	0.93	0.67	1.09	1.05
d, Delay for Lane Group [s/veh]	82.84	13.52	71.86	72.01	70.95	71.82	55.89	90.81	86.94
Lane Group LOS	F	B	E	E	E	E	E	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.32	11.52	1.10	0.89	18.02	16.52	9.23	42.84	41.02
50th-Percentile Queue Length [ft/ln]	283.04	287.93	27.52	22.30	450.52	412.89	230.79	1071.03	1025.56
95th-Percentile Queue Length [veh/ln]	16.84	17.08	1.98	1.61	24.98	23.18	14.21	57.39	53.49
95th-Percentile Queue Length [ft/ln]	421.00	427.07	49.54	40.15	624.57	579.51	355.36	1434.72	1337.27

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	82.84	82.84	13.52	71.86	71.94	72.01	70.95	71.37	55.89	90.81	86.94	86.94
Movement LOS	F	F	B	E	E	E	E	E	E	F	F	F
d_A, Approach Delay [s/veh]	21.72			71.93			67.68			89.89		
Approach LOS	C			E			E			F		
d_I, Intersection Delay [s/veh]	65.03											
Intersection LOS	E											
Intersection V/C	1.071											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.666			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			693			654		
d_b, Bicycle Delay [s]	73.73			54.89			34.33			36.27		
I_b,int, Bicycle LOS Score for Intersection	5.003			1.601			2.423			7.353		
Bicycle LOS	F			A			B			F		

**Sequence**

Ring 1	-	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	162.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.089

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1045	199	0	1137	879	0	0	0	0	794	352
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	4.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1045	199	0	1137	879	0	0	0	0	794	352
Peak Hour Factor	1.0000	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	281	50	0	306	236	0	0	0	0	199	98
Total Analysis Volume [veh/h]	0	1124	199	0	1223	945	0	0	0	0	794	391
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	0	30	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	21	0	0	0	0	0	59	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		Yes			Yes						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	43	43	43		29	29
g / C, Green / Cycle	0.54	0.54	0.54		0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.22	0.24	1.36		0.23	0.31
s, saturation flow rate [veh/h]	5094	5012	693		3514	1271
c, Capacity [veh/h]	2750	2706	374		1265	458
d1, Uniform Delay [s]	10.84	11.18	17.80		21.12	23.61
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.45	0.55	693.86		0.52	4.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.41	0.45	2.52		0.63	0.85
d, Delay for Lane Group [s/veh]	11.29	11.72	711.66		21.64	28.27
Lane Group LOS	B	B	F		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	3.65	4.10	77.94		5.89	3.49
50th-Percentile Queue Length [ft/ln]	91.13	102.42	1948.55		147.22	87.20
95th-Percentile Queue Length [veh/ln]	6.56	7.37	133.33		9.87	6.28
95th-Percentile Queue Length [ft/ln]	164.04	184.36	3333.34		246.72	156.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	11.29	0.00	0.00	11.72	711.66	0.00	0.00	0.00	0.00	21.64	28.27
Movement LOS		B			B	F					C	C
d_A, Approach Delay [s/veh]	11.29		316.82				0.00		23.82			
Approach LOS	B		F				A		C			
d_I, Intersection Delay [s/veh]	162.56											
Intersection LOS	F											
Intersection V/C	2.089											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.971	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	426	426	0	1377
d_b, Bicycle Delay [s]	24.77	24.88	39.95	3.88
I_b,int, Bicycle LOS Score for Intersection	2.178	2.752	4.132	1.560
Bicycle LOS	B	C	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	239.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.264

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)			Eastbound			Northwestbound		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1309	522	0	1709	696	0	0	0	304	0	859
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1309	522	0	1709	696	0	0	0	304	0	859
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	334	133	0	436	174	0	0	0	76	0	239
Total Analysis Volume [veh/h]	0	1336	533	0	1744	696	0	0	0	304	0	954
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	20	0	0	20	0	0	0	0	60	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	24	24	24		48	48
g / C, Green / Cycle	0.30	0.30	0.30		0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.44	0.34	0.57		0.09	0.57
s, saturation flow rate [veh/h]	3051	1579	3051		3514	1685
c, Capacity [veh/h]	915	473	915		2108	1011
d1, Uniform Delay [s]	27.97	27.70	27.97		7.00	14.74
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	213.13	80.51	411.83		0.03	5.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	1.46	1.13	1.91		0.14	0.94
d, Delay for Lane Group [s/veh]	241.10	108.21	439.79		7.03	20.06
Lane Group LOS	F	F	F		A	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	23.58	19.07	40.41		1.01	7.34
50th-Percentile Queue Length [ft/ln]	589.38	476.84	1010.21		25.16	183.45
95th-Percentile Queue Length [veh/ln]	37.98	28.16	66.18		1.81	11.78
95th-Percentile Queue Length [ft/ln]	949.42	704.04	1654.55		45.29	294.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	241.10	108.21	0.00	439.79	0.00	0.00	0.00	0.00	7.03	0.00	20.06
Movement LOS		F	F		F					A		C
d_A, Approach Delay [s/veh]	203.20		439.79		0.00		16.91					
Approach LOS	F		F		A		B					
d_I, Intersection Delay [s/veh]	239.80											
Intersection LOS	F											
Intersection V/C	1.264											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	31.48	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.151	1.419	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400	0	1401
d_b, Bicycle Delay [s]	25.60	25.63	39.97	3.59
I_b,int, Bicycle LOS Score for Intersection	2.588	2.519	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	69.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.118

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←↔→		↑↑↑↔		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	



**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	752	588	2491	348	223	1827
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	752	588	2491	348	223	1827
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	202	158	670	94	60	491
Total Analysis Volume [veh/h]	809	632	2678	374	240	1965
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	10	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	64	64
g / C, Green / Cycle	0.21	0.21	0.53	0.53	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.24	0.41	0.53	0.24	0.68	0.39
s, saturation flow rate [veh/h]	3361	1543	5049	1579	351	4979
c, Capacity [veh/h]	719	330	2700	844	299	3387
d1, Uniform Delay [s]	36.75	36.55	21.55	13.21	28.52	7.90
k, delay calibration	0.06	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	58.78	422.54	3.38	0.14	19.94	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.13	1.91	0.99	0.44	0.80	0.58
d, Delay for Lane Group [s/veh]	95.53	459.09	24.93	13.35	48.46	7.96
Lane Group LOS	F	F	C	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.89	46.07	18.33	4.52	3.20	5.88
50th-Percentile Queue Length [ft/ln]	347.19	1151.84	458.33	113.08	80.12	147.11
95th-Percentile Queue Length [veh/ln]	21.25	72.91	25.36	8.01	5.77	9.86
95th-Percentile Queue Length [ft/ln]	531.21	1822.80	633.88	200.28	144.21	246.56

**Movement, Approach, & Intersection Results**

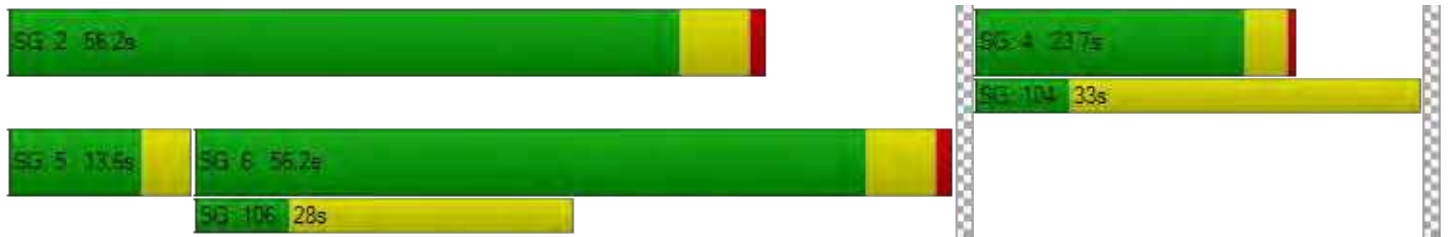
d_M, Delay for Movement [s/veh]	95.53	459.09	24.93	13.35	48.46	7.96
Movement LOS	F	F	C	B	D	A
d_A, Approach Delay [s/veh]	254.98		23.51		12.36	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	69.64					
Intersection LOS	E					
Intersection V/C	1.118					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.40	36.40	36.40
I_p,int, Pedestrian LOS Score for Intersection	2.978	3.407	3.364
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	428	1070	1070
d_b, Bicycle Delay [s]	29.01	10.12	10.12
I_b,int, Bicycle LOS Score for Intersection	1.560	3.238	2.772
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	39.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.979

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	1032	90	2679	99	74	2258
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1032	90	2679	99	74	2258
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	263	23	683	25	19	576
Total Analysis Volume [veh/h]	1053	92	2734	101	76	2304
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	25	25	50	50	5	59
g / C, Green / Cycle	0.26	0.26	0.53	0.53	0.05	0.62
(v / s)_i Volume / Saturation Flow Rate	0.30	0.06	0.54	0.06	0.04	0.46
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	910	424	2659	842	100	3104
d1, Uniform Delay [s]	35.09	27.43	22.59	11.44	44.32	12.54
k, delay calibration	0.06	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	72.51	0.09	14.45	0.02	4.32	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.16	0.22	1.03	0.12	0.76	0.74
d, Delay for Lane Group [s/veh]	107.60	27.53	37.04	11.46	48.64	12.67
Lane Group LOS	F	C	F	B	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.54	1.65	20.30	0.97	1.82	9.16
50th-Percentile Queue Length [ft/ln]	488.53	41.29	507.45	24.30	45.47	229.09
95th-Percentile Queue Length [veh/ln]	29.08	2.97	28.30	1.75	3.27	14.13
95th-Percentile Queue Length [ft/ln]	727.07	74.32	707.40	43.73	81.84	353.20



**Movement, Approach, & Intersection Results**

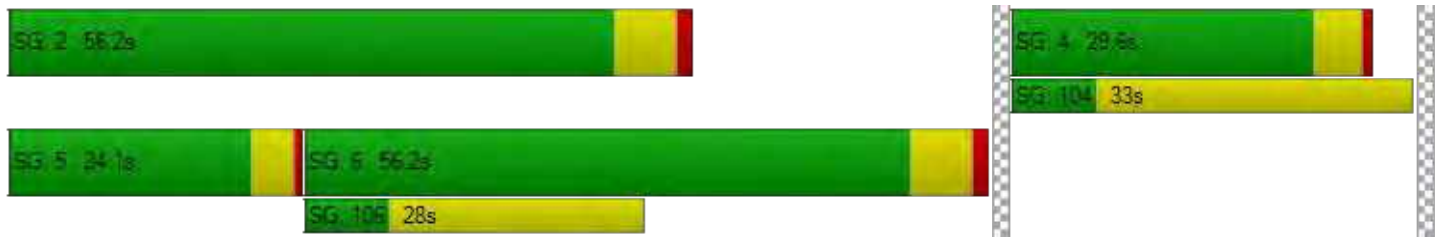
d_M, Delay for Movement [s/veh]	107.60	27.53	37.04	11.46	48.64	12.67
Movement LOS	F	C	F	B	D	B
d_A, Approach Delay [s/veh]	101.17		36.13		13.82	
Approach LOS	F		D		B	
d_I, Intersection Delay [s/veh]	39.49					
Intersection LOS	D					
Intersection V/C	0.979					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.19	37.19	37.19
I_p,int, Pedestrian LOS Score for Intersection	2.402	3.860	3.684
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	526	1051	1051
d_b, Bicycle Delay [s]	25.84	10.70	10.70
I_b,int, Bicycle LOS Score for Intersection	1.560	3.119	2.869
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bafront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.940

**Intersection Setup**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐ ⇐		↑ ↑ ↑		⇐ ⇐ ↑ ↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	581	164	2488	60	48	1269
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.80	14.80	4.10	4.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	581	164	2488	60	48	1269
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	42	635	15	12	324
Total Analysis Volume [veh/h]	593	167	2539	61	49	1295
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	10	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	57	57
g / C, Green / Cycle	0.23	0.23	0.57	0.57	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.56	0.04	0.10	0.29
s, saturation flow rate [veh/h]	1438	1365	4507	1406	471	4470
c, Capacity [veh/h]	330	313	2588	807	342	2936
d1, Uniform Delay [s]	33.54	33.54	18.08	8.26	20.42	7.23
k, delay calibration	0.50	0.50	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	104.70	112.89	2.28	0.01	0.07	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.17	1.19	0.98	0.08	0.14	0.44
d, Delay for Lane Group [s/veh]	138.25	146.43	20.37	8.27	20.49	7.26
Lane Group LOS	F	F	C	A	C	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.35	16.23	14.89	0.48	0.14	3.31
50th-Percentile Queue Length [ft/ln]	408.81	405.70	372.33	11.88	3.46	82.63
95th-Percentile Queue Length [veh/ln]	24.96	24.97	21.22	0.86	0.25	5.95
95th-Percentile Queue Length [ft/ln]	624.01	624.28	530.55	21.39	6.23	148.73

**Movement, Approach, & Intersection Results**

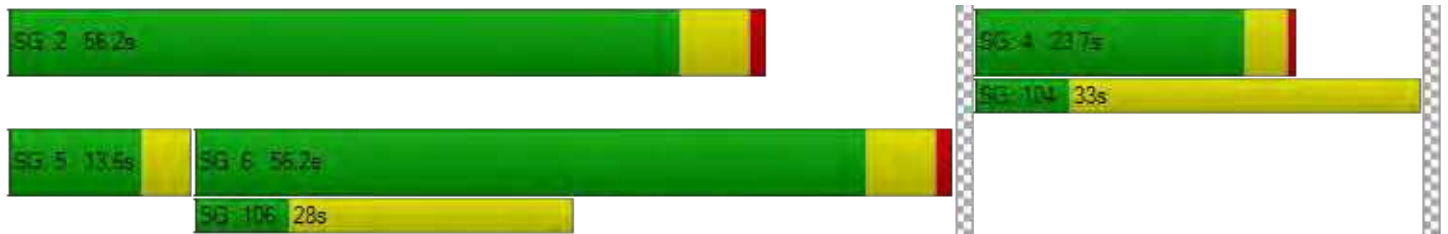
d_M, Delay for Movement [s/veh]	141.12	146.43	20.37	8.27	20.49	7.26
Movement LOS	F	F	C	A	C	A
d_A, Approach Delay [s/veh]	142.26		20.09		7.75	
Approach LOS	F		C		A	
d_I, Intersection Delay [s/veh]	36.30					
Intersection LOS	D					
Intersection V/C	0.940					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.21	33.21	33.21
I_p,int, Pedestrian LOS Score for Intersection	2.383	3.217	3.217
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	460	1149	1149
d_b, Bicycle Delay [s]	25.81	7.88	7.88
I_b,int, Bicycle LOS Score for Intersection	2.814	2.990	2.299
Bicycle LOS	C	C	B

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	189.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.636

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	515	399	19	406	215	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	515	399	19	406	215	20
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	115	5	117	62	6
Total Analysis Volume [veh/h]	592	459	22	467	247	23
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	1051	600	516
Degree of Utilization, x	1.64	0.81	0.52

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	57.88	8.25	3.00
95th-Percentile Queue Length [ft]	1446.97	206.36	75.01
Approach Delay [s/veh]	308.53	29.97	17.38
Approach LOS	F	D	C
Intersection Delay [s/veh]	189.84		
Intersection LOS	F		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

**Intersection Setup**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	0	179	2539	24	49	1337
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	19.20	3.80	3.80	8.60	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	179	2539	24	49	1337
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	49	698	7	13	367
Total Analysis Volume [veh/h]	0	197	2790	26	54	1469
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	10	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	0.5	0.5	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	82	82	82	82	82
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	15	50	50	57	57
g / C, Green / Cycle	0.18	0.61	0.61	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.16	0.62	0.02	0.25	0.34
s, saturation flow rate [veh/h]	1233	4518	1410	214	4342
c, Capacity [veh/h]	222	2761	862	224	3035
d1, Uniform Delay [s]	32.75	15.91	6.31	20.33	5.60
k, delay calibration	0.13	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.61	7.79	0.01	0.20	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.89	1.01	0.03	0.24	0.48
d, Delay for Lane Group [s/veh]	46.36	23.70	6.31	20.53	5.64
Lane Group LOS	D	F	A	C	A
Critical Lane Group	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.53	16.02	0.16	0.23	2.93
50th-Percentile Queue Length [ft/ln]	113.26	400.48	3.96	5.83	73.16
95th-Percentile Queue Length [veh/ln]	8.02	22.78	0.28	0.42	5.27
95th-Percentile Queue Length [ft/ln]	200.53	569.38	7.12	10.49	131.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	46.36	23.70	6.31	20.53	5.64
Movement LOS		D	F	A	C	A
d_A, Approach Delay [s/veh]	46.36		23.54		6.17	
Approach LOS	D		C		A	
d_I, Intersection Delay [s/veh]	18.70					
Intersection LOS	B					
Intersection V/C	0.888					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	-6.2	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.30	30.60	30.60
I_p,int, Pedestrian LOS Score for Intersection	1.911	3.185	3.217
Crosswalk LOS	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	1224	1224
d_b, Bicycle Delay [s]	23.31	6.16	6.16
I_b,int, Bicycle LOS Score for Intersection	1.560	3.108	2.397
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	113.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.240

**Intersection Setup**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Base Volume Input [veh/h]	79	391	27	131	414	60	412	21	509	270	18	678
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	79	391	27	131	414	60	412	21	509	270	18	678
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	111	8	37	118	17	117	6	145	77	5	193
Total Analysis Volume [veh/h]	90	444	31	149	470	68	468	24	578	307	20	770
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing in	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing mi	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									1,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	10	34	0	11	35	0	0	40	40	0	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	20	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	9	32	7	30	30	77	30	30
g / C, Green / Cycle	0.08	0.28	0.06	0.26	0.26	0.67	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.04	0.30	0.28	0.38	0.36	0.35
s, saturation flow rate [veh/h]	1767	1834	3431	1768	1771	1539	1506	1577
c, Capacity [veh/h]	143	510	216	460	460	1031	440	410
d1, Uniform Delay [s]	51.31	40.54	52.95	42.68	42.68	9.88	44.16	42.68
k, delay calibration	0.11	0.45	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.45	23.98	3.91	97.75	61.41	2.20	128.49	167.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.63	0.93	0.69	1.17	1.07	0.56	1.25	1.34
d, Delay for Lane Group [s/veh]	55.76	64.52	56.87	140.43	104.09	12.08	172.65	210.42
Lane Group LOS	E	E	E	F	F	B	F	F
Critical Lane Group	No	No	No	Yes	Yes	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.70	16.37	2.23	25.41	20.81	7.63	28.54	30.64
50th-Percentile Queue Length [ft/ln]	67.40	409.31	55.76	635.25	520.13	190.78	713.59	765.89
95th-Percentile Queue Length [veh/ln]	4.85	23.01	4.01	36.86	29.44	12.16	42.11	46.23
95th-Percentile Queue Length [ft/ln]	121.32	575.21	100.37	921.39	735.98	304.04	1052.75	1155.78

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	55.76	64.52	64.52	56.87	140.43	140.43	104.09	104.09	12.08	172.65	172.65	199.56
Movement LOS	E	E	E	E	F	F	F	F	B	F	F	F
d_A, Approach Delay [s/veh]	63.13			122.31			54.39			191.54		
Approach LOS	E			F			D			F		
d_I, Intersection Delay [s/veh]	113.48											
Intersection LOS	F											
Intersection V/C	1.240											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.17	47.17	47.17	47.17
I_p,int, Pedestrian LOS Score for Intersection	3.013	2.774	2.358	2.460
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	520	538	624	711
d_b, Bicycle Delay [s]	31.55	30.82	27.27	23.94
I_b,int, Bicycle LOS Score for Intersection	2.492	2.693	3.325	3.370
Bicycle LOS	B	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	148.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.403

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
Base Volume Input [veh/h]	362	54	40	343	146	3	50	8	245	0	490	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	362	54	40	343	146	3	50	8	245	0	490	83
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	14	10	86	37	1	13	2	61	0	123	21
Total Analysis Volume [veh/h]	362	54	40	343	146	3	50	8	245	0	490	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			8			7		
v_di, Inbound Pedestrian Volume crossing in	0			0			7			8		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	41	0	0	27	0	0	22	0	0	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	38	22	22	18	38	38
g / C, Green / Cycle	0.42	0.24	0.24	0.20	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.85	0.21	0.09	0.34	0.18	0.19
s, saturation flow rate [veh/h]	535	1609	1680	899	1628	1468
c, Capacity [veh/h]	298	390	407	181	729	621
d1, Uniform Delay [s]	36.07	32.92	28.43	36.00	18.18	18.44
k, delay calibration	0.50	0.11	0.11	0.46	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	255.25	6.56	0.55	323.48	1.71	2.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.53	0.88	0.37	1.67	0.41	0.44
d, Delay for Lane Group [s/veh]	291.31	39.48	28.98	359.48	19.89	20.70
Lane Group LOS	F	D	C	F	B	C
Critical Lane Group	Yes	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	27.71	7.73	2.70	20.17	4.52	4.27
50th-Percentile Queue Length [ft/ln]	692.83	193.22	67.38	504.35	113.06	106.64
95th-Percentile Queue Length [veh/ln]	45.58	12.29	4.85	33.47	8.01	7.65
95th-Percentile Queue Length [ft/ln]	1139.50	307.20	121.28	836.76	200.24	191.32

**Movement, Approach, & Intersection Results**

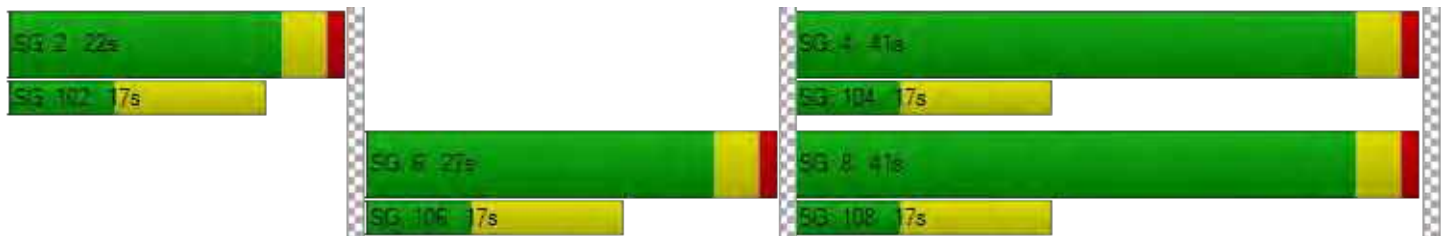
d_M, Delay for Movement [s/veh]	291.31	291.31	291.31	39.48	28.98	28.98	359.48	359.48	359.48	19.89	20.21	20.70
Movement LOS	F	F	F	D	C	C	F	F	F	B	C	C
d_A, Approach Delay [s/veh]	291.31			36.30			359.48			20.28		
Approach LOS	F			D			F			C		
d_I, Intersection Delay [s/veh]	148.71											
Intersection LOS	F											
Intersection V/C	1.403											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	34.72
I_p,int, Pedestrian LOS Score for Intersection	2.438	2.115	2.665	2.161
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	821	511	400	821
d_b, Bicycle Delay [s]	15.64	24.98	28.85	15.64
I_b,int, Bicycle LOS Score for Intersection	2.312	2.371	2.060	2.032
Bicycle LOS	B	B	B	B

**Sequence**




Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	512.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.739

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	173	157	266	316	197	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	157	266	316	197	51
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	47	80	95	59	15
Total Analysis Volume [veh/h]	208	189	320	381	237	61
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	1.74	0.25	0.26	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	512.66	487.30	8.90	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	29.66	29.66	1.03	1.03	0.00	0.00
95th-Percentile Queue Length [ft/ln]	741.53	741.53	25.77	25.77	0.00	0.00
d_A, Approach Delay [s/veh]	500.59		4.06		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	144.40					
Intersection LOS	F					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/ Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	16.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.089

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	106	210	35	15	30	242
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.90	7.90	14.00	14.00	12.70	17.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	210	35	15	30	242
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	65	11	5	9	75
Total Analysis Volume [veh/h]	131	259	43	19	37	299
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.09	0.00	0.00	0.00	0.09	0.31
d_M, Delay for Movement [s/veh]	7.62	0.00	0.00	0.00	16.41	11.46
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.29	0.29	0.00	0.00	1.91	1.91
95th-Percentile Queue Length [ft/ln]	7.14	7.14	0.00	0.00	47.83	47.83
d_A, Approach Delay [s/veh]	2.56		0.00		12.01	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	6.39					
Intersection LOS	C					

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Scenario 19 Cumulative PM (2040 vols)

Report File: P:\...\Cumulative PM.pdf

12/30/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	959		1163		1338	444	3904

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	49	1326	7	75	1046	249	15	6	412	304	6	4	3499

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	293	675	54	13	996	354	462	34	236	128	85	40	3370

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	2	745	61	416	703	81	96	26	2	65	76	339	2612

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	137	544	481	639	476	104	2381

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	34	32	32	214	0	289	2	770	136	328	718	2	2557

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	3685	27	390	970	68	1942	7082

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	220	95	1112	159	332	146	76	2469	310	559	829	34	6341

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	43	1065	302	138	994	54	123	201	35	193	195	299	3642

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	207	933	1212	87	115	122	2676

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1000	672	57	1178	274	492	3673

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	414	1318	270	79	1282	27	55	226	574	423	363	56	5087

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	41	1329	804	279	342	40	2835

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	9	1053	4	29	540	18	142	31	39	21	8	47	1941

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	22	693	5	2	691	112	146	2	48	15	4	6	1746

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	3	656	125	54	705	10	46	123	5	85	53	58	1923

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	30	286	264	372	125	301	135	483	184	277	681	22	3160

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road/101 NB Ramps	1961		1480		570	870	4881

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	22	311	18	146	696	36	21	132	21	7	18	52	1480

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	197	40	1766	12	31	5	9	757	239	2568	788	14	6426

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	1045	199	1137	879	794	352	4406

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1309	522	1709	696	304	859	5399

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	752	588	2491	348	223	1827	6229

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	1032	90	2679	99	74	2258	6232

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	581	164	2488	60	48	1269	4610

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	515	399	19	406	215	20	1574

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	179		2539	24	49	1337	4128

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	79	391	27	131	414	60	412	21	509	270	18	678	3010

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	362	54	40	343	146	3	50	8	245	0	490	83	1824

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	173	157	266	316	197	51	1160

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	106	210	35	15	30	242	638

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Scenario 19 Cumulative PM (2040 vols)

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12/30/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Southeastbound		Total Volume
			Thru			Thru			Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	959			1163			1338	444	3904
		Growth Factor	1.00			1.00			1.00	1.00	-
		In Process	0			0			0	0	0
		Net New Trips	0			0			0	0	0
		Other	0			0			0	0	0
		<b>Future Total</b>	<b>959</b>			<b>1163</b>			<b>1338</b>	<b>444</b>	<b>3904</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	49	1326	7	75	1046	249	15	6	412	304	6	4	3499	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>49</b>	<b>1326</b>	<b>7</b>	<b>75</b>	<b>1046</b>	<b>249</b>	<b>15</b>	<b>6</b>	<b>412</b>	<b>304</b>	<b>6</b>	<b>4</b>	<b>3499</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	293	675	54	13	996	354	462	34	236	128	85	40	3370	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>293</b>	<b>675</b>	<b>54</b>	<b>13</b>	<b>996</b>	<b>354</b>	<b>462</b>	<b>34</b>	<b>236</b>	<b>128</b>	<b>85</b>	<b>40</b>	<b>3370</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	2	745	61	416	703	81	96	26	2	65	76	339	2612	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>2</b>	<b>745</b>	<b>61</b>	<b>416</b>	<b>703</b>	<b>81</b>	<b>96</b>	<b>26</b>	<b>2</b>	<b>65</b>	<b>76</b>	<b>339</b>	<b>2612</b>	



ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	137	544	481	639	476	104	2381
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>137</b>	<b>544</b>	<b>481</b>	<b>639</b>	<b>476</b>	<b>104</b>	<b>2381</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	Final Base	34	32	32	214	0	289	2	770	136	328	718	2	2557
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>34</b>	<b>32</b>	<b>32</b>	<b>214</b>	<b>0</b>	<b>289</b>	<b>2</b>	<b>770</b>	<b>136</b>	<b>328</b>	<b>718</b>	<b>2</b>	<b>2557</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	3685	27	390	970	68	1942	7082
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3685</b>	<b>27</b>	<b>390</b>	<b>970</b>	<b>68</b>	<b>1942</b>	<b>7082</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	220	95	1112	159	332	146	76	2469	310	559	829	34	6341
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>220</b>	<b>95</b>	<b>1112</b>	<b>159</b>	<b>332</b>	<b>146</b>	<b>76</b>	<b>2469</b>	<b>310</b>	<b>559</b>	<b>829</b>	<b>34</b>	<b>6341</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	43	1065	302	138	994	54	123	201	35	193	195	299	3642
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>43</b>	<b>1065</b>	<b>302</b>	<b>138</b>	<b>994</b>	<b>54</b>	<b>123</b>	<b>201</b>	<b>35</b>	<b>193</b>	<b>195</b>	<b>299</b>	<b>3642</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	207	933	1212	87	115	122	2676
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>207</b>	<b>933</b>	<b>1212</b>	<b>87</b>	<b>115</b>	<b>122</b>	<b>2676</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1000	672	57	1178	274	492	3673
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1000</b>	<b>672</b>	<b>57</b>	<b>1178</b>	<b>274</b>	<b>492</b>	<b>3673</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	414	1318	270	79	1282	27	55	226	574	423	363	56	5087
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>414</b>	<b>1318</b>	<b>270</b>	<b>79</b>	<b>1282</b>	<b>27</b>	<b>55</b>	<b>226</b>	<b>574</b>	<b>423</b>	<b>363</b>	<b>56</b>	<b>5087</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	41	1329	804	279	342	40	2835
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>41</b>	<b>1329</b>	<b>804</b>	<b>279</b>	<b>342</b>	<b>40</b>	<b>2835</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	9	1053	4	29	540	18	142	31	39	21	8	47	1941
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>1053</b>	<b>4</b>	<b>29</b>	<b>540</b>	<b>18</b>	<b>142</b>	<b>31</b>	<b>39</b>	<b>21</b>	<b>8</b>	<b>47</b>	<b>1941</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	22	693	5	2	691	112	146	2	48	15	4	6	1746
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>693</b>	<b>5</b>	<b>2</b>	<b>691</b>	<b>112</b>	<b>146</b>	<b>2</b>	<b>48</b>	<b>15</b>	<b>4</b>	<b>6</b>	<b>1746</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	3	656	125	54	705	10	46	123	5	85	53	58	1923
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3</b>	<b>656</b>	<b>125</b>	<b>54</b>	<b>705</b>	<b>10</b>	<b>46</b>	<b>123</b>	<b>5</b>	<b>85</b>	<b>53</b>	<b>58</b>	<b>1923</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd- Willow Rd	Final Base	30	286	264	372	125	301	135	483	184	277	681	22	3160
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>30</b>	<b>286</b>	<b>264</b>	<b>372</b>	<b>125</b>	<b>301</b>	<b>135</b>	<b>483</b>	<b>184</b>	<b>277</b>	<b>681</b>	<b>22</b>	<b>3160</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road/101 NB Ramps	Final Base	1961		1480		570	870	4881
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1961</b>	<b>1480</b>	<b>570</b>	<b>870</b>	<b>4881</b>		

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	22	311	18	146	696	36	21	132	21	7	18	52	1480
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>311</b>	<b>18</b>	<b>146</b>	<b>696</b>	<b>36</b>	<b>21</b>	<b>132</b>	<b>21</b>	<b>7</b>	<b>18</b>	<b>52</b>	<b>1480</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	197	40	1766	12	31	5	9	757	239	2568	788	14	6426
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>197</b>	<b>40</b>	<b>1766</b>	<b>12</b>	<b>31</b>	<b>5</b>	<b>9</b>	<b>757</b>	<b>239</b>	<b>2568</b>	<b>788</b>	<b>14</b>	<b>6426</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1045	199	1137	879	794	352	4406
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1045</b>	<b>199</b>	<b>1137</b>	<b>879</b>	<b>794</b>	<b>352</b>	<b>4406</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1309	522	1709	696	304	859	5399
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1309</b>	<b>522</b>	<b>1709</b>	<b>696</b>	<b>304</b>	<b>859</b>	<b>5399</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	752	588	2491	348	223	1827	6229
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>752</b>	<b>588</b>	<b>2491</b>	<b>348</b>	<b>223</b>	<b>1827</b>	<b>6229</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	1032	90	2679	99	74	2258	6232
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1032</b>	<b>90</b>	<b>2679</b>	<b>99</b>	<b>74</b>	<b>2258</b>	<b>6232</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	Final Base	581	164	2488	60	48	1269	4610
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>581</b>	<b>164</b>	<b>2488</b>	<b>60</b>	<b>48</b>	<b>1269</b>	<b>4610</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	515	399	19	406	215	20	1574
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>515</b>	<b>399</b>	<b>19</b>	<b>406</b>	<b>215</b>	<b>20</b>	<b>1574</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	179	2539	24	49	1337	4128	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>179</b>	<b>2539</b>	<b>24</b>	<b>49</b>	<b>1337</b>	<b>4128</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	79	391	27	131	414	60	412	21	509	270	18	678	3010
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>79</b>	<b>391</b>	<b>27</b>	<b>131</b>	<b>414</b>	<b>60</b>	<b>412</b>	<b>21</b>	<b>509</b>	<b>270</b>	<b>18</b>	<b>678</b>	<b>3010</b>

ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	362	54	40	343	146	3	50	8	245	0	490	83	1824
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>362</b>	<b>54</b>	<b>40</b>	<b>343</b>	<b>146</b>	<b>3</b>	<b>50</b>	<b>8</b>	<b>245</b>	<b>0</b>	<b>490</b>	<b>83</b>	<b>1824</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	173	157	266	316	197	51	1160
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>173</b>	<b>157</b>	<b>266</b>	<b>316</b>	<b>197</b>	<b>51</b>	<b>1160</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	Final Base	106	210	35	15	30	242	638
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>106</b>	<b>210</b>	<b>35</b>	<b>15</b>	<b>30</b>	<b>242</b>	<b>638</b>

## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	351	878	77	174
2	340	852	75	169
3	333	834	73	165
4	312	781	69	155
5	277	694	61	137
6	274	685	60	136
7	270	676	59	134
8	246	615	54	122
9	242	606	53	120
10	239	597	52	118
11	207	518	45	103
12	193	483	42	96
13	190	474	42	94
14	140	351	31	70
15	140	351	31	70
16	98	246	22	49
17	56	140	12	28
18	56	140	12	28
19	32	79	7	16
20	18	44	4	9
21	11	26	2	5
22	4	9	1	2
23	4	9	1	2
24	4	9	1	2



## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1229	1	174	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1192	1	169	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1167	1	165	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	1093	1	155	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	971	1	137	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	959	1	136	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	946	1	134	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	861	1	122	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9	1	848	1	120	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
10	1	836	1	118	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
11	1	725	1	103	No	No	No	Yes	No	Yes	Yes	Yes	No	No
12	1	676	1	96	No	No	No	Yes	No	Yes	Yes	Yes	No	No
13	1	664	1	94	No	No	No	Yes	No	Yes	Yes	Yes	No	No
14	1	491	1	70	No	No	No	No	No	No	No	Yes	No	No
15	1	491	1	70	No	No	No	No	No	No	No	Yes	No	No
16	1	344	1	49	No	No	No	No	No	No	No	No	No	No
17	1	196	1	28	No	No	No	No	No	No	No	No	No	No
18	1	196	1	28	No	No	No	No	No	No	No	No	No	No
19	1	111	1	16	No	No	No	No	No	No	No	No	No	No
20	1	62	1	9	No	No	No	No	No	No	No	No	No	No
21	1	37	1	5	No	No	No	No	No	No	No	No	No	No
22	1	13	1	2	No	No	No	No	No	No	No	No	No	No
23	1	13	1	2	No	No	No	No	No	No	No	No	No	No
24	1	13	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	9	10	13	10	13	13	15	7	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.3	13.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:14	0:40
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	77	174
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1480	1480
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	425	914	235
2	412	887	228
3	404	868	223
4	378	813	209
5	336	722	186
6	332	713	183
7	327	704	181
8	298	640	165
9	293	631	162
10	289	622	160
11	251	539	139
12	234	503	129
13	230	494	127
14	170	366	94
15	170	366	94
16	119	256	66
17	68	146	38
18	68	146	38
19	38	82	21
20	21	46	12
21	13	27	7
22	4	9	2
23	4	9	2
24	4	9	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1339	1	235	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1299	1	228	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1272	1	223	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1191	1	209	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	1058	1	186	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	1045	1	183	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	1031	1	181	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	938	1	165	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	924	1	162	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	911	1	160	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	790	1	139	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
12	1	737	1	129	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
13	1	724	1	127	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
14	1	536	1	94	No	No	No	Yes	No	No	Yes	Yes	No	No
15	1	536	1	94	No	No	No	Yes	No	No	Yes	Yes	No	No
16	1	375	1	66	No	No	No	No	No	No	No	No	No	No
17	1	214	1	38	No	No	No	No	No	No	No	No	No	No
18	1	214	1	38	No	No	No	No	No	No	No	No	No	No
19	1	120	1	21	No	No	No	No	No	No	No	No	No	No
20	1	67	1	12	No	No	No	No	No	No	No	No	No	No
21	1	40	1	7	No	No	No	No	No	No	No	No	No	No
22	1	13	1	2	No	No	No	No	No	No	No	No	No	No
23	1	13	1	2	No	No	No	No	No	No	No	No	No	No
24	1	13	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	11	13	15	15	10	3

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	1:08
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	235
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1574
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	248	582	330
2	241	565	320
3	236	553	314
4	221	518	294
5	196	460	261
6	193	454	257
7	191	448	254
8	174	407	231
9	171	402	228
10	169	396	224
11	146	343	195
12	136	320	182
13	134	314	178
14	99	233	132
15	99	233	132
16	69	163	92
17	40	93	53
18	40	93	53
19	22	52	30
20	12	29	17
21	7	17	10
22	2	6	3
23	2	6	3
24	2	6	3

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	830	1	330	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	806	1	320	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	789	1	314	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	739	1	294	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	1	656	1	261	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	1	647	1	257	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	1	639	1	254	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
8	1	581	1	231	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
9	1	573	1	228	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
10	1	565	1	224	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
11	1	489	1	195	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	456	1	182	No	Yes	Yes	Yes	No	No	No	Yes	No	No
13	1	448	1	178	No	Yes	Yes	Yes	No	No	No	Yes	No	No
14	1	332	1	132	No	No	No	Yes	No	No	No	No	No	No
15	1	332	1	132	No	No	No	Yes	No	No	No	No	No	No
16	1	232	1	92	No	No	No	No	No	No	No	No	No	No
17	1	133	1	53	No	No	No	No	No	No	No	No	No	No
18	1	133	1	53	No	No	No	No	No	No	No	No	No	No
19	1	74	1	30	No	No	No	No	No	No	No	No	No	No
20	1	41	1	17	No	No	No	No	No	No	No	No	No	No
21	1	24	1	10	No	No	No	No	No	No	No	No	No	No
22	1	8	1	3	No	No	No	No	No	No	No	No	No	No
23	1	8	1	3	No	No	No	No	No	No	No	No	No	No
24	1	8	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	3	7	10	13	8	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	500.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	45:53
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	330
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1160
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>

## Signal Warrants Report For Intersection 265: Adam Court/ Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	316	50	272
2	307	49	264
3	300	48	258
4	281	45	242
5	250	40	215
6	246	39	212
7	243	39	209
8	221	35	190
9	218	35	188
10	215	34	185
11	186	30	160
12	174	28	150
13	171	27	147
14	126	20	109
15	126	20	109
16	88	14	76
17	51	8	44
18	51	8	44
19	28	5	24
20	16	3	14
21	9	2	8
22	3	1	3
23	3	1	3
24	3	1	3

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	366	1	272	No	No	Yes	Yes	No	No	No	No	No	No
2	1	356	1	264	No	No	Yes	Yes	No	No	No	No	No	No
3	1	348	1	258	No	No	No	Yes	No	No	No	No	No	No
4	1	326	1	242	No	No	No	Yes	No	No	No	No	No	No
5	1	290	1	215	No	No	No	Yes	No	No	No	No	No	No
6	1	285	1	212	No	No	No	Yes	No	No	No	No	No	No
7	1	282	1	209	No	No	No	Yes	No	No	No	No	No	No
8	1	256	1	190	No	No	No	No	No	No	No	No	No	No
9	1	253	1	188	No	No	No	No	No	No	No	No	No	No
10	1	249	1	185	No	No	No	No	No	No	No	No	No	No
11	1	216	1	160	No	No	No	No	No	No	No	No	No	No
12	1	202	1	150	No	No	No	No	No	No	No	No	No	No
13	1	198	1	147	No	No	No	No	No	No	No	No	No	No
14	1	146	1	109	No	No	No	No	No	No	No	No	No	No
15	1	146	1	109	No	No	No	No	No	No	No	No	No	No
16	1	102	1	76	No	No	No	No	No	No	No	No	No	No
17	1	59	1	44	No	No	No	No	No	No	No	No	No	No
18	1	59	1	44	No	No	No	No	No	No	No	No	No	No
19	1	33	1	24	No	No	No	No	No	No	No	No	No	No
20	1	19	1	14	No	No	No	No	No	No	No	No	No	No
21	1	11	1	8	No	No	No	No	No	No	No	No	No	No
22	1	4	1	3	No	No	No	No	No	No	No	No	No	No
23	1	4	1	3	No	No	No	No	No	No	No	No	No	No
24	1	4	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	2	7	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	12
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:54
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	272
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	638
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections



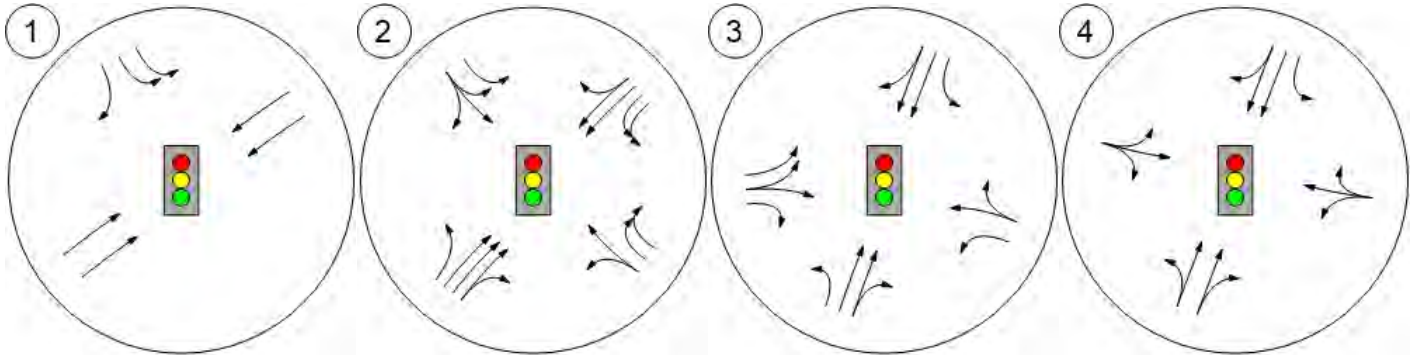


Lane Configuration and Traffic Control

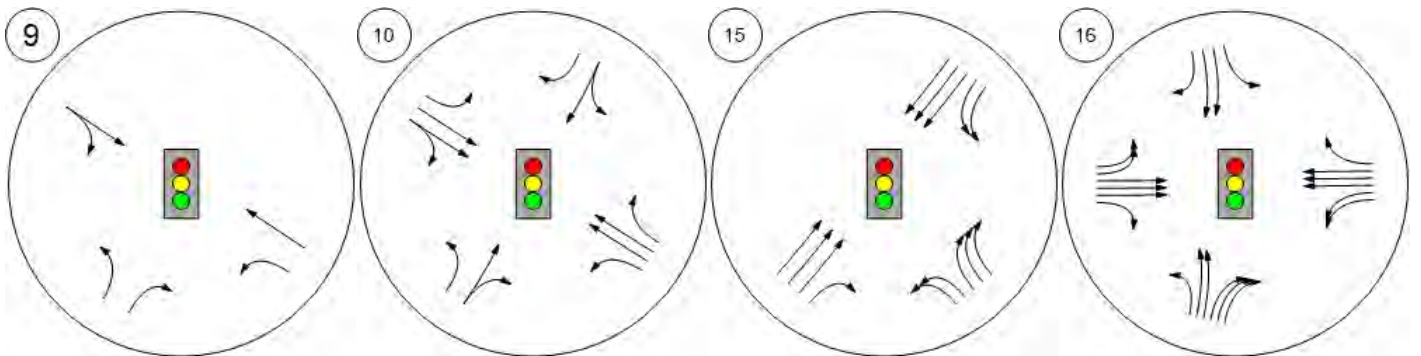


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



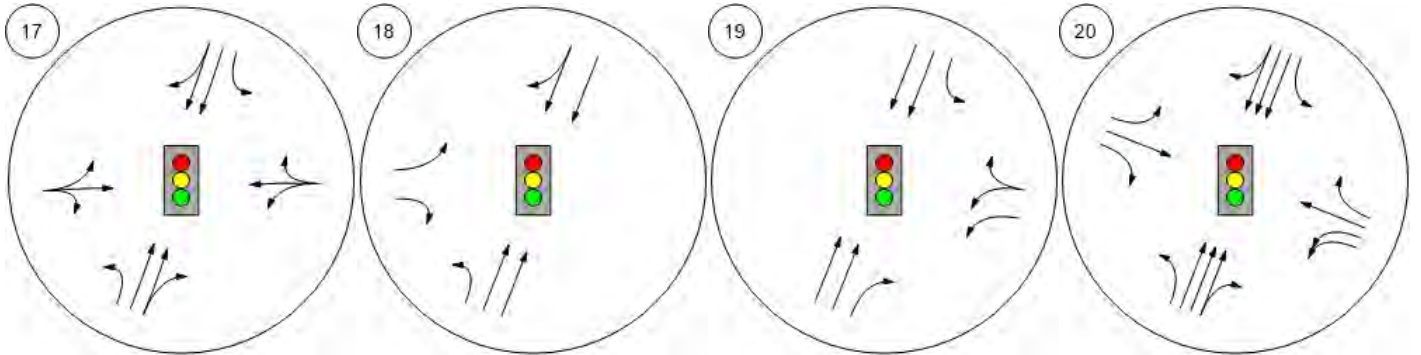
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



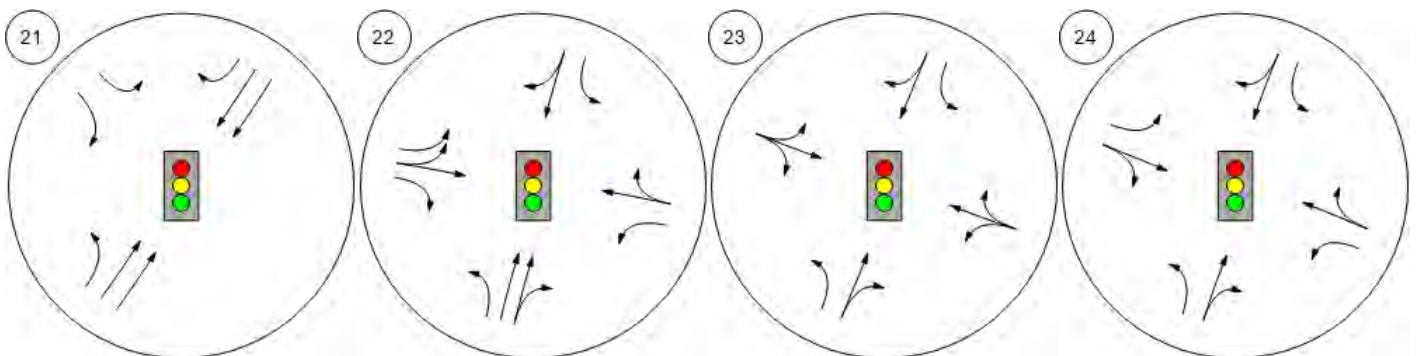
Lane Configuration and Traffic Control



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



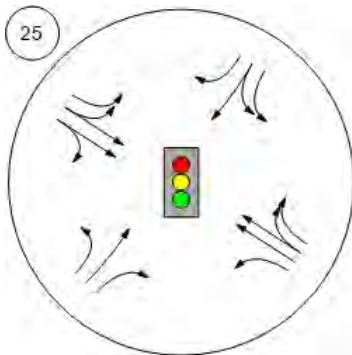
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



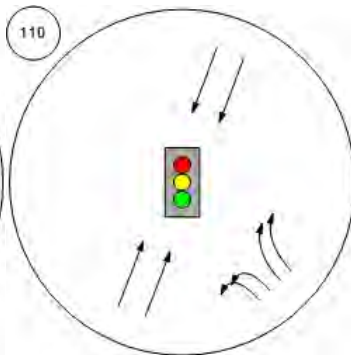
Lane Configuration and Traffic Control



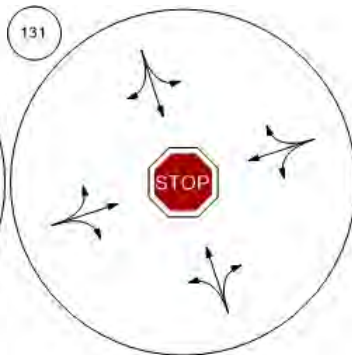
Middlefield Rd-Willow Rd



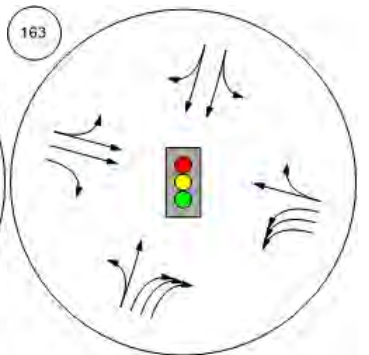
Marsh Road/101 NB Ramps



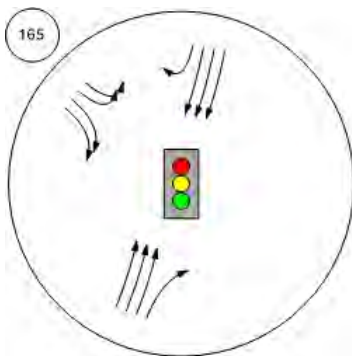
Chilco Street/Hamilton Avenue



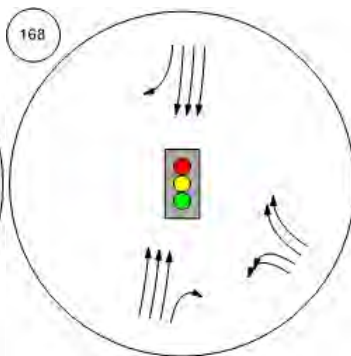
Bayfront Expy/Marsh Rd



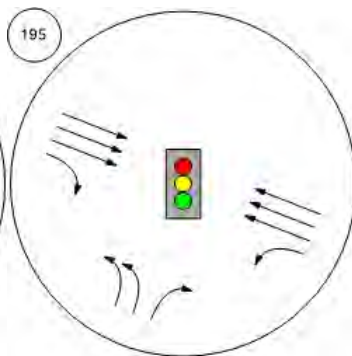
Willow Rd/US-101 SB Ramps



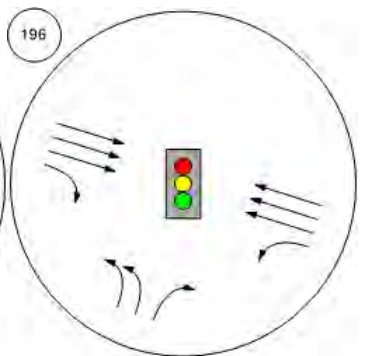
Willow Rd/US-101 NB Ramp



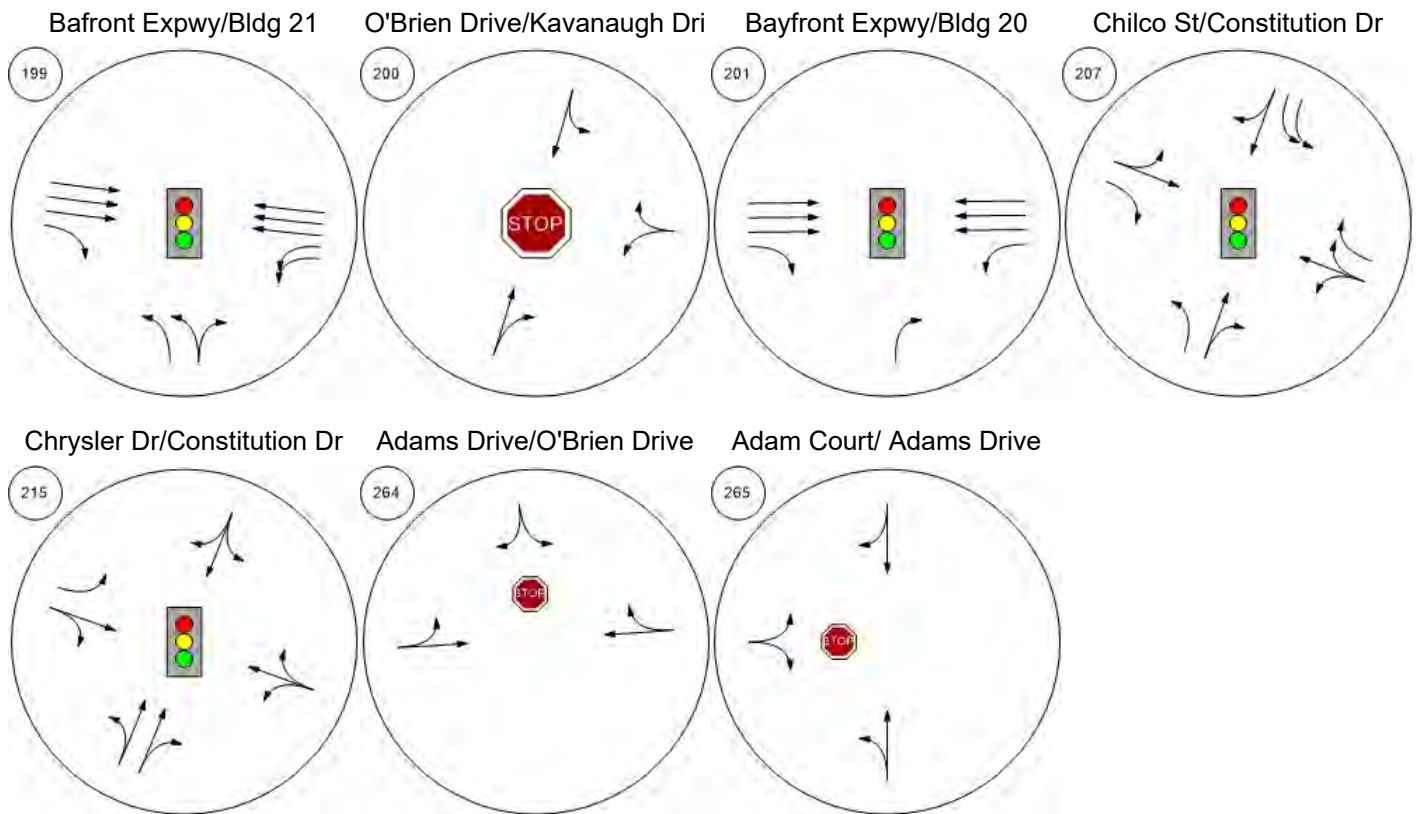
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



Lane Configuration and Traffic Control

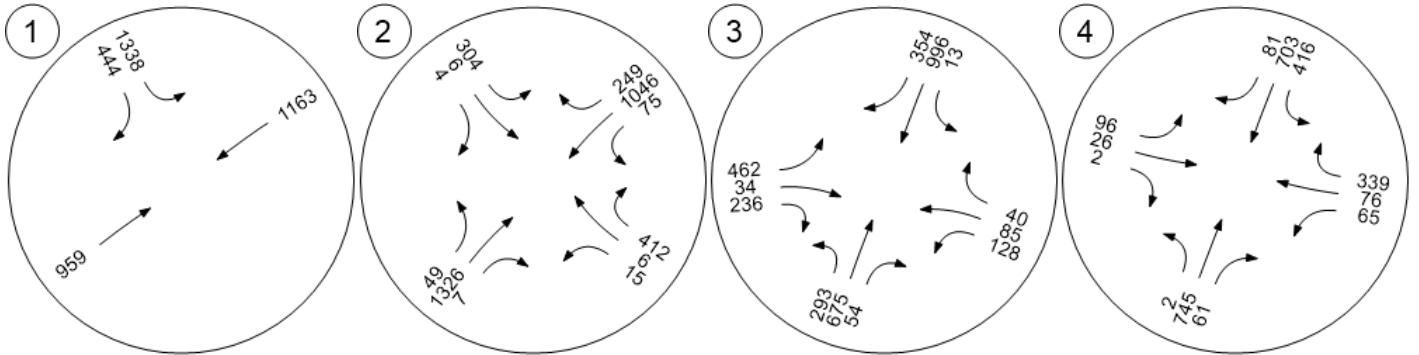


Traffic Volume - Base Volume

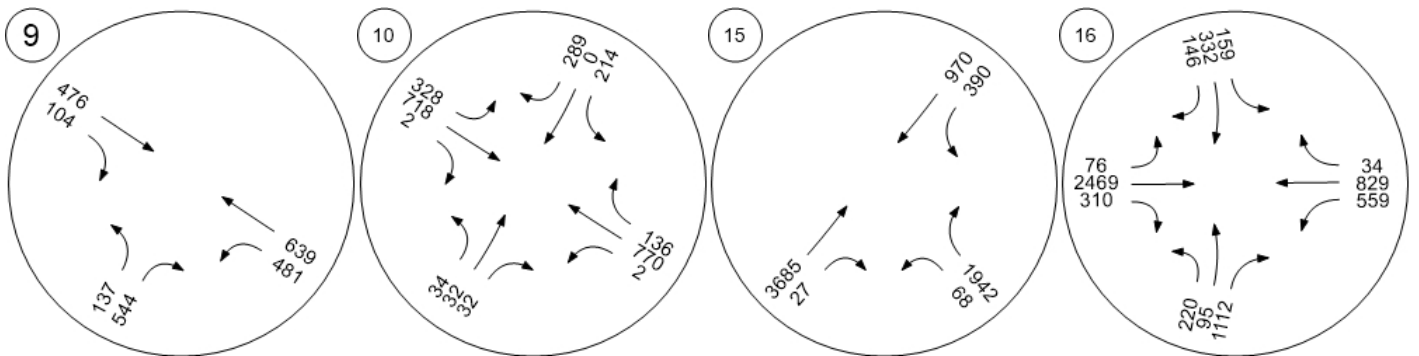


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



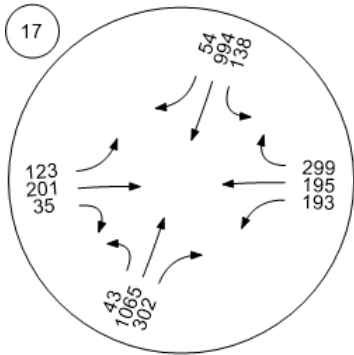
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



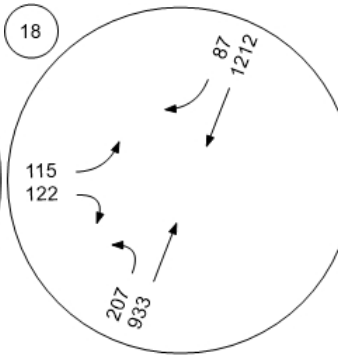
Traffic Volume - Base Volume



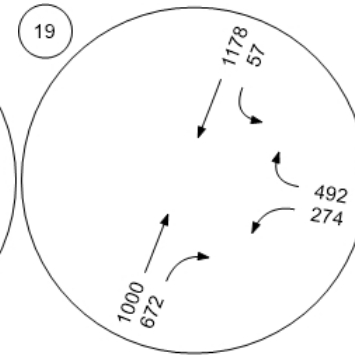
Willow Rd (SR 114)/Hamilton



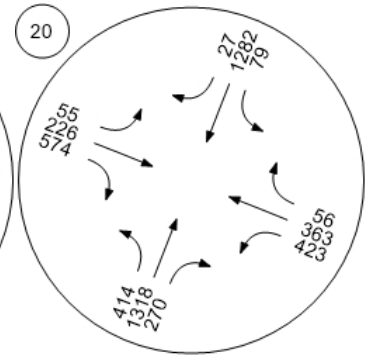
Willow Rd (SR 114)/Ivy Dr



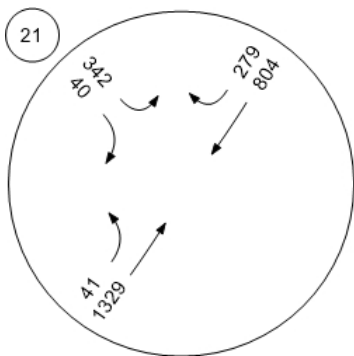
Willow Rd (SR 114)/O'Brien



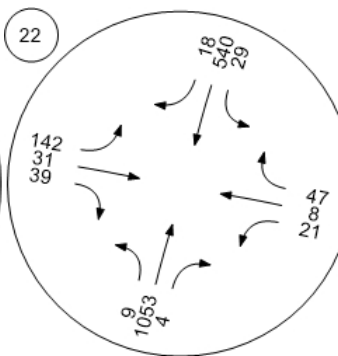
Willow Rd (SR 114)/Newbrid



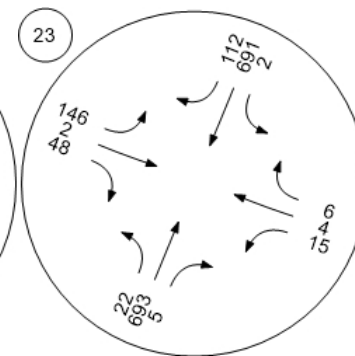
Willow Rd/Bay Rd



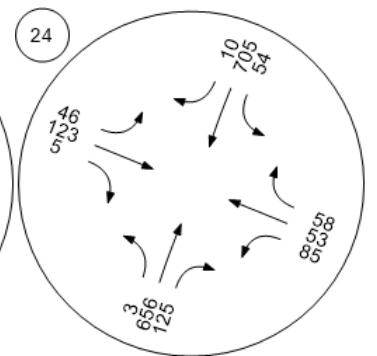
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



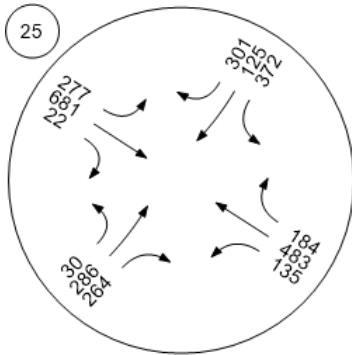
Willow Rd/Gilbert Ave



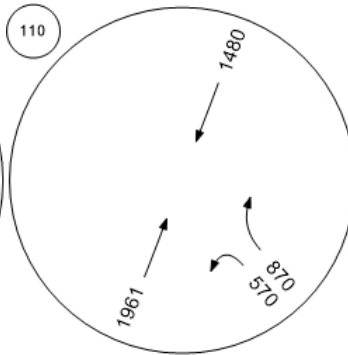
Traffic Volume - Base Volume



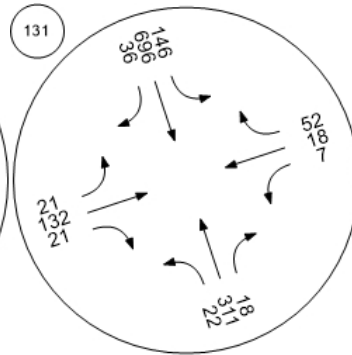
Middlefield Rd-Willow Rd



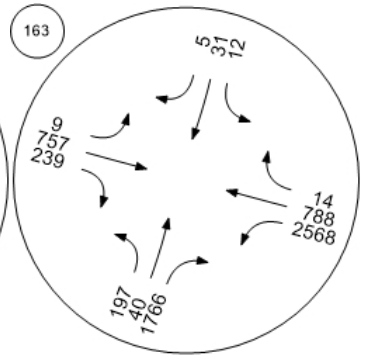
Marsh Road/101 NB Ramps



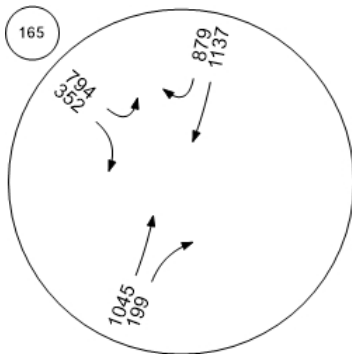
Chilco Street/Hamilton Avenue



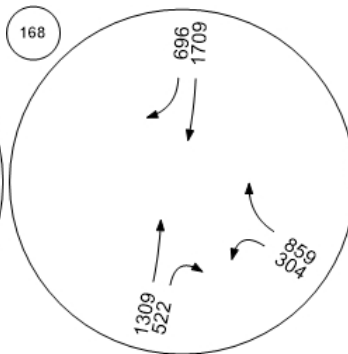
Bayfront Expy/Marsh Rd



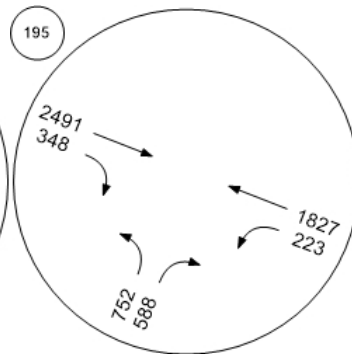
Willow Rd/US-101 SB Ramps



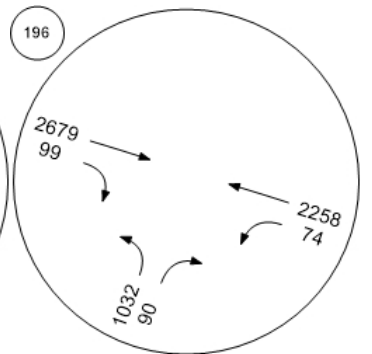
Willow Rd/US-101 NB Ramp



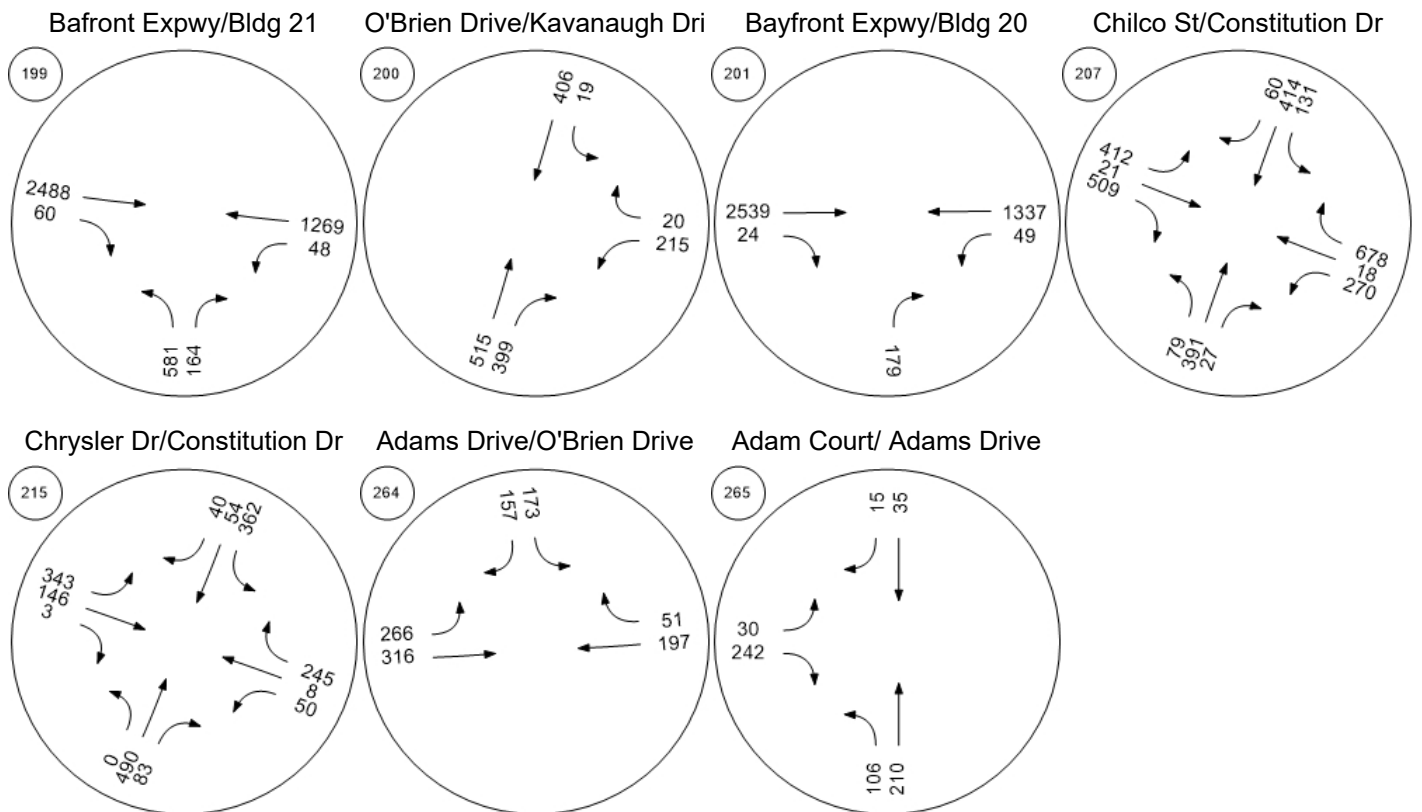
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



Traffic Volume - Base Volume



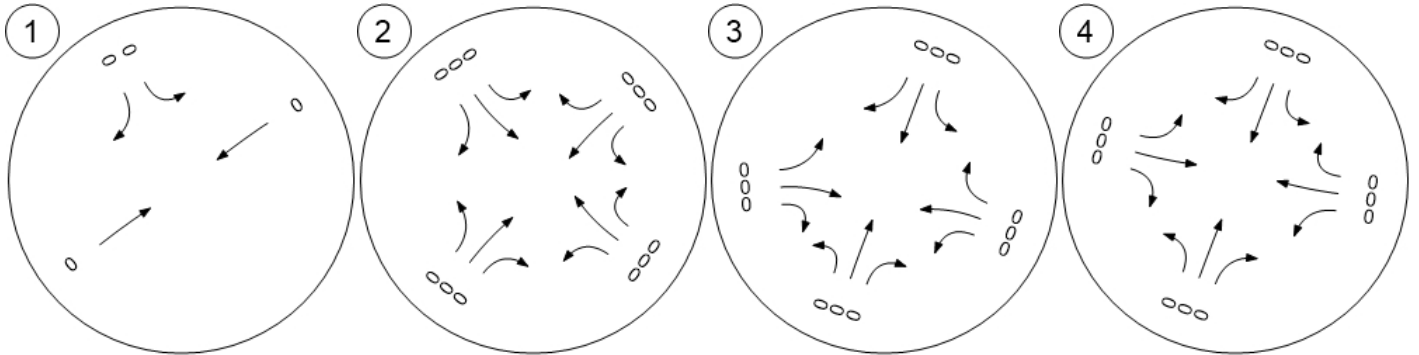


Traffic Volume - In-Process Volume

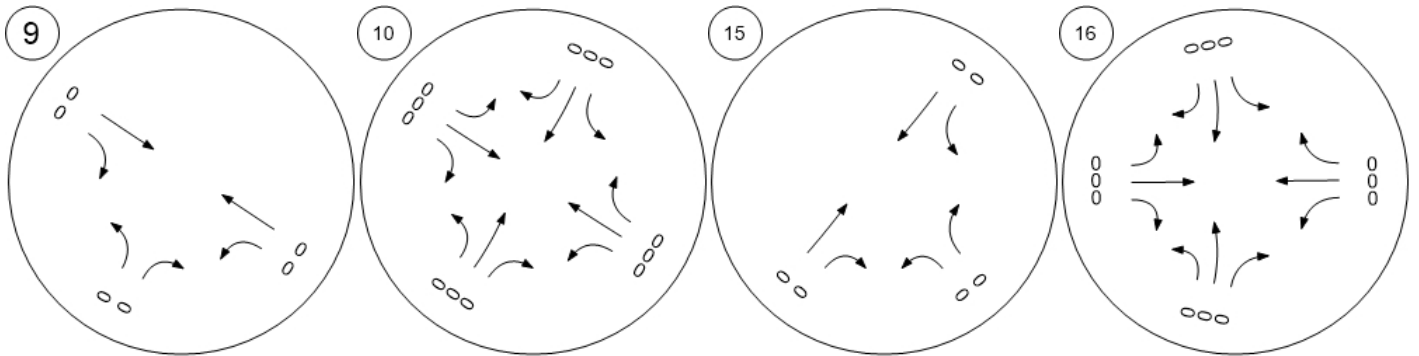


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



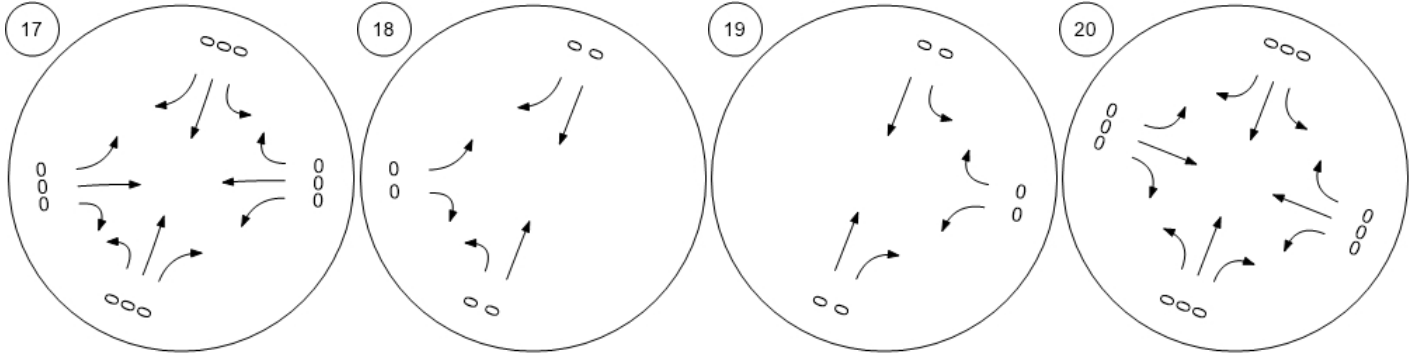
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



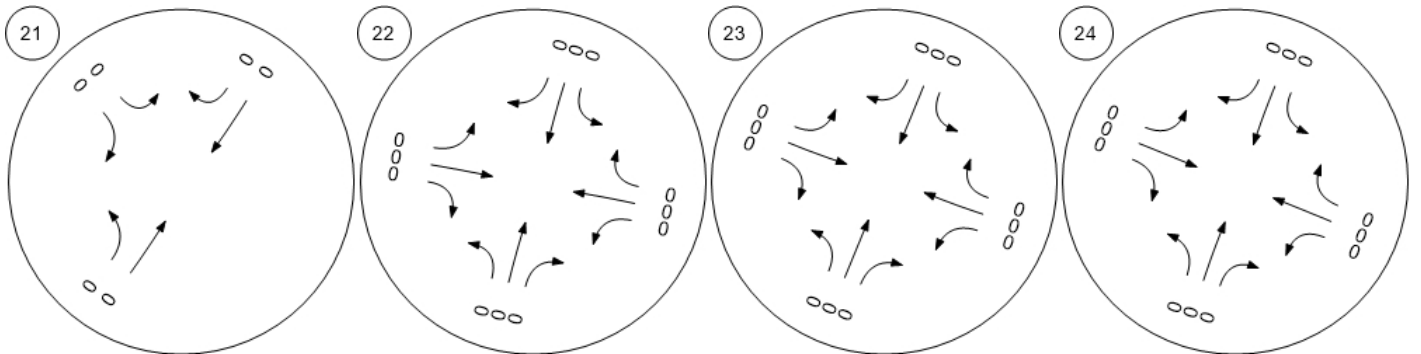
Traffic Volume - In-Process Volume



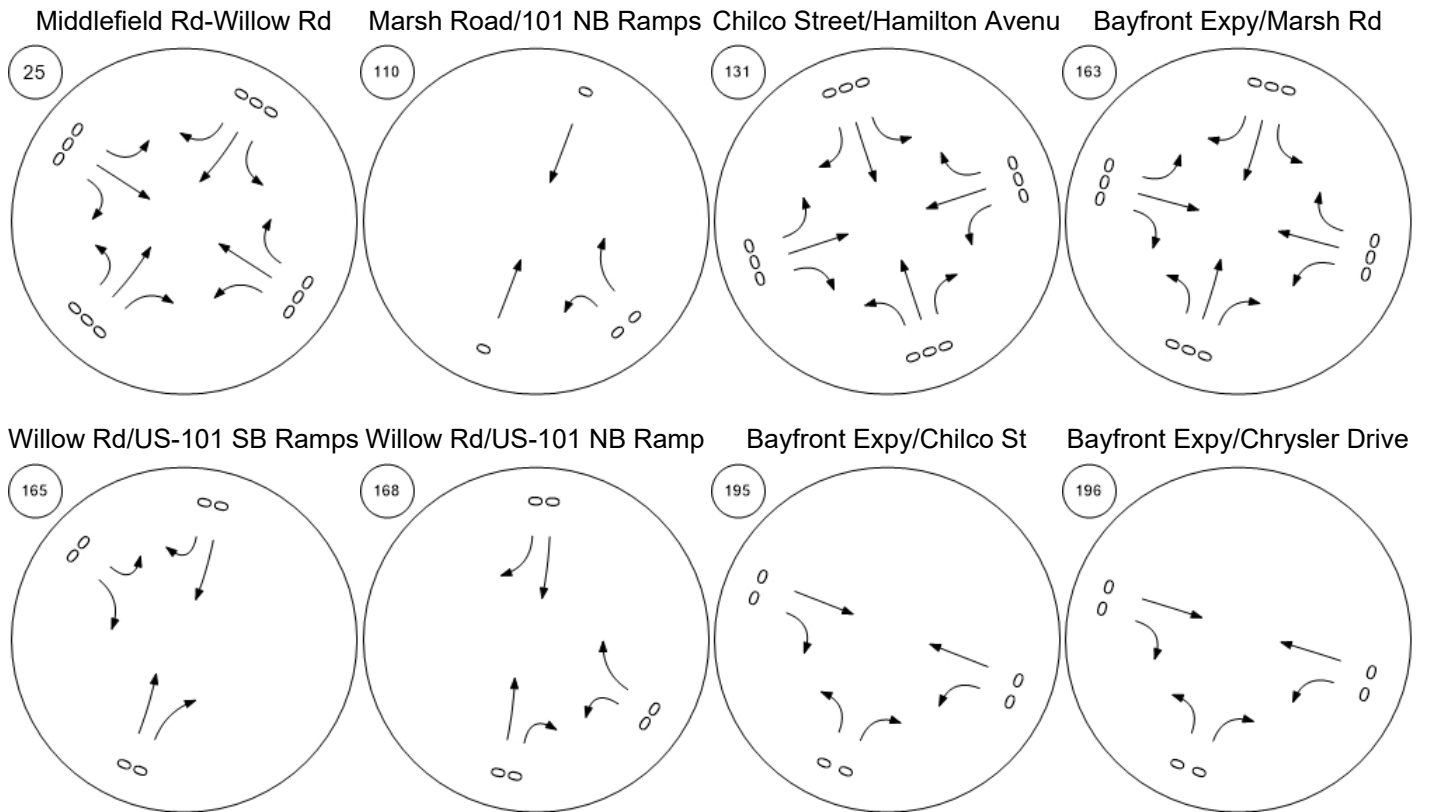
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



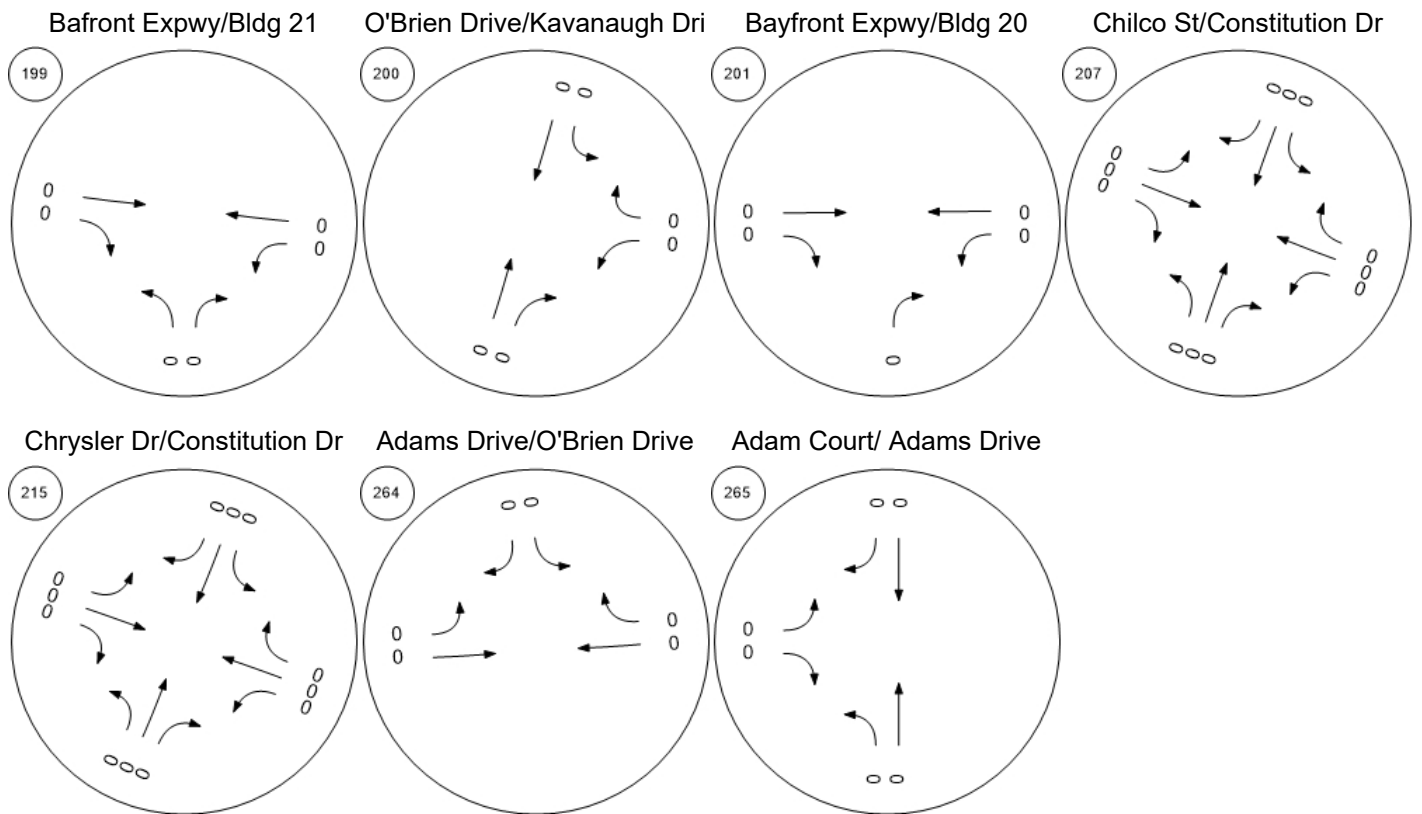
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume

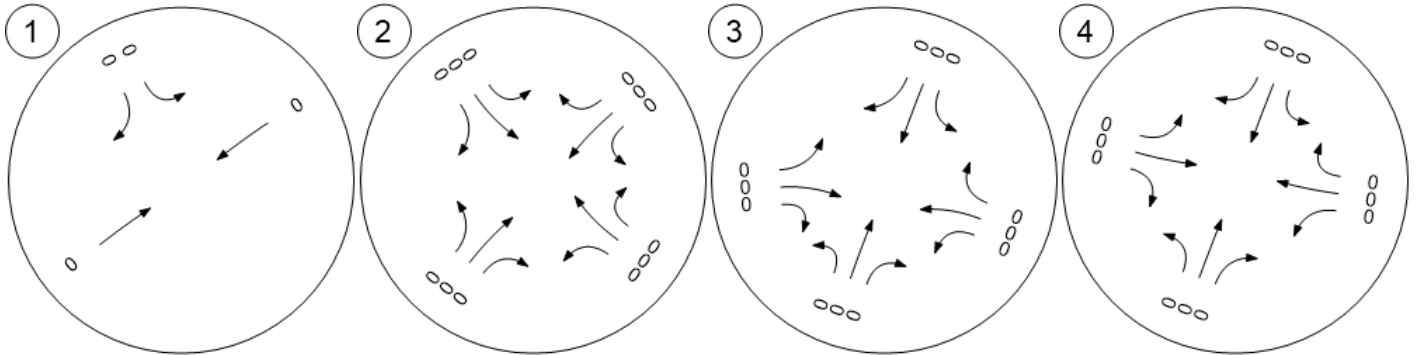


Traffic Volume - Net New Site Trips

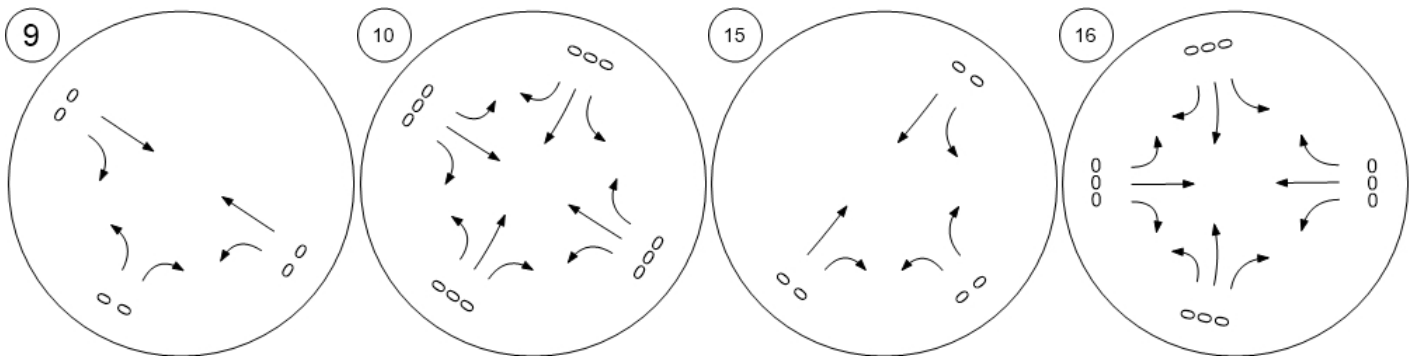


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



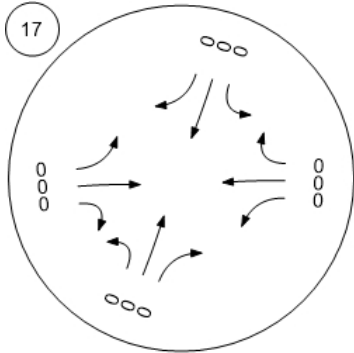
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



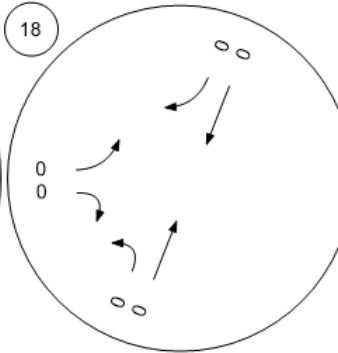
Traffic Volume - Net New Site Trips



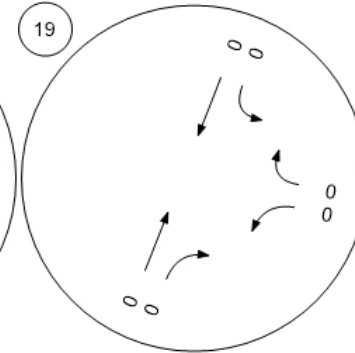
Willow Rd (SR 114)/Hamilton



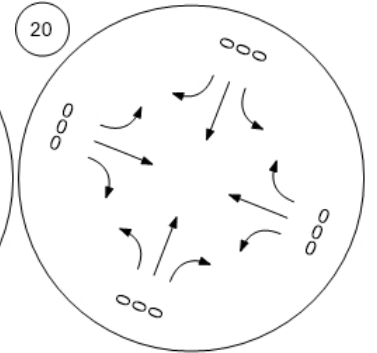
Willow Rd (SR 114)/Ivy Dr



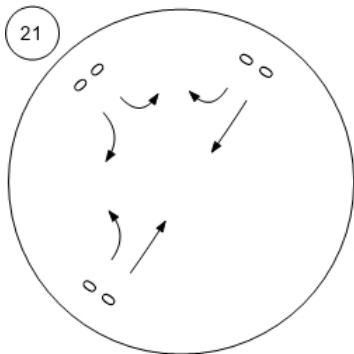
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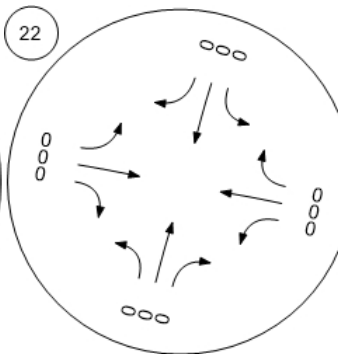
Willow Rd (SR 114)/Newbrid



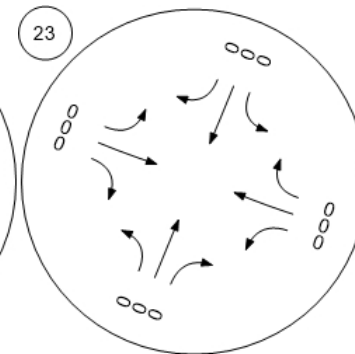
Willow Rd/Bay Rd



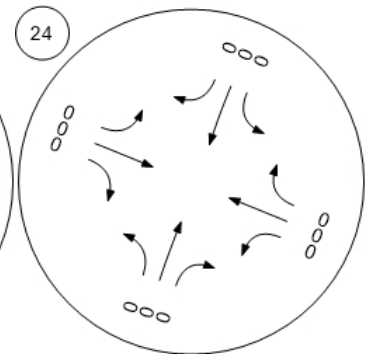
Willow Rd/Durham St-VA Me



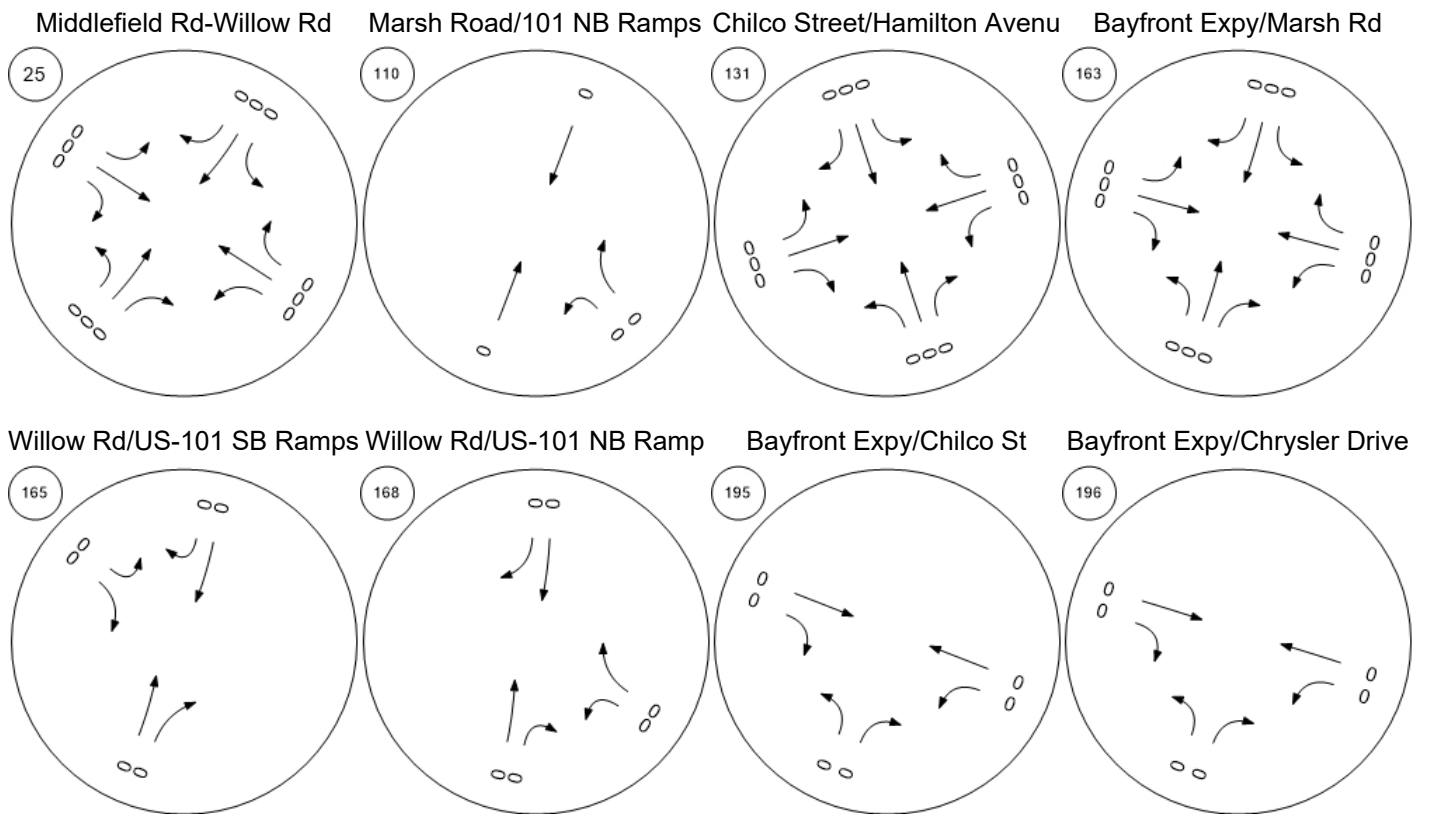
Willow Rd/Coleman Ave



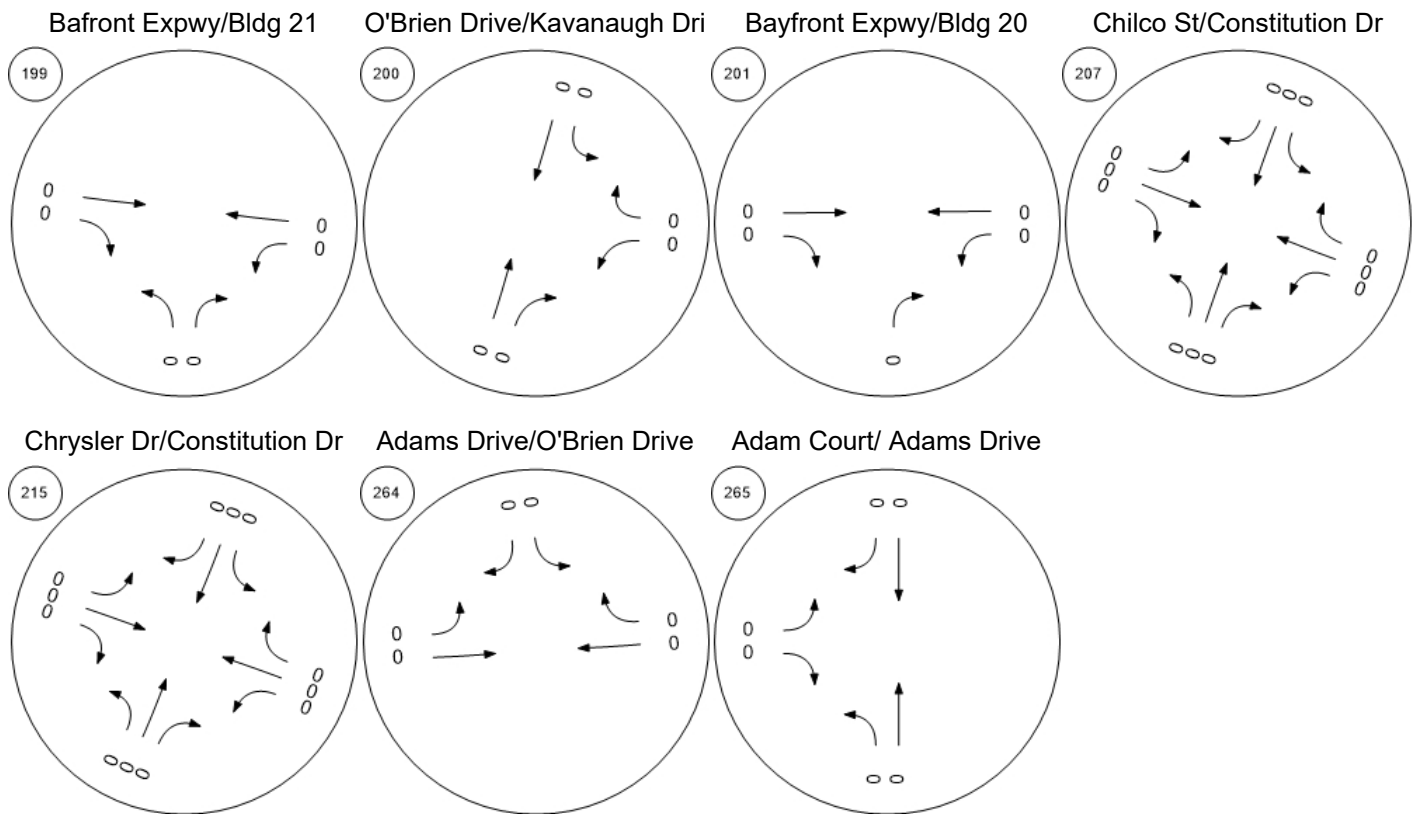
Willow Rd/Gilbert Ave



Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



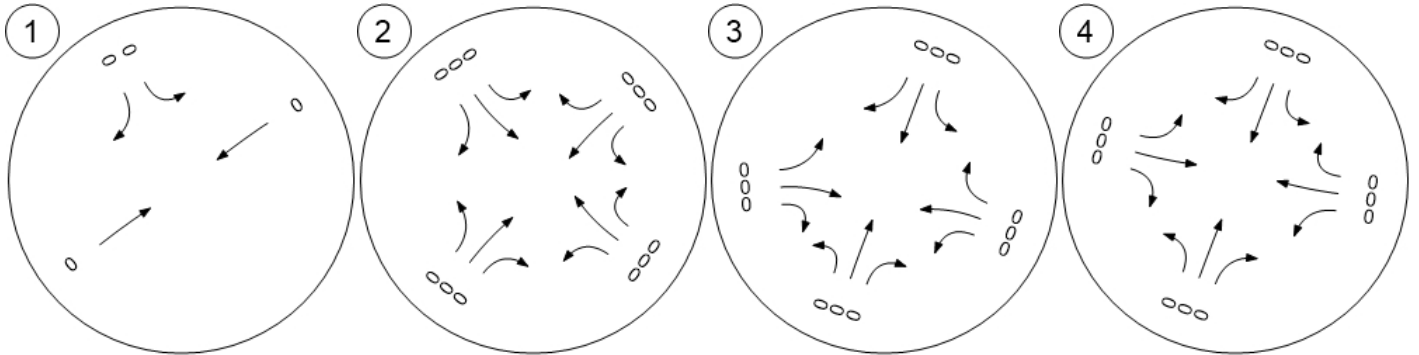


Traffic Volume - Other Volume

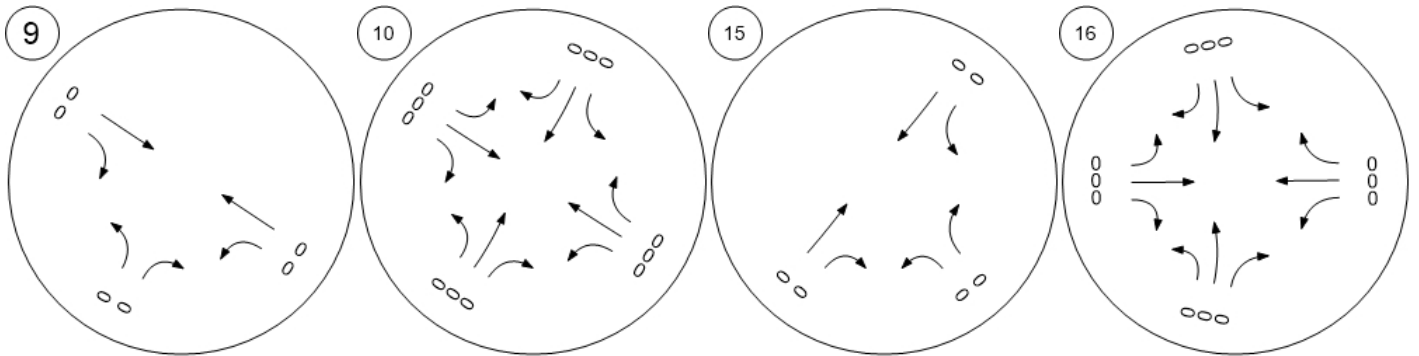


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



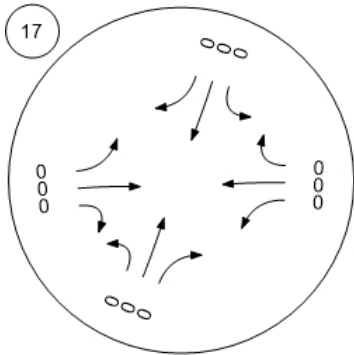
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



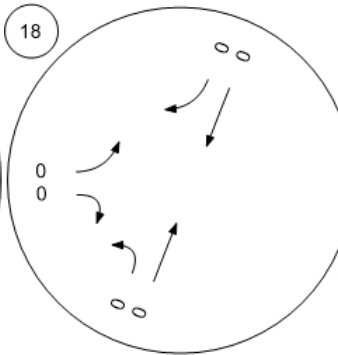
Traffic Volume - Other Volume



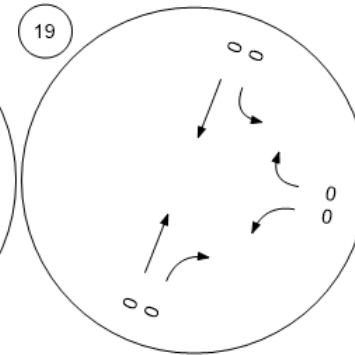
Willow Rd (SR 114)/Hamilton



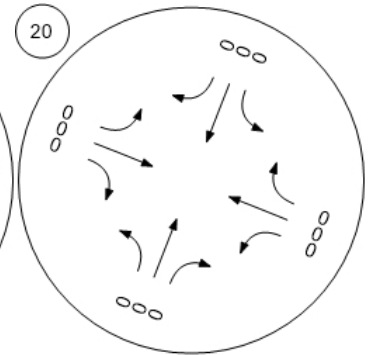
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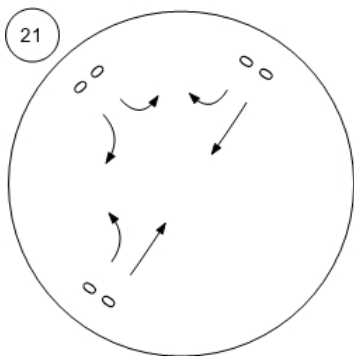
Willow Rd (SR 114)/O'Brien



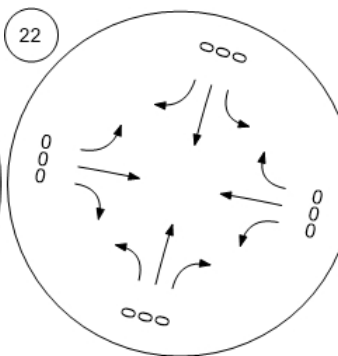
Willow Rd (SR 114)/Newbrid



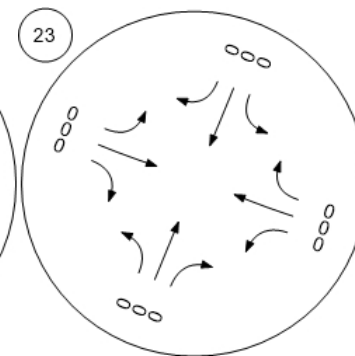
Willow Rd/Bay Rd



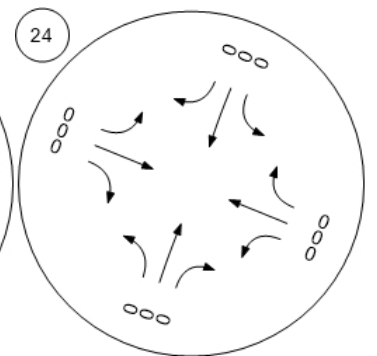
Willow Rd/Durham St-VA Me



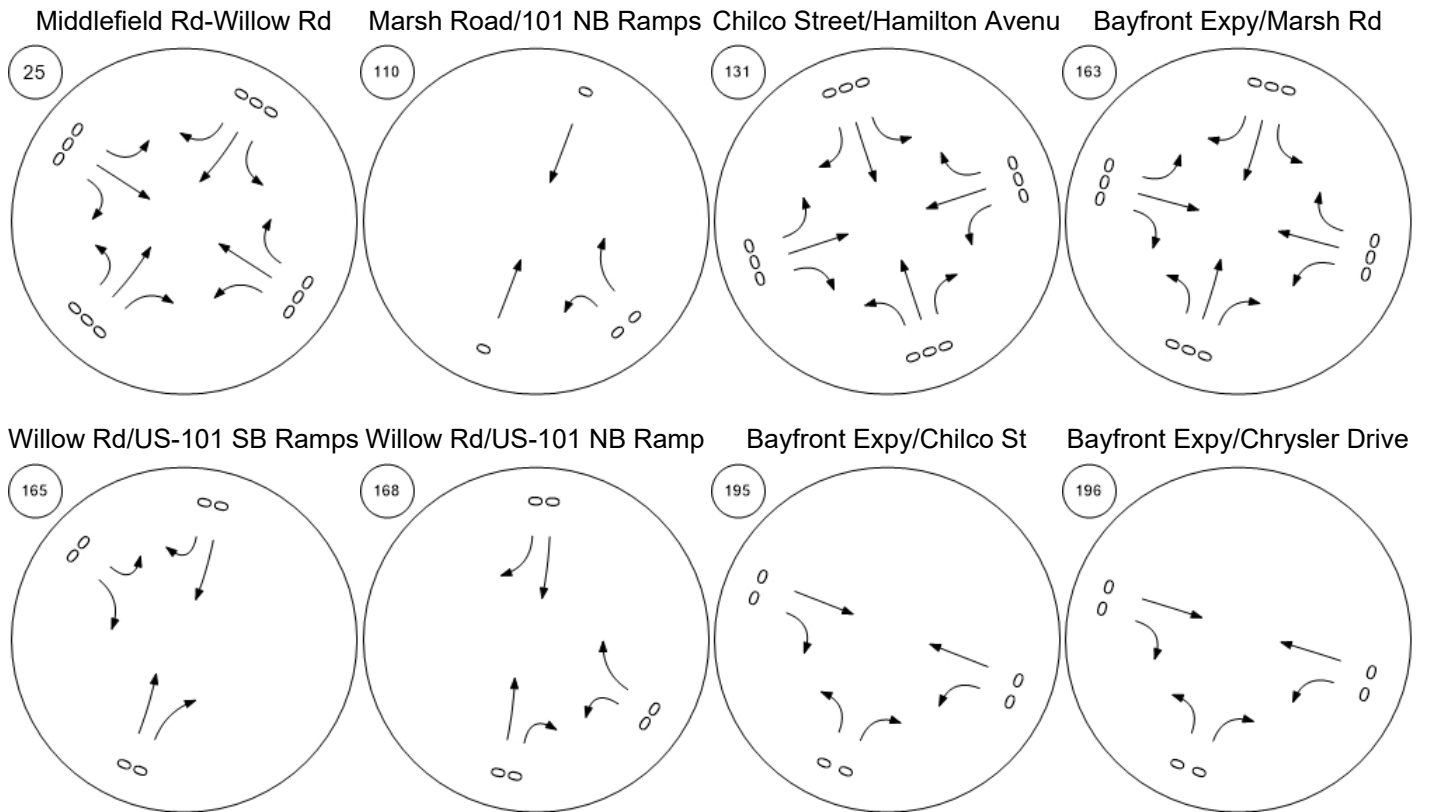
Willow Rd/Coleman Ave



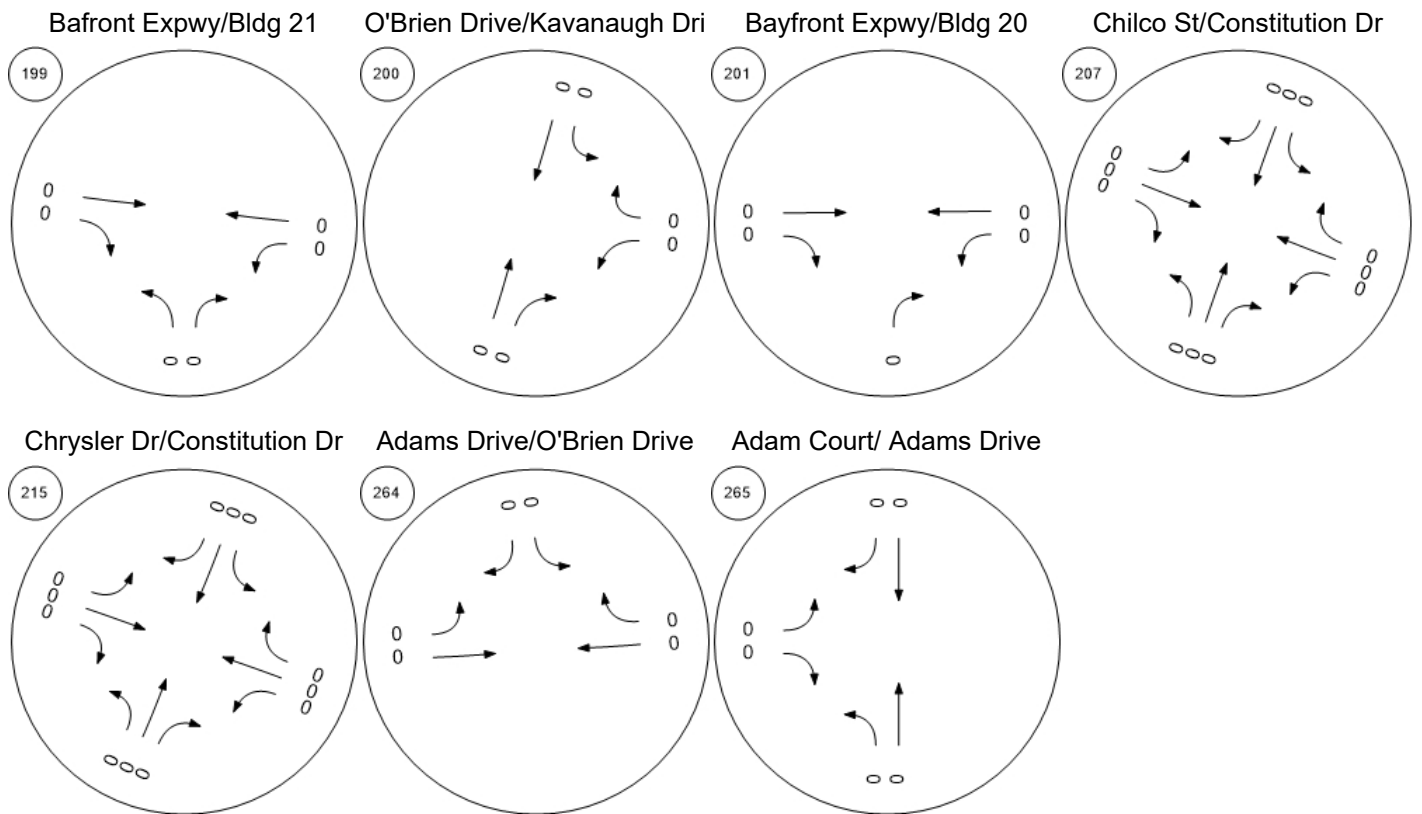
Willow Rd/Gilbert Ave



Traffic Volume - Other Volume



Traffic Volume - Other Volume

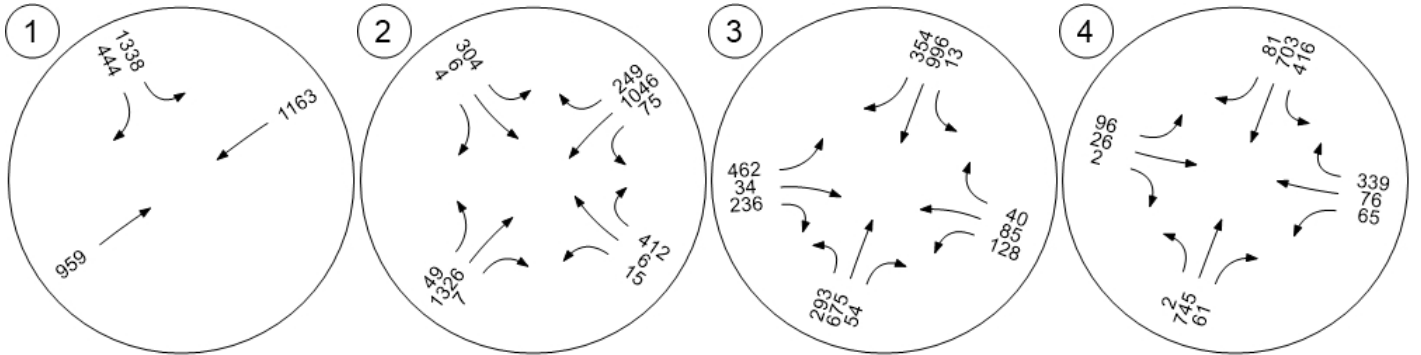


Traffic Volume - Future Total Volume

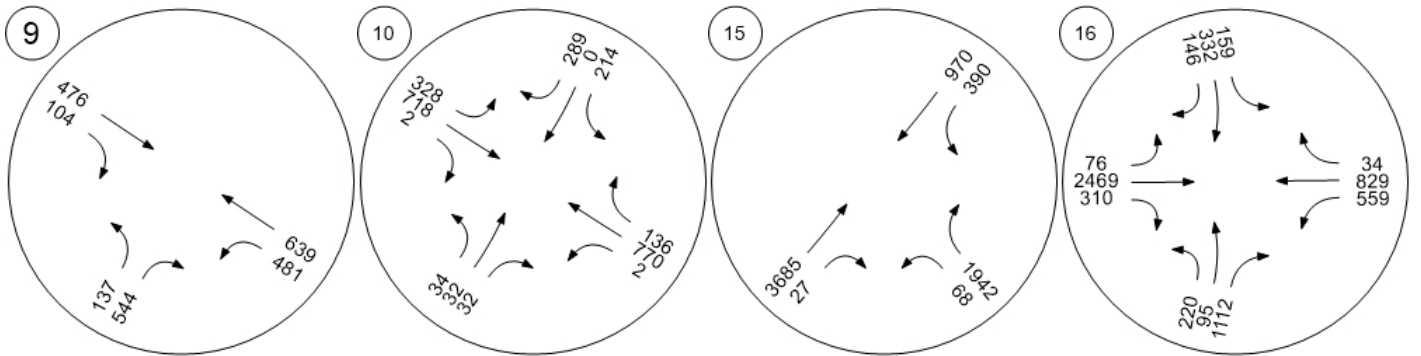


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



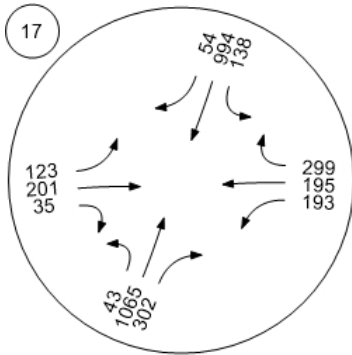
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



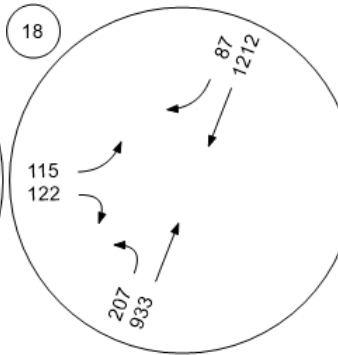
Traffic Volume - Future Total Volume



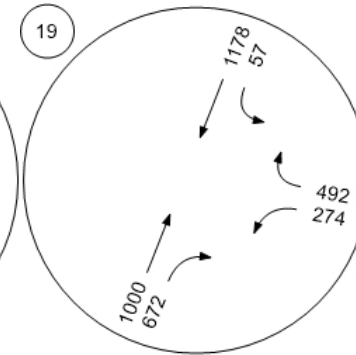
Willow Rd (SR 114)/Hamilton



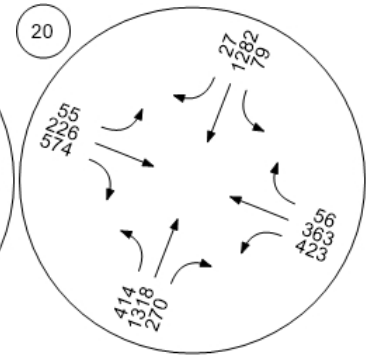
Willow Rd (SR 114)/Ivy Dr



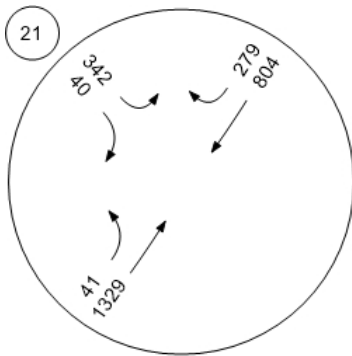
Willow Rd (SR 114)/O'Brien



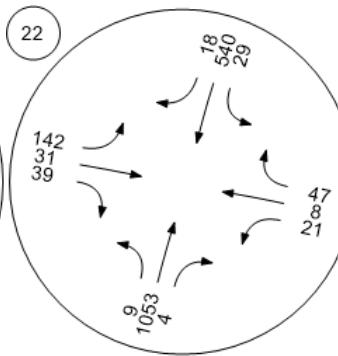
Willow Rd (SR 114)/Newbrid



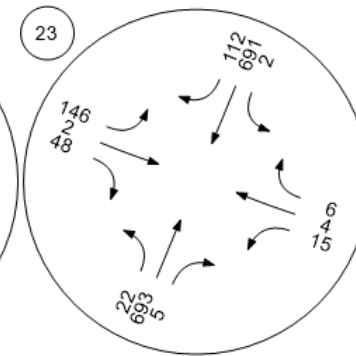
Willow Rd/Bay Rd



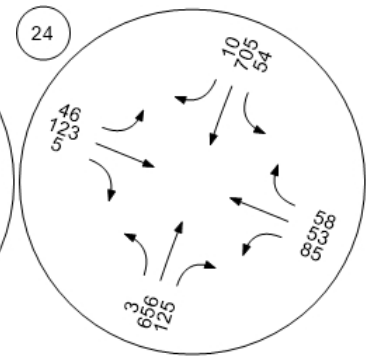
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



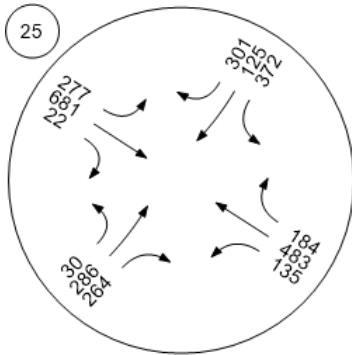
Willow Rd/Gilbert Ave



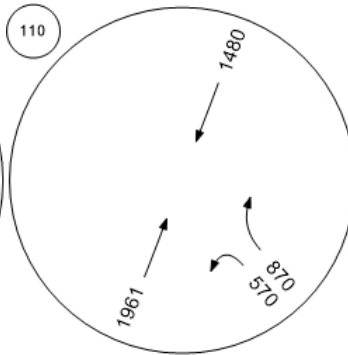
Traffic Volume - Future Total Volume



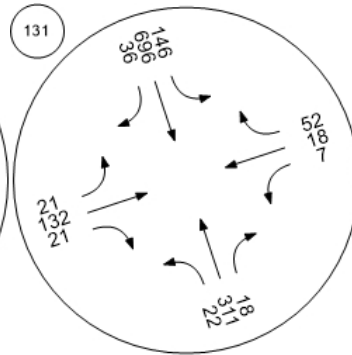
Middlefield Rd-Willow Rd



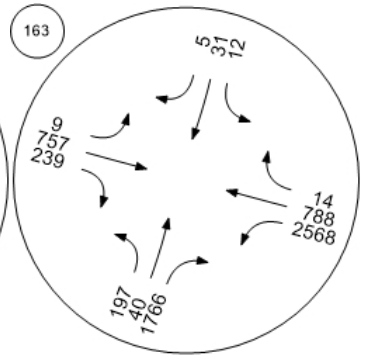
Marsh Road/101 NB Ramps



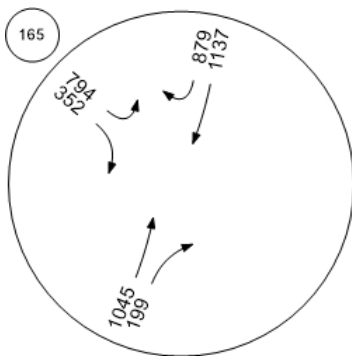
Chilco Street/Hamilton Avenue



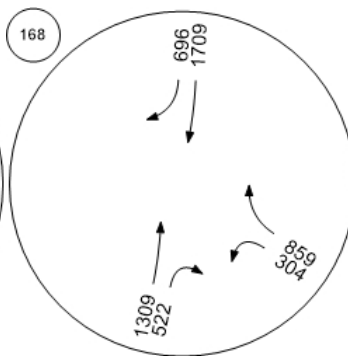
Bayfront Expy/Marsh Rd



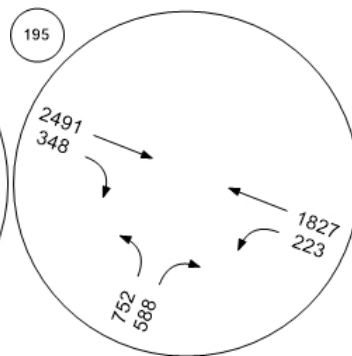
Willow Rd/US-101 SB Ramps



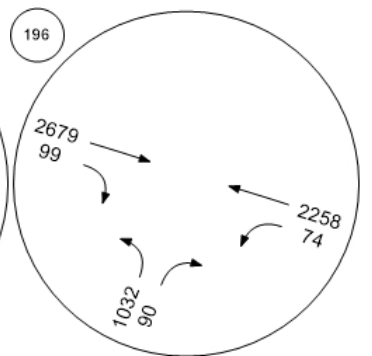
Willow Rd/US-101 NB Ramp



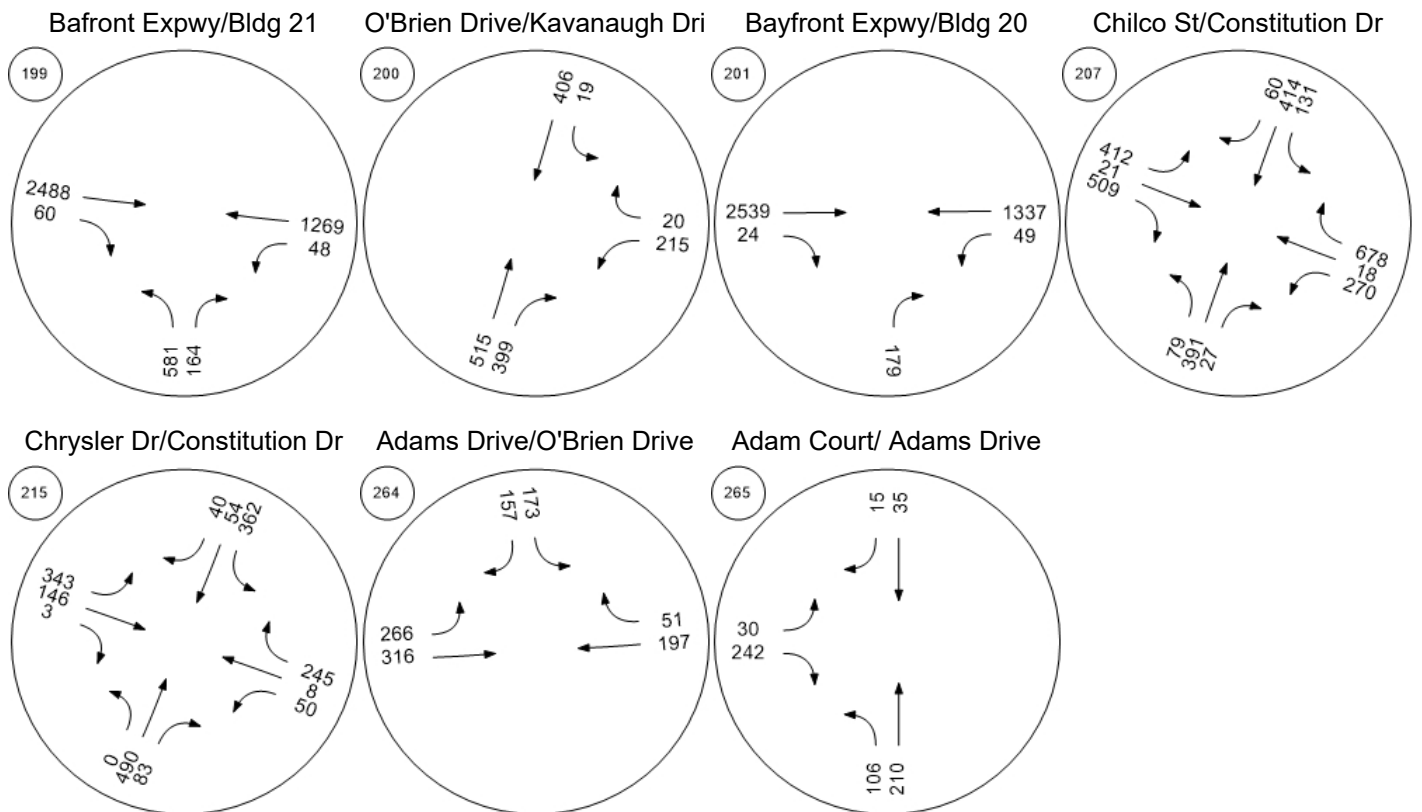
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



Traffic Volume - Future Total Volume



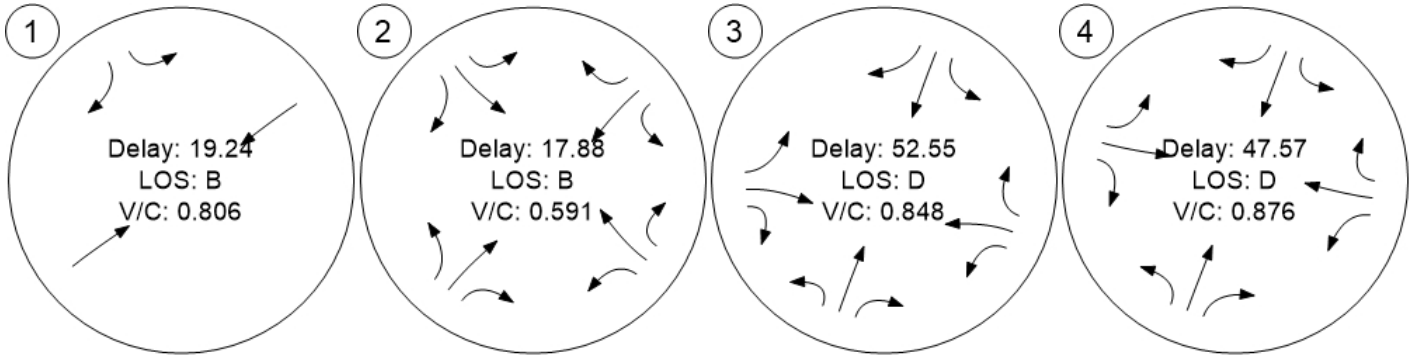


Traffic Conditions

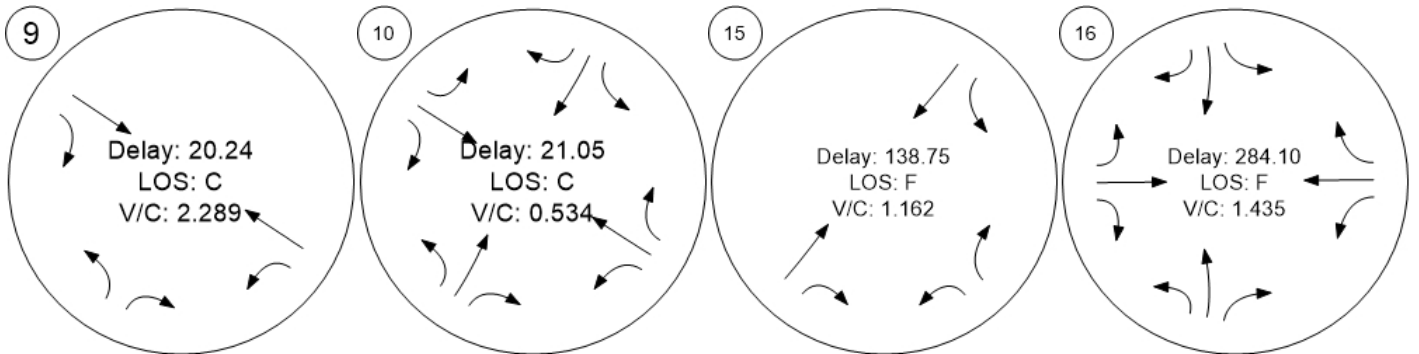


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



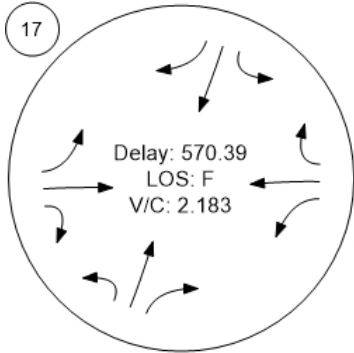
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



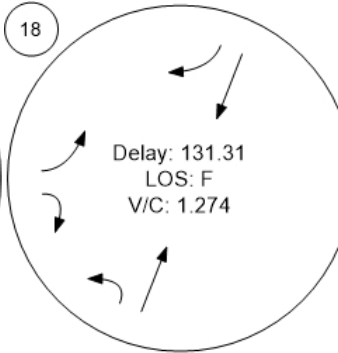
Traffic Conditions



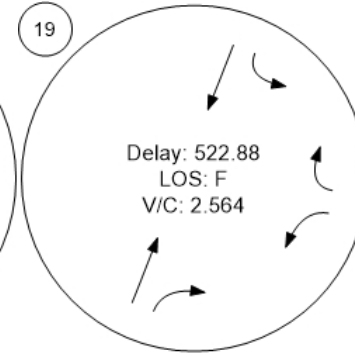
Willow Rd (SR 114)/Hamilton



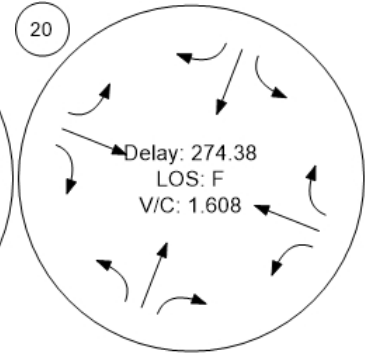
Willow Rd (SR 114)/Ivy Dr



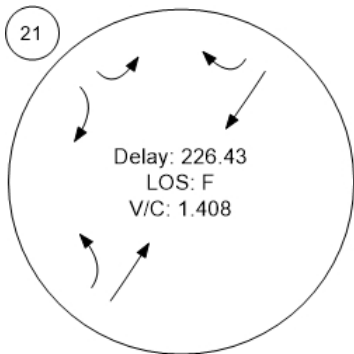
Willow Rd (SR 114)/O'Brien



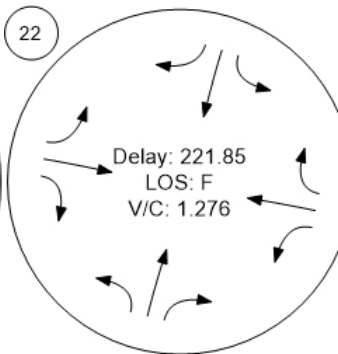
Willow Rd (SR 114)/Newbrid



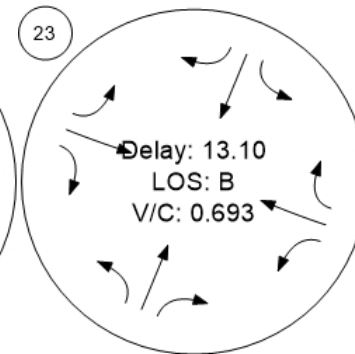
Willow Rd/Bay Rd



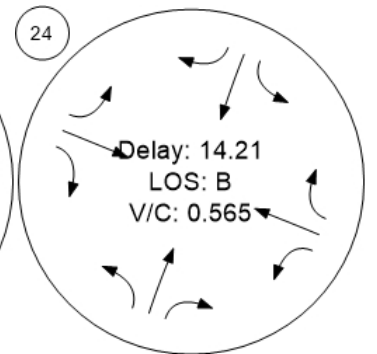
Willow Rd/Durham St-VA Me



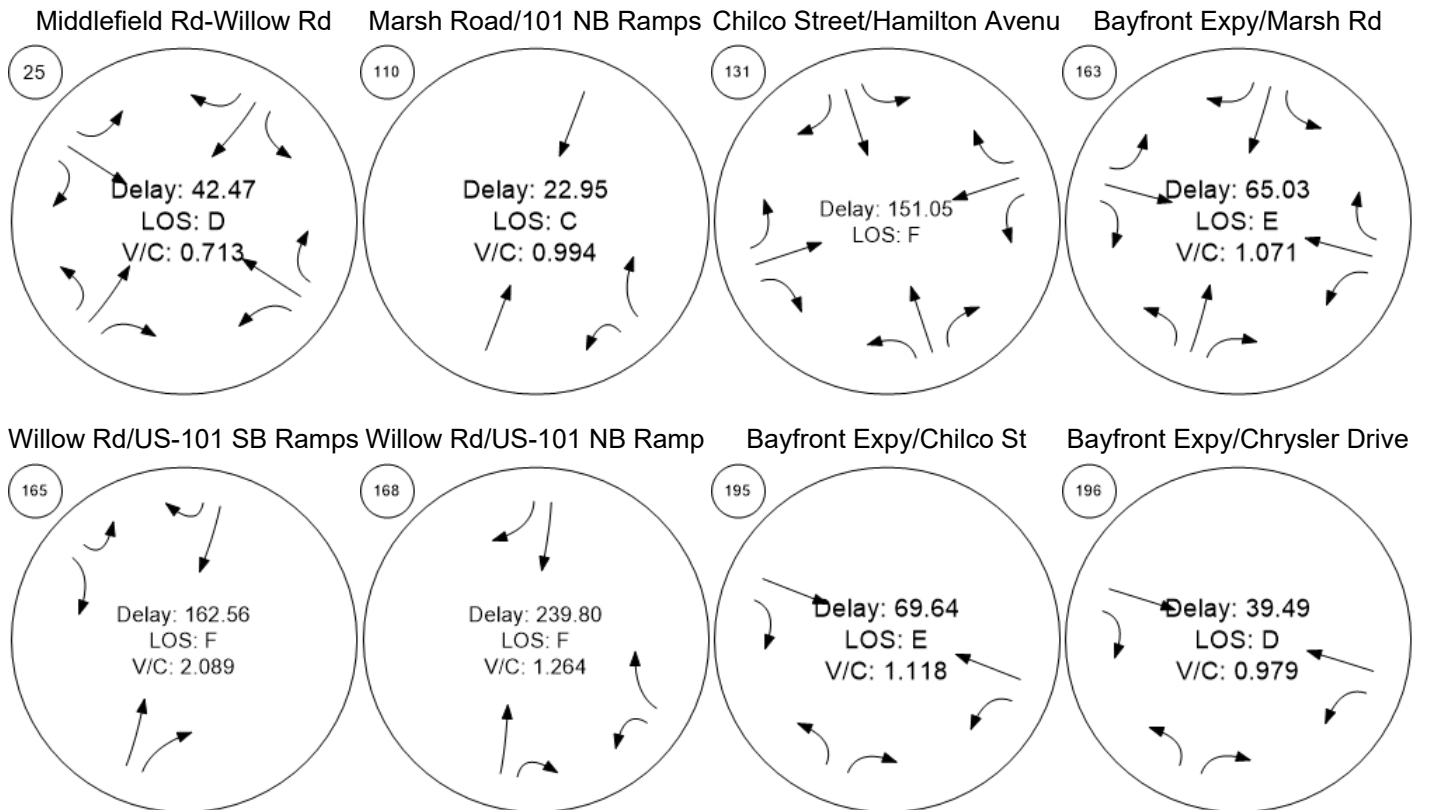
Willow Rd/Coleman Ave



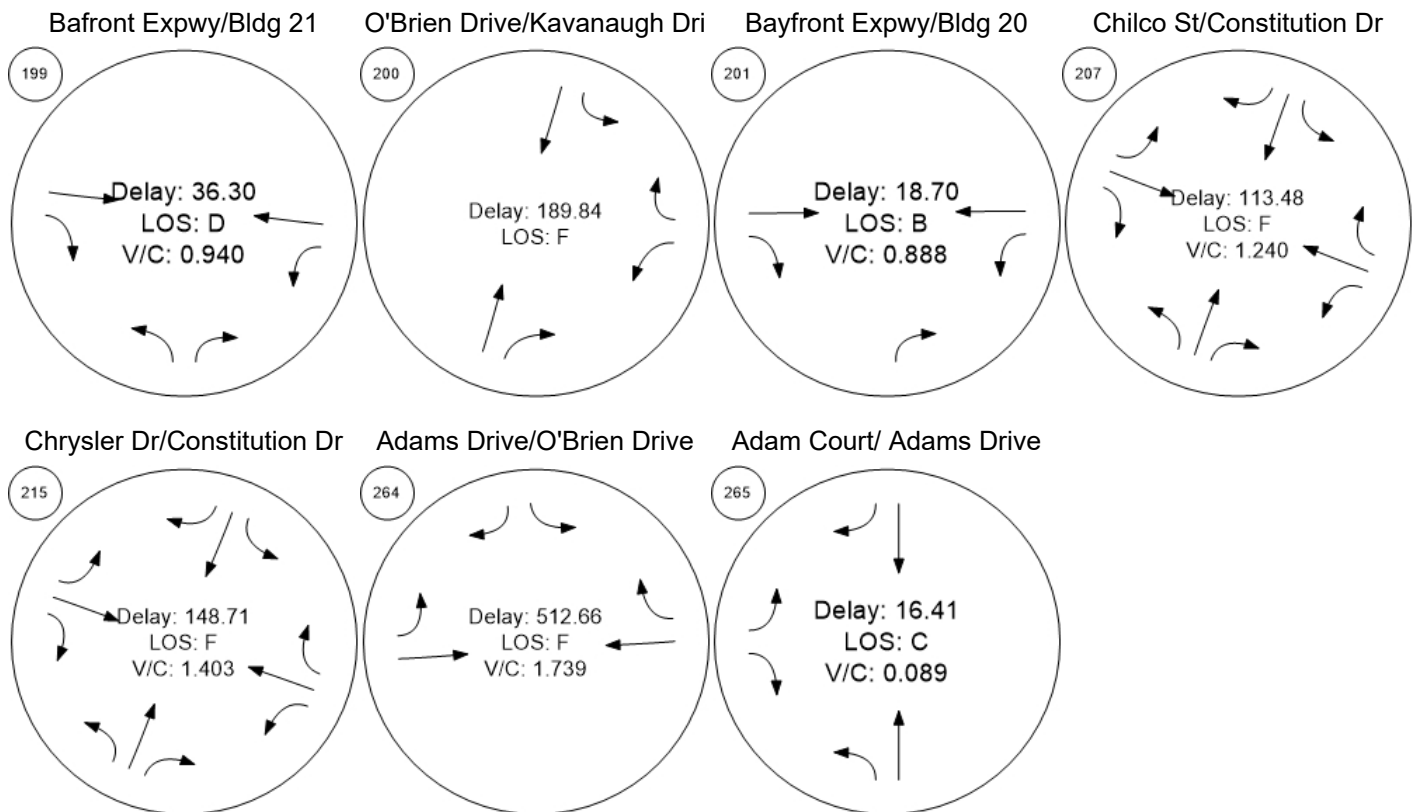
Willow Rd/Gilbert Ave



Traffic Conditions

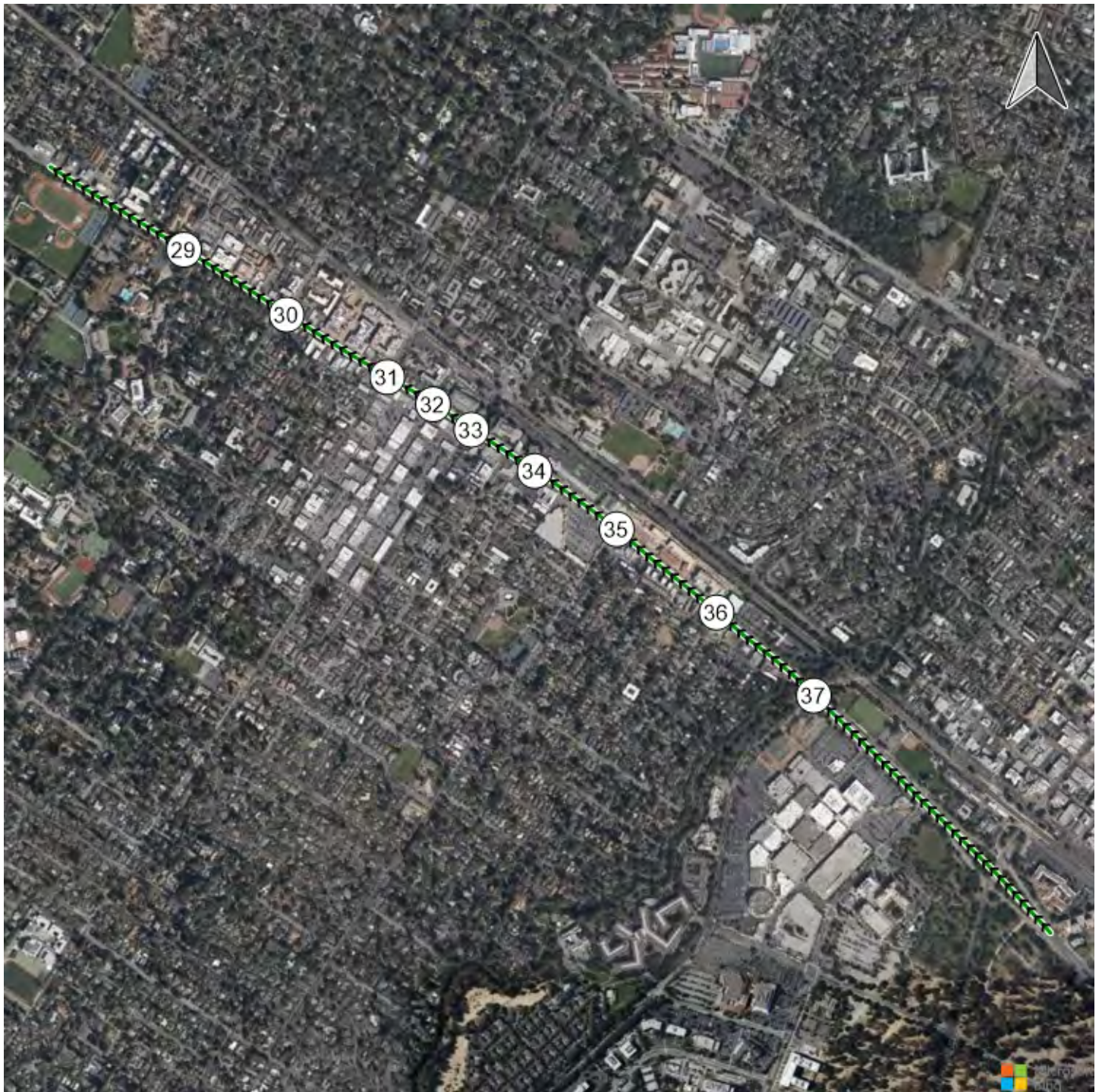


Traffic Conditions



Time Space Diagram - Flowing Off

Route 1: ECR NB



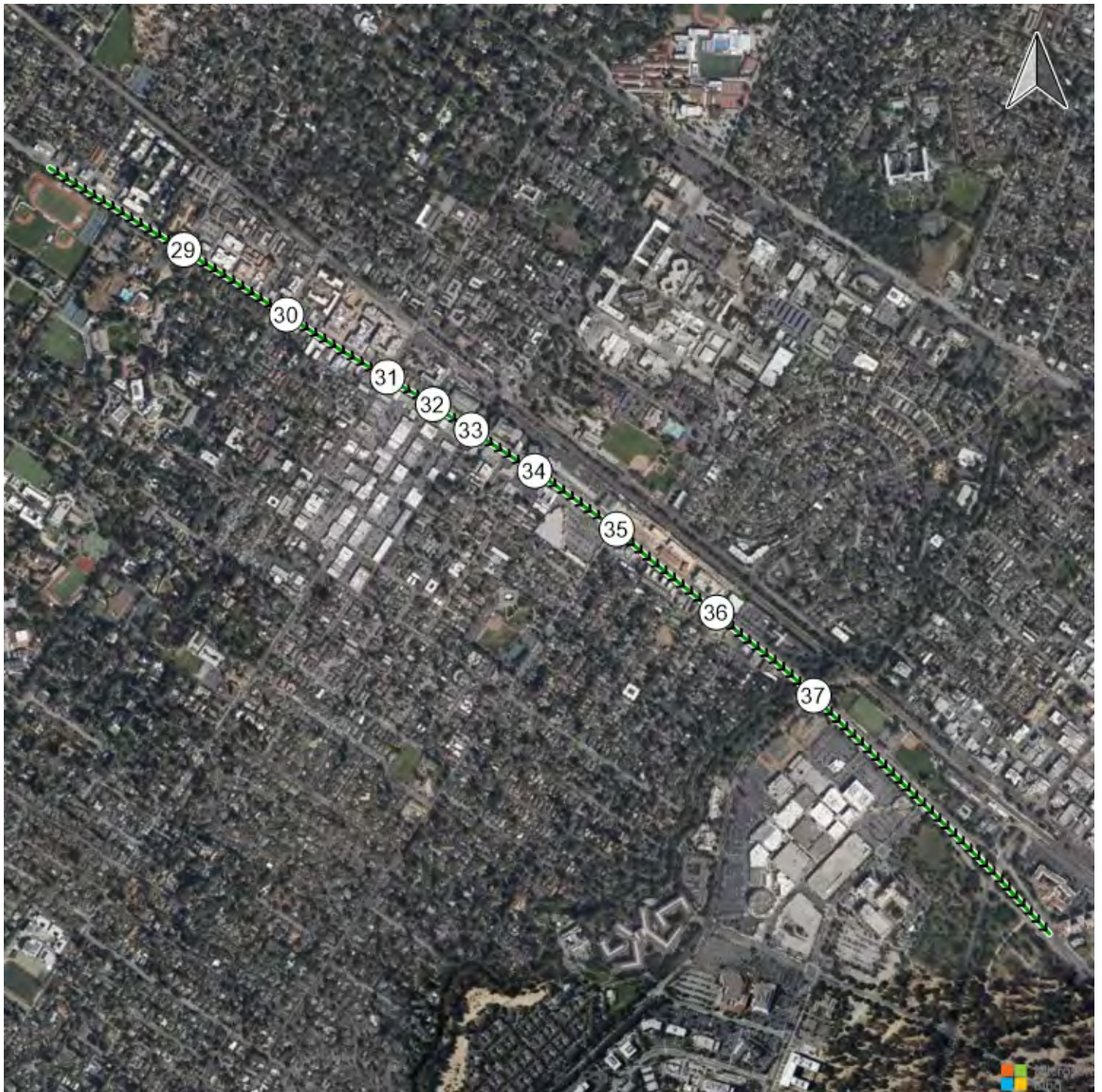
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Route 1: ECR NB

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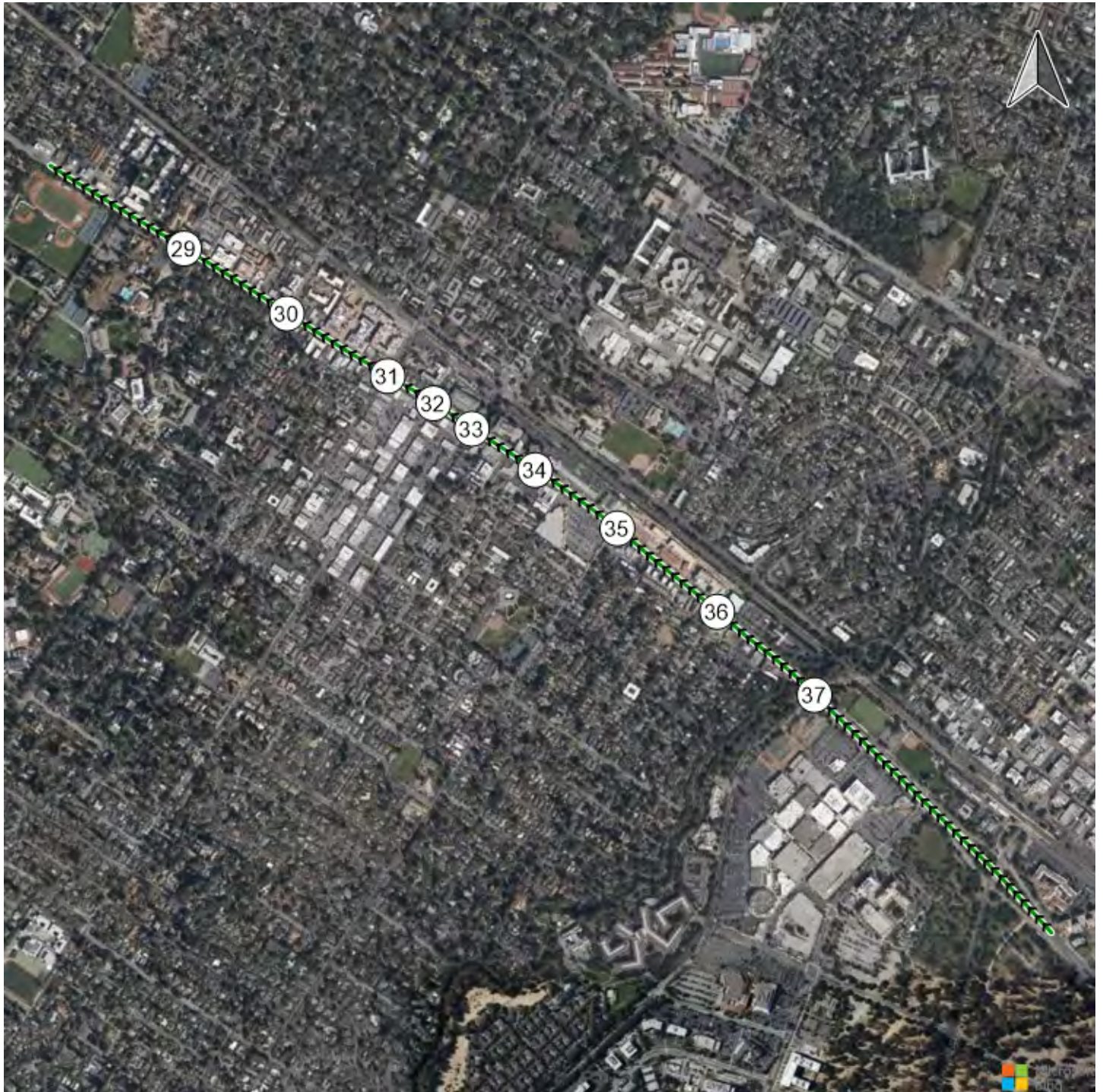
Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



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Version 2021 (SP 0-6)

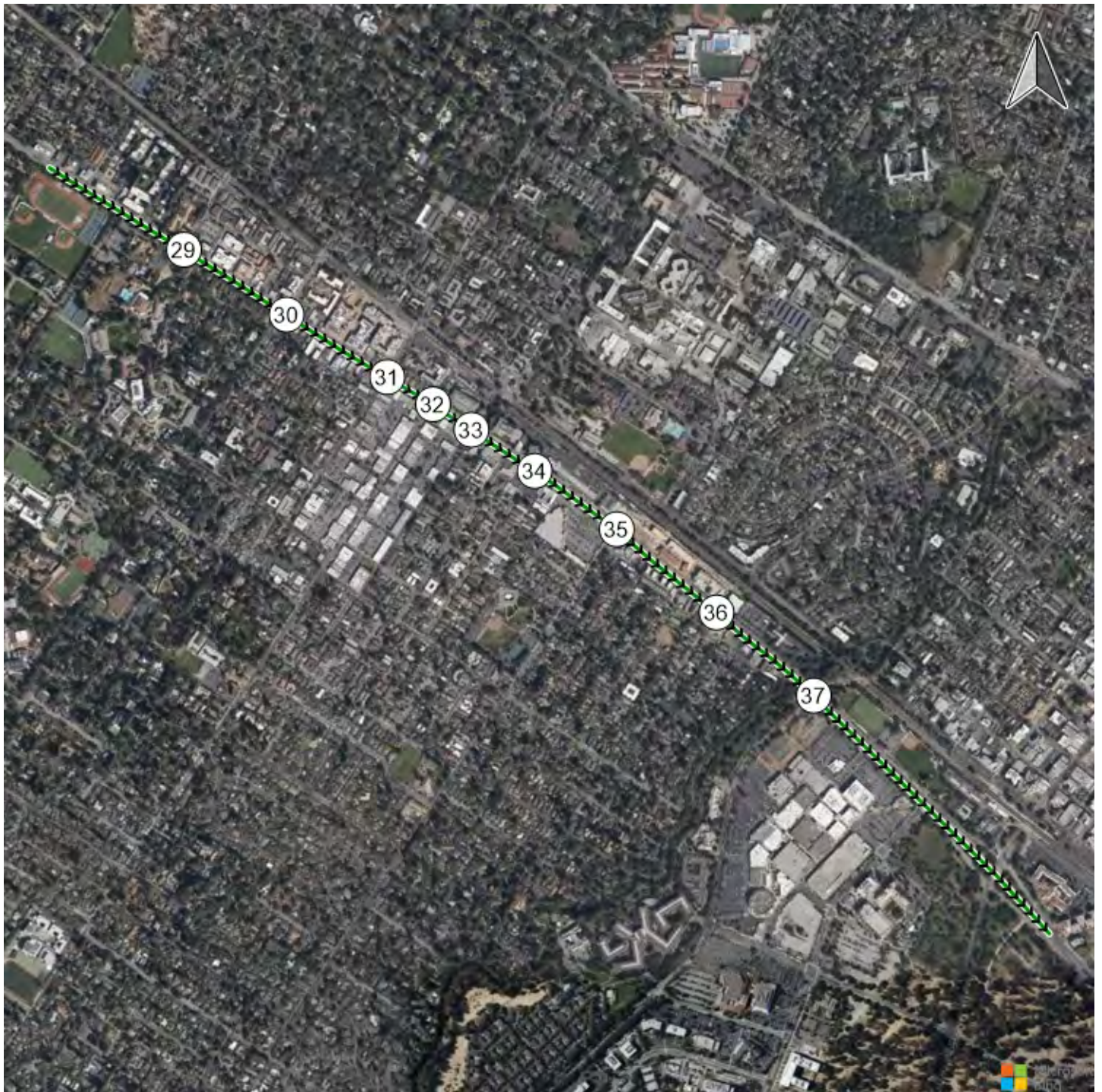
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



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Version 2021 (SP 0-6)

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Route 2: ECR SB

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Scenario 20 Cumulative AM (2040 vols)+Project  
 12/30/2021

### Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Right	0.919	24.4	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	SEB Left	0.842	31.8	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.839	60.4	E
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	EB Left	1.225	64.8	E
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NWB Left	0.757	49.7	D
10	Middlefield Rd/Ringswood Ave	Signalized	HCM 6th Edition	NEB Left	0.411	13.2	B
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Left	0.779	13.3	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	WB Left	1.299	261.8	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	SB Left	1.179	171.2	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	NB Left	1.622	251.8	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	NB Thru	1.154	78.9	E
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	WB Right	1.613	232.2	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	SEB Left	1.179	79.1	E
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	WB Right	1.138	129.2	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.935	34.3	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.699	23.9	C
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.627	65.0	E
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	1.118	62.2	E

131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	NB Thru	0.875	27.1	D
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.846	65.6	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.727	99.4	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.569	128.4	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.064	49.2	D
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.762	12.8	B
199	Bayfront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.722	5.6	A
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	2.020	276.6	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.933	9.9	A
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	SB Right	0.753	51.1	D
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.631	345.5	F
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	1.075	373.4	F
265	Adam Court/Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.049	17.8	C
267	Willow Road(SR114)/Park Street	Signalized	HCM 6th Edition	SB Left	0.521	34.2	C
269	O'Brien Drive/Loop Road	Roundabout	HCM 6th Edition	WB Right		8.8	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.919

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↶↷↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	1038	1462	217	1369	551
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1038	1462	217	1369	551
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	265	373	54	349	141
Total Analysis Volume [veh/h]	0	1059	1492	217	1397	562
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.26	0.42	0.41	0.36
s, saturation flow rate [veh/h]	4000	3515	3373	1572
c, Capacity [veh/h]	2121	1772	1394	650
d1, Uniform Delay [s]	11.98	17.07	23.43	21.40
k, delay calibration	0.50	0.50	0.06	0.40
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	5.06	8.57	11.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.50	0.84	1.00	0.87
d, Delay for Lane Group [s/veh]	12.82	22.13	32.01	33.33
Lane Group LOS	B	C	F	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.51	11.47	13.72	11.03
50th-Percentile Queue Length [ft/ln]	137.79	286.87	343.02	275.87
95th-Percentile Queue Length [veh/ln]	9.36	17.03	19.83	16.48
95th-Percentile Queue Length [ft/ln]	234.04	425.75	495.67	412.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.82	22.13	0.00	32.01	33.33
Movement LOS		B	C		F	C
d_A, Approach Delay [s/veh]	12.82		22.13		32.39	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	24.40					
Intersection LOS	C					
Intersection V/C	0.919					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	3.012	0.000	2.598
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.433	2.791	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	31.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	⇌⇌⇌			⇌⇌⇌			⇌⇌⇌			⇌⇌		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	42	1321	7	448	1225	346	13	4	68	355	20	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	0.00	0.00	12.70	1.70	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	59	0	0	0
Total Hourly Volume [veh/h]	42	1321	7	448	1225	346	13	4	9	355	20	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	367	2	124	340	96	4	1	3	99	6	0
Total Analysis Volume [veh/h]	47	1468	8	498	1361	384	14	4	10	394	22	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			1			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			1			1	
v_co, Outbound Pedestrian Volume crossing		1			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		1			0			1			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	40	40	15	40	40	0	20	0	20	20	20
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	51	51	31	70	70	0	41	0	37	37	37
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	96	96	112	102	102	7	7	35	35
g / C, Green / Cycle	0.05	0.60	0.60	0.70	0.64	0.64	0.04	0.04	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.03	0.27	0.27	0.49	0.47	0.51	0.01	0.00	0.22	0.01
s, saturation flow rate [veh/h]	1758	3532	1849	1018	1840	1707	1829	2555	1785	1900
c, Capacity [veh/h]	82	2122	1111	693	1177	1092	82	115	390	415
d1, Uniform Delay [s]	74.70	17.56	17.56	16.62	19.72	21.21	73.64	73.20	62.47	49.38
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	0.71	1.35	6.33	4.22	6.12	0.98	0.24	47.89	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.58	0.46	0.46	0.72	0.74	0.80	0.22	0.09	1.01	0.05
d, Delay for Lane Group [s/veh]	79.39	18.27	18.92	22.95	23.95	27.33	74.62	73.44	110.36	49.42
Lane Group LOS	E	B	B	C	C	C	E	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.00	9.97	10.64	3.85	22.77	24.86	0.75	0.20	21.21	0.72
50th-Percentile Queue Length [ft/ln]	50.05	249.18	266.01	96.18	569.21	621.40	18.64	5.09	530.25	17.95
95th-Percentile Queue Length [veh/ln]	3.60	15.15	15.99	6.93	30.59	33.03	1.34	0.37	28.92	1.29
95th-Percentile Queue Length [ft/ln]	90.09	378.63	399.75	173.13	764.85	825.81	33.55	9.16	723.05	32.31

**Movement, Approach, & Intersection Results**

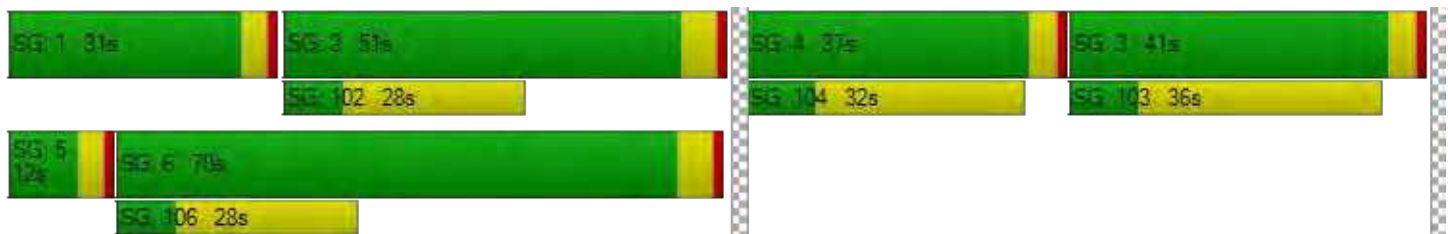
d_M, Delay for Movement [s/veh]	79.39	18.49	18.92	22.95	25.16	27.33	74.62	74.62	73.44	110.36	49.42	49.42
Movement LOS	E	B	B	C	C	C	E	E	E	F	D	D
d_A, Approach Delay [s/veh]	20.37			25.04			74.20			107.14		
Approach LOS	C			C			E			F		
d_I, Intersection Delay [s/veh]	31.79											
Intersection LOS	C											
Intersection V/C	0.842											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.43	68.43	69.35	69.35
I_p,int, Pedestrian LOS Score for Intersection	3.092	3.299	2.946	2.198
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	575	813	460	410
d_b, Bicycle Delay [s]	40.61	28.18	47.41	50.54
I_b,int, Bicycle LOS Score for Intersection	2.397	3.410	1.703	2.246
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	60.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	228	974	126	29	1014	413	629	77	230	38	22	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	228	974	126	29	1014	413	629	77	215	38	22	25
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	251	32	7	261	106	162	20	55	10	6	6
Total Analysis Volume [veh/h]	235	1004	130	30	1045	426	648	79	222	39	23	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			2			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			1			2	
v_co, Outbound Pedestrian Volume crossing		0			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			0			6			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	95	95	5	88	88	39	39	39	12	12
g / C, Green / Cycle	0.08	0.60	0.60	0.03	0.55	0.55	0.24	0.24	0.24	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.31	0.02	0.42	0.43	0.21	0.21	0.15	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1792	1704	1823	1648	1717	1706	1527	1439	1214
c, Capacity [veh/h]	142	1120	1070	58	1003	907	419	416	372	107	91
d1, Uniform Delay [s]	73.44	18.72	18.83	75.88	27.77	28.38	58.10	57.96	53.30	70.35	71.32
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.18	0.18	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	322.04	1.69	1.81	2.58	5.40	6.67	9.32	8.64	1.14	1.52	3.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.65	0.51	0.52	0.51	0.76	0.78	0.88	0.87	0.60	0.36	0.54
d, Delay for Lane Group [s/veh]	395.48	20.41	20.64	78.45	33.17	35.05	67.43	66.60	54.44	71.87	75.00
Lane Group LOS	F	C	C	E	C	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	18.58	12.85	12.52	1.26	23.62	22.70	15.48	15.14	8.12	1.59	2.06
50th-Percentile Queue Length [ft/ln]	464.41	321.34	313.08	31.42	590.42	567.52	387.11	378.45	203.06	39.66	51.39
95th-Percentile Queue Length [veh/ln]	29.63	18.73	18.33	2.26	31.59	30.51	21.94	21.52	12.80	2.86	3.70
95th-Percentile Queue Length [ft/ln]	740.87	468.34	458.18	56.56	789.67	762.86	548.45	537.97	319.90	71.40	92.51

**Movement, Approach, & Intersection Results**

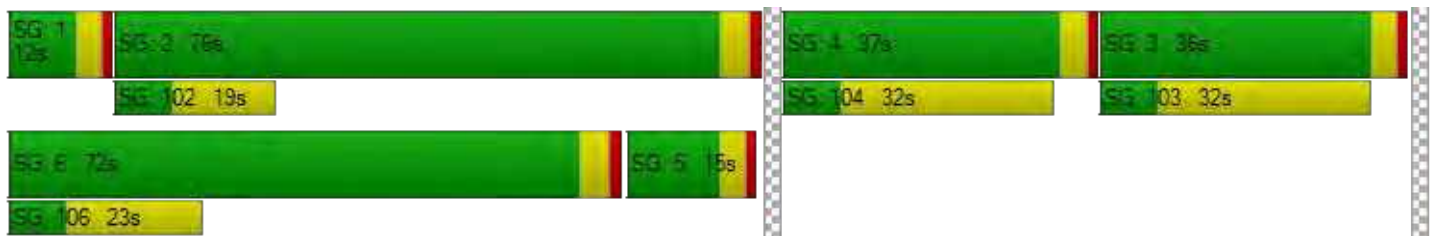
d_M, Delay for Movement [s/veh]	395.48	20.51	20.64	78.45	33.68	35.05	67.07	66.60	54.44	71.87	75.00	75.00
Movement LOS	F	C	C	E	C	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	84.89			34.96			64.08			73.62		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	60.40											
Intersection LOS	E											
Intersection V/C	0.839											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.990			3.083			2.514			2.056		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.689			2.798			3.150			1.705		
Bicycle LOS	B			C			C			A		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	64.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.225

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	839	82	425	755	47	338	69	2	48	57	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	839	82	425	755	47	338	69	2	48	57	339
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	214	21	108	193	12	86	18	1	12	15	86
Total Analysis Volume [veh/h]	0	856	84	434	770	48	345	70	2	49	58	346
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			5			0			5	
v_di, Inbound Pedestrian Volume crossing in		0			5			0			5	
v_co, Outbound Pedestrian Volume crossing		1			1			1			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			1			1			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			12			9			2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	30	30
g / C, Green / Cycle	0.33	0.33	0.20	0.57	0.57	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.25	0.23	0.23	0.64	0.26
s, saturation flow rate [veh/h]	1882	1656	1708	1807	1763	648	1712
c, Capacity [veh/h]	669	549	343	1030	1005	324	688
d1, Uniform Delay [s]	24.41	24.42	32.07	9.62	9.64	31.07	21.91
k, delay calibration	0.50	0.50	0.23	0.50	0.50	0.50	0.34
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.46	11.69	129.85	1.16	1.21	151.38	3.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	0.80	1.26	0.40	0.40	1.29	0.66
d, Delay for Lane Group [s/veh]	31.87	36.11	161.92	10.79	10.84	182.44	25.29
Lane Group LOS	C	D	F	B	B	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.40	8.84	18.68	3.80	3.74	19.94	7.56
50th-Percentile Queue Length [ft/ln]	234.97	220.99	467.07	94.97	93.56	498.61	189.10
95th-Percentile Queue Length [veh/ln]	14.43	13.72	28.83	6.84	6.74	31.54	12.07
95th-Percentile Queue Length [ft/ln]	360.67	342.89	720.64	170.94	168.42	788.54	301.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.87	33.63	36.11	161.92	10.81	10.84	182.44	182.44	182.44	25.29	25.29	25.29
Movement LOS	C	C	D	F	B	B	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	33.86			63.20			182.44			25.29		
Approach LOS	C			E			F			C		
d_I, Intersection Delay [s/veh]	64.82											
Intersection LOS	E											
Intersection V/C	1.225											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	23.9
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.82	29.82	29.82	19.73
I_p,int, Pedestrian LOS Score for Intersection	2.695	3.421	1.921	2.199
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	596	1071	681	681
d_b, Bicycle Delay [s]	19.73	8.70	17.50	17.44
I_b,int, Bicycle LOS Score for Intersection	2.335	2.593	2.248	2.307
Bicycle LOS	B	B	B	B

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	49.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	87	590	520	508	501	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	11.80	4.20	3.10	2.50	3.30	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	87	0	520	508	501	104
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	138	135	133	28
Total Analysis Volume [veh/h]	93	0	553	540	533	111
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing in	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	10	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.6	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	13	13	33	100	68
g / C, Green / Cycle	0.11	0.11	0.28	0.84	0.57
(v / s)_i Volume / Saturation Flow Rate	0.06	0.00	0.31	0.29	0.36
s, saturation flow rate [veh/h]	1641	1561	1765	1862	1779
c, Capacity [veh/h]	180	172	485	1555	1005
d1, Uniform Delay [s]	50.42	0.00	43.52	2.30	17.79
k, delay calibration	0.08	0.08	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.69	0.00	84.97	0.61	3.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	1.14	0.35	0.64
d, Delay for Lane Group [s/veh]	52.11	0.00	128.49	2.91	20.92
Lane Group LOS	D	A	F	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	0.00	25.56	2.07	12.35
50th-Percentile Queue Length [ft/ln]	68.20	0.00	639.03	51.64	308.77
95th-Percentile Queue Length [veh/ln]	4.91	0.00	36.59	3.72	18.11
95th-Percentile Queue Length [ft/ln]	122.76	0.00	914.81	92.96	452.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.11	0.00	128.49	2.91	20.92	20.92
Movement LOS	D	A	F	A	C	C
d_A, Approach Delay [s/veh]	52.11		66.45		20.92	
Approach LOS	D		E		C	
d_I, Intersection Delay [s/veh]	49.70					
Intersection LOS	D					
Intersection V/C	0.757					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.52	49.52	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.948	2.892	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	763	1090	507
d_b, Bicycle Delay [s]	23.21	12.68	34.09
I_b,int, Bicycle LOS Score for Intersection	1.560	3.363	2.622
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringswood Ave**

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.411

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↑			↑↵			↵↵↵			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	6	11	9	129	28	342	21	686	211	301	756	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	8.30	4.40	0.00	4.00	0.00	3.20	0.00	4.60	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	222	0	0	96	0	0	0
Total Hourly Volume [veh/h]	6	11	9	129	28	120	21	686	115	301	756	56
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	2	34	7	32	6	182	31	80	201	15
Total Analysis Volume [veh/h]	6	12	10	137	30	128	22	730	122	320	804	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			5			2			6		
v_di, Inbound Pedestrian Volume crossing in	2			6			1			5		
v_co, Outbound Pedestrian Volume crossing	9			41			40			8		
v_ci, Inbound Pedestrian Volume crossing mi	8			40			41			9		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	8			23			15			38		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	22	22	22	22	94	79	79	91	85	85
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.78	0.66	0.66	0.76	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.00	0.01	0.13	0.09	0.03	0.21	0.08	0.38	0.24	0.24
s, saturation flow rate [veh/h]	1397	1736	1310	1477	701	3526	1473	849	1840	1780
c, Capacity [veh/h]	124	325	300	277	574	2331	974	667	1301	1258
d1, Uniform Delay [s]	54.83	40.14	46.93	43.16	4.13	8.69	7.45	5.24	6.75	6.77
k, delay calibration	0.10	0.10	0.10	0.10	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.08	1.54	1.15	0.03	0.35	0.26	2.46	0.70	0.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.07	0.56	0.46	0.04	0.31	0.13	0.48	0.34	0.34
d, Delay for Lane Group [s/veh]	54.98	40.22	48.47	44.31	4.16	9.04	7.72	7.70	7.45	7.51
Lane Group LOS	D	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.18	0.56	4.82	3.46	0.11	3.87	1.15	2.40	4.06	3.99
50th-Percentile Queue Length [ft/ln]	4.56	13.93	120.51	86.61	2.87	96.77	28.72	59.97	101.53	99.71
95th-Percentile Queue Length [veh/ln]	0.33	1.00	8.42	6.24	0.21	6.97	2.07	4.32	7.31	7.18
95th-Percentile Queue Length [ft/ln]	8.20	25.07	210.53	155.89	5.16	174.18	51.69	107.94	182.75	179.48

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	54.98	40.22	40.22	48.47	48.47	44.31	4.16	9.04	7.72	7.70	7.48	7.51
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	43.38			46.67			8.73			7.54		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	13.25											
Intersection LOS	B											
Intersection V/C	0.411											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.008			2.916			3.162			2.839		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	513			513			757			507		
d_b, Bicycle Delay [s]	33.29			33.54			23.36			34.10		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.413			2.360			2.536		
Bicycle LOS	A			B			B			B		

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	13.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

**Intersection Setup**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	857	67	1319	2955	241	416
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	3.50	1.60	3.10	2.20	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	857	67	1319	2955	241	416
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	221	17	340	762	62	107
Total Analysis Volume [veh/h]	884	69	1360	3046	248	429
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	21	21	33	57	8	45
g / C, Green / Cycle	0.28	0.28	0.44	0.76	0.11	0.60
(v / s)_i Volume / Saturation Flow Rate	0.18	0.04	0.39	0.60	0.07	0.10
s, saturation flow rate [veh/h]	4955	1548	3470	5049	3453	4166
c, Capacity [veh/h]	1363	426	1513	3831	379	2494
d1, Uniform Delay [s]	24.08	20.69	19.70	5.52	32.15	6.76
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.21	0.84	0.47	0.72	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.65	0.16	0.90	0.80	0.65	0.17
d, Delay for Lane Group [s/veh]	24.71	20.91	20.54	5.99	32.87	6.77
Lane Group LOS	C	C	C	A	C	A
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.07	0.83	8.86	2.78	2.11	0.84
50th-Percentile Queue Length [ft/ln]	101.73	20.70	221.53	69.46	52.68	21.09
95th-Percentile Queue Length [veh/ln]	7.32	1.49	13.74	5.00	3.79	1.52
95th-Percentile Queue Length [ft/ln]	183.12	37.26	343.57	125.03	94.82	37.96



**Movement, Approach, & Intersection Results**

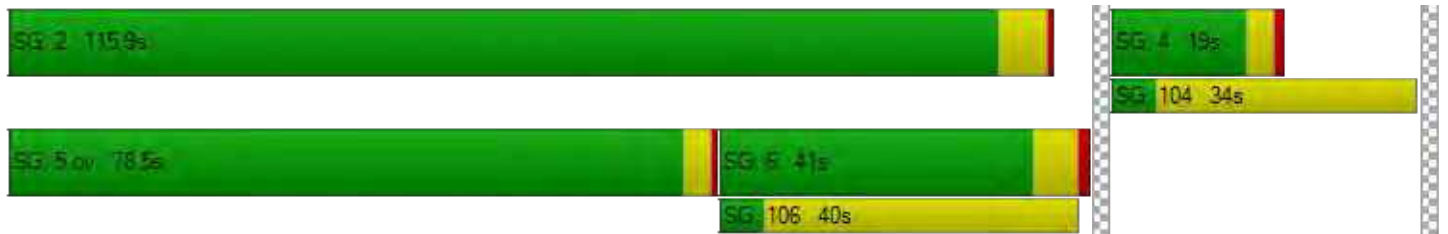
d_M, Delay for Movement [s/veh]	24.71	20.91	20.54	5.99	32.87	6.77
Movement LOS	C	C	C	A	C	A
d_A, Approach Delay [s/veh]	24.44		10.48		16.33	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	13.34					
Intersection LOS	B					
Intersection V/C	0.779					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.14	0.00	29.14
I_p,int, Pedestrian LOS Score for Intersection	3.671	0.000	2.929
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	931	372	399
d_b, Bicycle Delay [s]	10.75	24.92	24.10
I_b,int, Bicycle LOS Score for Intersection	2.084	3.983	1.670
Bicycle LOS	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	261.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.299

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	253	596	277	38	76	72	391	439	235	1160	2513	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	253	596	277	38	76	56	391	439	129	1160	2513	72
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	152	71	10	19	14	100	112	33	296	641	18
Total Analysis Volume [veh/h]	258	608	283	39	78	57	399	448	132	1184	2564	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			2			3			0	
v_di, Inbound Pedestrian Volume crossing in		0			3			2			0	
v_co, Outbound Pedestrian Volume crossing		4			0			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		3			0			4			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	22	21	51	9	9	9	26	51	51	25	50	50
g / C, Green / Cycle	0.17	0.17	0.40	0.07	0.07	0.07	0.21	0.40	0.40	0.20	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.35	0.28	0.07	0.06	0.03	0.05	0.26	0.09	0.09	0.44	0.51	0.05
s, saturation flow rate [veh/h]	740	2209	3942	670	2746	1075	1515	4922	1458	2715	5020	1615
c, Capacity [veh/h]	128	369	1578	48	196	77	312	1989	589	538	1990	640
d1, Uniform Delay [s]	52.15	52.54	24.45	57.77	55.98	57.37	50.10	24.65	24.64	50.58	38.08	24.08
k, delay calibration	0.50	0.50	0.11	0.19	0.11	0.15	0.17	0.11	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	481.46	302.79	0.05	42.31	1.30	17.49	134.15	0.06	0.19	546.40	130.81	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.01	1.65	0.18	0.82	0.40	0.74	1.28	0.23	0.22	2.20	1.29	0.11
d, Delay for Lane Group [s/veh]	533.60	355.33	24.50	100.07	57.28	74.85	184.24	24.71	24.83	596.99	168.89	24.16
Lane Group LOS	F	F	C	F	E	E	F	C	C	F	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	21.13	21.26	1.81	1.81	1.24	2.18	10.71	2.97	2.65	49.29	44.19	1.41
50th-Percentile Queue Length [ft/ln]	528.33	531.54	45.13	45.24	31.12	54.62	267.84	74.26	66.16	1232.32	1104.76	35.31
95th-Percentile Queue Length [veh/ln]	35.63	34.60	3.25	3.26	2.24	3.93	17.92	5.35	4.76	78.56	64.74	2.54
95th-Percentile Queue Length [ft/ln]	890.67	865.08	81.24	81.43	56.02	98.31	448.00	133.67	119.08	1963.93	1618.54	63.56

**Movement, Approach, & Intersection Results**

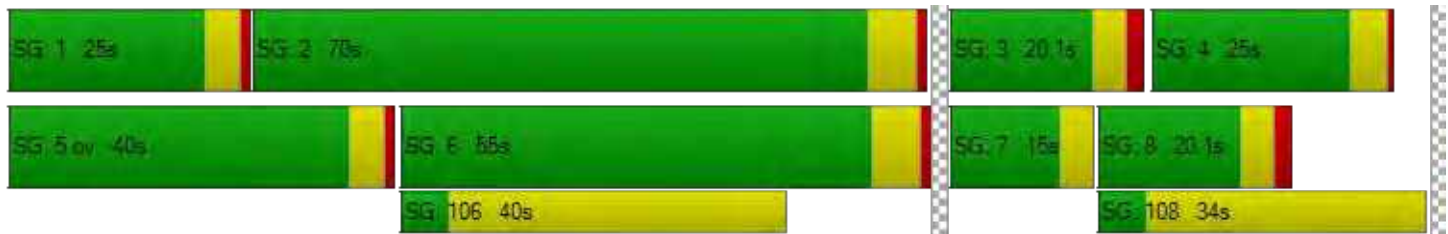
d_M, Delay for Movement [s/veh]	533.60	355.33	24.50	100.07	57.28	74.85	184.24	24.71	24.83	596.99	168.89	24.16
Movement LOS	F	F	C	F	E	E	F	C	C	F	F	C
d_A, Approach Delay [s/veh]	313.88			72.63			89.74			298.78		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	261.76											
Intersection LOS	F											
Intersection V/C	1.299											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.44	0.00	54.44	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.145	0.000	3.345	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	326	238	776	1014
d_b, Bicycle Delay [s]	44.20	49.01	23.63	15.34
I_b,int, Bicycle LOS Score for Intersection	2.508	1.716	2.156	3.661
Bicycle LOS	B	A	B	D

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	171.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.179

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	100	900	80	488	1351	48	47	16	48	18	6	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	6.30	7.00	9.10	8.40	10.50	1.30	4.50	6.00	23.10	12.50	30.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	100	900	80	488	1351	48	47	16	48	18	6	161
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	242	22	131	363	13	13	4	13	5	2	43
Total Analysis Volume [veh/h]	108	968	86	525	1453	52	51	17	52	19	6	173
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing in	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	50	100	74	24	74	100	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	120	96	96	120	104	104	33	33	33	33
g / C, Green / Cycle	0.75	0.60	0.60	0.75	0.65	0.65	0.21	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.27	0.66	0.67	0.47	0.81	0.82	0.04	0.10	0.02	0.25
s, saturation flow rate [veh/h]	404	808	781	1114	934	917	1212	705	1092	727
c, Capacity [veh/h]	132	485	469	313	604	593	45	144	150	150
d1, Uniform Delay [s]	50.44	31.94	31.94	51.78	28.23	28.23	80.00	56.05	64.84	63.50
k, delay calibration	0.42	0.50	0.50	0.50	0.50	0.50	0.11	0.04	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.97	71.31	74.06	319.32	123.99	133.65	102.84	0.91	0.38	134.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	1.10	1.11	1.68	1.25	1.27	1.13	0.48	0.13	1.19
d, Delay for Lane Group [s/veh]	86.41	103.25	106.00	371.09	152.22	161.89	182.83	56.96	65.22	198.39
Lane Group LOS	F	F	F	F	F	F	F	E	E	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.29	27.14	26.61	15.44	42.71	43.55	3.17	2.54	0.65	11.78
50th-Percentile Queue Length [ft/ln]	57.14	678.48	665.29	385.93	1067.85	1088.63	79.15	63.39	16.22	294.56
95th-Percentile Queue Length [veh/ln]	4.11	38.52	38.00	27.79	63.13	64.95	5.70	4.56	1.17	18.93
95th-Percentile Queue Length [ft/ln]	102.85	963.03	950.11	694.67	1578.37	1623.70	142.47	114.11	29.20	473.24

**Movement, Approach, & Intersection Results**

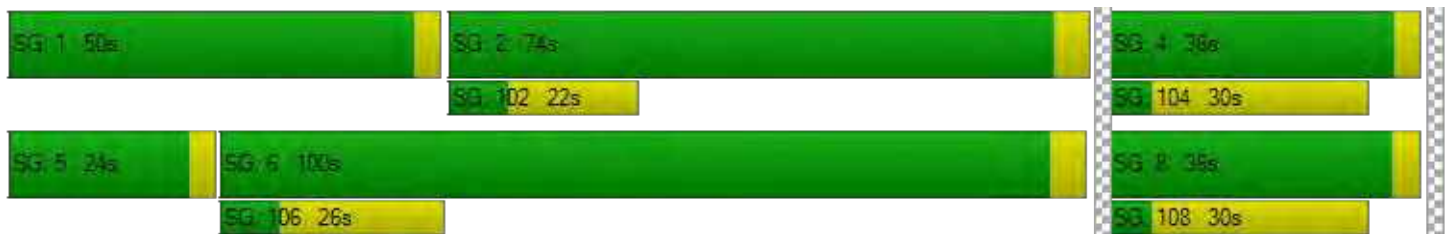
d_M, Delay for Movement [s/veh]	86.41	104.48	106.00	371.09	156.88	161.89	182.83	56.96	56.96	65.22	198.39	198.39
Movement LOS	F	F	F	F	F	F	F	E	E	E	F	F
d_A, Approach Delay [s/veh]	102.91			212.41			110.46			185.61		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	171.16											
Intersection LOS	F											
Intersection V/C	1.179											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.25	71.25	69.38	69.38
I_p,int, Pedestrian LOS Score for Intersection	3.148	3.144	2.146	2.784
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	875	410	413
d_b, Bicycle Delay [s]	12.90	25.80	50.69	50.68
I_b,int, Bicycle LOS Score for Intersection	2.518	3.234	1.758	1.886
Bicycle LOS	B	C	A	A

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	251.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.622

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	266	1221	1418	28	172	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	5.70	10.30	22.20	0.00	6.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	266	1221	1418	28	172	95
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	332	385	8	47	26
Total Analysis Volume [veh/h]	289	1327	1541	30	187	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing in	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	106	90	90	24	24
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	103	87	87	20	20
g / C, Green / Cycle	0.10	0.80	0.67	0.67	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.36	0.86	1.01	1.01	0.11	0.13
s, saturation flow rate [veh/h]	795	1546	781	775	1745	779
c, Capacity [veh/h]	80	1229	525	521	263	117
d1, Uniform Delay [s]	58.39	13.28	21.30	21.30	52.44	53.73
k, delay calibration	0.50	0.50	0.50	0.50	0.16	0.30
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1210.33	49.99	233.64	238.85	5.25	38.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	3.62	1.08	1.50	1.51	0.71	0.88
d, Delay for Lane Group [s/veh]	1268.72	63.27	254.94	260.14	57.69	92.16
Lane Group LOS	F	F	F	F	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	29.41	20.72	47.65	48.03	6.20	4.53
50th-Percentile Queue Length [ft/ln]	735.22	517.97	1191.20	1200.77	154.90	113.35
95th-Percentile Queue Length [veh/ln]	47.55	30.09	76.76	77.57	10.28	8.03
95th-Percentile Queue Length [ft/ln]	1188.82	752.28	1918.92	1939.30	256.96	200.65

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	1268.72	63.27	257.49	260.14	57.69	92.16
Movement LOS	F	F	F	F	E	F
d_A, Approach Delay [s/veh]	278.85		257.54		69.93	
Approach LOS	F		F		E	
d_I, Intersection Delay [s/veh]	251.80					
Intersection LOS	F					
Intersection V/C	1.622					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.166	3.153	2.156
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.01	7.42	45.67
I_b,int, Bicycle LOS Score for Intersection	2.893	2.856	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	78.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.154

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1323	995	42	1172	237	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.30	7.40	9.70	10.30	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1323	995	42	1172	237	138
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	352	265	11	312	63	37
Total Analysis Volume [veh/h]	1407	1059	45	1247	252	147
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	95	95	4	103	20	20
g / C, Green / Cycle	0.73	0.73	0.03	0.79	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.91	0.72	0.03	0.83	0.14	0.14
s, saturation flow rate [veh/h]	1549	1478	1704	1494	1312	1559
c, Capacity [veh/h]	1138	1085	57	1182	201	239
d1, Uniform Delay [s]	17.24	14.51	62.26	13.55	54.04	54.06
k, delay calibration	0.50	0.50	0.04	0.50	0.27	0.27
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	114.14	22.07	8.38	41.85	27.94	25.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.24	0.98	0.78	1.05	0.91	0.91
d, Delay for Lane Group [s/veh]	131.38	36.58	70.64	55.40	81.98	79.13
Lane Group LOS	F	D	E	F	F	E
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	31.43	27.63	1.59	18.78	7.41	8.63
50th-Percentile Queue Length [ft/ln]	785.77	690.73	39.79	469.58	185.26	215.83
95th-Percentile Queue Length [veh/ln]	47.85	36.25	2.86	27.11	11.87	13.45
95th-Percentile Queue Length [ft/ln]	1196.33	906.24	71.61	677.66	296.87	336.29

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	131.38	36.58	70.64	55.40	81.30	79.13
Movement LOS	F	D	E	F	F	E
d_A, Approach Delay [s/veh]	90.67		55.93		80.43	
Approach LOS	F		E		F	
d_I, Intersection Delay [s/veh]	78.89					
Intersection LOS	E					
Intersection V/C	1.154					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.42
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.446
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.17	3.45	44.18
I_b,int, Bicycle LOS Score for Intersection	3.594	2.626	2.218
Bicycle LOS	D	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	232.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.613

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑ →			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	143	1874	423	40	1370	7	17	93	421	262	121	305
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	143	1874	423	40	1370	7	17	93	377	262	121	271
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	498	113	11	364	2	5	25	100	70	32	72
Total Analysis Volume [veh/h]	152	1994	450	43	1457	7	18	99	401	279	129	288
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			3			3	
v_di, Inbound Pedestrian Volume crossing in		3			3			2			2	
v_co, Outbound Pedestrian Volume crossing		8			12			7			11	
v_ci, Inbound Pedestrian Volume crossing mi		7			11			8			12	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			1			5			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	55	55	4	47	47	36	36	36	20	20	20
g / C, Green / Cycle	0.10	0.43	0.43	0.03	0.36	0.36	0.27	0.27	0.27	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.09	0.47	0.50	0.02	0.64	0.64	0.01	0.06	0.30	0.18	0.16	0.43
s, saturation flow rate [veh/h]	1781	3455	1627	1781	1491	781	1420	1577	1322	1536	800	668
c, Capacity [veh/h]	176	1481	698	55	538	281	385	428	359	236	123	103
d1, Uniform Delay [s]	57.69	37.14	37.14	62.54	41.56	41.56	34.95	36.82	46.80	55.02	55.02	54.28
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.46	0.07	0.46	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.17	54.23	94.19	8.43	361.70	368.59	0.02	0.10	81.80	88.90	91.71	838.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	1.10	1.18	0.78	1.79	1.79	0.05	0.23	1.12	1.18	1.05	2.81
d, Delay for Lane Group [s/veh]	62.85	91.37	131.33	70.97	403.26	410.15	34.97	36.92	128.60	143.92	146.73	892.96
Lane Group LOS	E	F	F	E	F	F	C	D	F	F	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.11	33.65	39.45	1.55	35.62	37.84	0.43	2.48	19.51	6.77	7.15	27.23
50th-Percentile Queue Length [ft/ln]	127.63	841.30	986.22	38.85	890.48	946.12	10.70	61.99	487.83	169.27	178.63	680.79
95th-Percentile Queue Length [veh/ln]	8.81	46.16	55.75	2.80	59.01	62.39	0.77	4.46	28.56	11.79	11.78	45.44
95th-Percentile Queue Length [ft/ln]	220.27	1154.07	1393.78	69.93	1475.29	1559.87	19.25	111.58	714.09	294.81	294.45	1135.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	62.85	98.81	131.33	70.97	405.61	410.15	34.97	36.92	128.60	143.92	146.73	892.96
Movement LOS	E	F	F	E	F	F	C	D	F	F	F	F
d_A, Approach Delay [s/veh]	102.34			396.08			107.82			454.39		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	232.21											
Intersection LOS	F											
Intersection V/C	1.613											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.500	3.059	2.418	2.625
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.33	21.07	38.56	50.34
I_b,int, Bicycle LOS Score for Intersection	2.987	2.388	2.487	2.764
Bicycle LOS	C	B	B	C

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	79.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.179

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩️		↩️		↩️ ↩️	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1387	1216	627	469	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1387	1216	328	469	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	347	304	82	117	0
Total Analysis Volume [veh/h]	65	1387	1216	328	469	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	5	45	36	36	36	36
g / C, Green / Cycle	0.06	0.49	0.40	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.53	0.44	0.27	0.51	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1229	928	1597
c, Capacity [veh/h]	78	1296	1101	489	369	635
d1, Uniform Delay [s]	42.15	22.85	27.29	22.25	27.29	0.00
k, delay calibration	0.04	0.23	0.16	0.23	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.15	39.46	52.00	3.40	142.18	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	1.07	1.10	0.67	1.27	0.00
d, Delay for Lane Group [s/veh]	50.30	62.31	79.29	25.66	169.47	0.00
Lane Group LOS	D	F	F	C	F	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.60	19.70	18.93	5.80	22.05	0.00
50th-Percentile Queue Length [ft/ln]	39.96	492.46	473.32	144.97	551.35	0.00
95th-Percentile Queue Length [veh/ln]	2.88	28.36	27.85	9.75	34.37	0.00
95th-Percentile Queue Length [ft/ln]	71.92	709.10	696.29	243.70	859.29	0.00

**Movement, Approach, & Intersection Results**

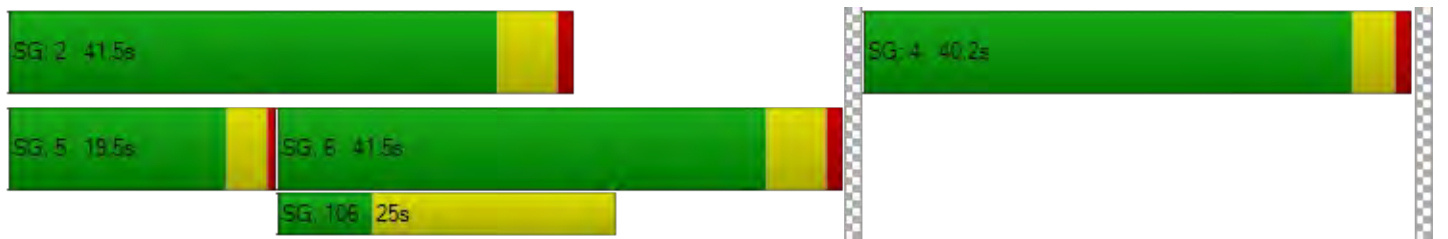
d_M, Delay for Movement [s/veh]	50.30	62.31	79.29	25.66	169.47	0.00
Movement LOS	D	F	F	C	F	A
d_A, Approach Delay [s/veh]	61.77		67.90		169.47	
Approach LOS	E		E		F	
d_I, Intersection Delay [s/veh]	79.08					
Intersection LOS	E					
Intersection V/C	1.179					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.91
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.452
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	796	796	796
d_b, Bicycle Delay [s]	16.41	16.42	16.41
I_b,int, Bicycle LOS Score for Intersection	2.758	3.080	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	129.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.138

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	22	909	7	36	928	108	68	15	32	59	12	363
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0
Total Hourly Volume [veh/h]	22	909	7	36	928	108	68	15	26	59	12	363
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	237	2	9	242	28	18	4	7	15	3	95
Total Analysis Volume [veh/h]	23	947	7	38	967	113	71	16	27	61	13	378
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing in	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			6			2		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	166	166	166	166	166	166	166	166	166	166
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	4	97	97	7	100	14	14	14	30	30
g / C, Green / Cycle	0.02	0.58	0.58	0.04	0.60	0.08	0.08	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.29	0.29	0.04	0.70	0.04	0.04	0.02	0.06	0.33
s, saturation flow rate [veh/h]	952	1445	1895	952	1537	952	1397	1336	952	1202
c, Capacity [veh/h]	23	843	1105	42	926	79	116	111	172	217
d1, Uniform Delay [s]	80.88	20.14	20.15	78.98	32.95	72.40	72.37	70.89	59.47	67.95
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	82.41	0.94	0.72	44.69	86.45	3.90	2.63	1.11	1.23	377.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.49	0.49	0.91	1.17	0.45	0.44	0.24	0.35	1.80
d, Delay for Lane Group [s/veh]	163.29	21.08	20.87	123.67	119.39	76.29	75.00	72.00	60.70	445.48
Lane Group LOS	F	C	C	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.53	9.75	12.73	2.16	58.65	1.57	2.24	1.14	2.34	32.09
50th-Percentile Queue Length [ft/ln]	38.28	243.78	318.17	53.91	1466.27	39.19	55.97	28.49	58.59	802.13
95th-Percentile Queue Length [veh/ln]	2.76	14.87	18.58	3.88	80.68	2.82	4.03	2.05	4.22	51.21
95th-Percentile Queue Length [ft/ln]	68.91	371.81	464.44	97.04	2017.02	70.54	100.75	51.27	105.47	1280.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	163.29	20.96	20.87	123.67	119.39	119.39	75.67	75.00	72.00	60.70	445.48	445.48
Movement LOS	F	C	C	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	24.31			119.54			74.69			393.56		
Approach LOS	C			F			E			F		
d_I, Intersection Delay [s/veh]	129.20											
Intersection LOS	F											
Intersection V/C	1.138											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	72.25			72.25			72.25			72.25		
I_p,int, Pedestrian LOS Score for Intersection	2.574			2.822			2.190			2.108		
Crosswalk LOS	B			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	241			241			362			362		
d_b, Bicycle Delay [s]	64.15			64.12			55.77			55.65		
I_b,int, Bicycle LOS Score for Intersection	2.366			3.404			1.758			2.305		
Bicycle LOS	B			C			A			B		

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.935

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	37	783	7	4	878	181	280	6	64	1	2	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.70	0.00	0.00	3.90	3.30	1.00	0.00	0.00	0.00	0.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	783	7	4	878	181	280	6	64	1	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	206	2	1	231	48	74	2	17	0	1	2
Total Analysis Volume [veh/h]	39	824	7	4	924	191	295	6	67	1	2	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		8			20			8			20	
v_di, Inbound Pedestrian Volume crossing in		8			20			8			20	
v_co, Outbound Pedestrian Volume crossing		4			2			2			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			2			2			4	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		6			2			13			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	109	109	109	109	109	109	41	41	41	0	41	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	105	105	105	105	37	37
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.46	0.01	0.63	0.26	0.01
s, saturation flow rate [veh/h]	495	1826	671	1779	1393	1744
c, Capacity [veh/h]	141	1278	342	1245	385	455
d1, Uniform Delay [s]	53.60	12.39	23.78	18.09	57.54	42.92
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.79	2.58	0.06	10.19	35.98	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.28	0.65	0.01	0.90	0.96	0.02
d, Delay for Lane Group [s/veh]	58.39	14.96	23.85	28.28	93.53	42.93
Lane Group LOS	E	B	C	C	F	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.51	15.94	0.09	32.29	18.11	0.26
50th-Percentile Queue Length [ft/ln]	37.67	398.50	2.21	807.17	452.87	6.56
95th-Percentile Queue Length [veh/ln]	2.71	22.49	0.16	41.61	25.09	0.47
95th-Percentile Queue Length [ft/ln]	67.81	562.20	3.98	1040.13	627.37	11.81



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	58.39	14.96	14.96	23.85	28.28	28.28	93.53	93.53	93.53	42.93	42.93	42.93
Movement LOS	E	B	B	C	C	C	F	F	F	D	D	D
d_A, Approach Delay [s/veh]	16.91			28.26			93.53			42.93		
Approach LOS	B			C			F			D		
d_I, Intersection Delay [s/veh]	34.29											
Intersection LOS	C											
Intersection V/C	0.935											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.38			64.38			64.38			64.38		
I_p,int, Pedestrian LOS Score for Intersection	2.470			3.113			2.087			1.755		
Crosswalk LOS	B			C			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1399			1399			492			492		
d_b, Bicycle Delay [s]	6.79			6.77			42.89			42.63		
I_b,int, Bicycle LOS Score for Intersection	2.995			3.406			2.167			1.574		
Bicycle LOS	C			C			B			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	7	686	148	52	914	0	20	109	11	146	97	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.20	10.00	7.40	3.60	0.00	2.70	0.00	0.00	2.60	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	686	148	52	914	0	20	109	11	146	97	93
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	186	40	14	248	0	5	30	3	40	26	25
Total Analysis Volume [veh/h]	8	746	161	57	993	0	22	118	12	159	105	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		6			4			6			3	
v_di, Inbound Pedestrian Volume crossing in		6			3			6			4	
v_co, Outbound Pedestrian Volume crossing		0			2			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			2			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		9			12			11			11	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	116	116	116	116	116	116	34	34	34	0	34	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	112	112	112	112	30	30	30	30
g / C, Green / Cycle	0.75	0.75	0.75	0.75	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.01	0.52	0.10	0.54	0.02	0.07	0.13	0.12
s, saturation flow rate [veh/h]	576	1757	588	1846	1167	1855	1235	1716
c, Capacity [veh/h]	299	1311	319	1377	138	370	203	342
d1, Uniform Delay [s]	24.17	9.98	24.13	10.46	65.06	51.64	65.79	54.57
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.19	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	3.02	1.22	3.29	0.54	0.57	10.98	2.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.03	0.69	0.18	0.72	0.16	0.35	0.78	0.60
d, Delay for Lane Group [s/veh]	24.34	13.00	25.35	13.75	65.60	52.21	76.76	57.03
Lane Group LOS	C	B	C	B	E	D	E	E
Critical Lane Group	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.18	15.94	1.36	18.27	0.82	4.35	6.78	7.42
50th-Percentile Queue Length [ft/ln]	4.57	398.44	33.94	456.83	20.57	108.69	169.49	185.40
95th-Percentile Queue Length [veh/ln]	0.33	22.48	2.44	25.28	1.48	7.77	11.05	11.88
95th-Percentile Queue Length [ft/ln]	8.22	562.12	61.09	632.10	37.02	194.17	276.24	297.05

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.34	13.00	13.00	25.35	13.75	13.75	65.60	52.21	52.21	76.76	57.03	57.03
Movement LOS	C	B	B	C	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	13.10			14.38			54.15			65.63		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	23.88											
Intersection LOS	C											
Intersection V/C	0.699											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.35			64.35			64.35			64.35		
I_p,int, Pedestrian LOS Score for Intersection	2.754			2.576			2.048			2.235		
Crosswalk LOS	C			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1493			1493			399			399		
d_b, Bicycle Delay [s]	4.84			4.84			48.29			48.29		
I_b,int, Bicycle LOS Score for Intersection	3.069			3.292			1.810			2.162		
Bicycle LOS	C			C			A			B		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	65.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	27	300	153	374	136	452	132	462	170	344	341	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	3.60	2.60	2.70	3.80	2.50	0.50	5.50	5.30	3.70	13.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	119	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	27	300	34	374	136	0	132	462	170	344	341	20
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	78	9	97	35	0	34	120	44	90	89	5
Total Analysis Volume [veh/h]	28	313	35	390	142	0	138	481	177	358	355	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		10			2			10			2	
v_di, Inbound Pedestrian Volume crossing in		10			2			10			2	
v_co, Outbound Pedestrian Volume crossing		5			3			2			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			2			3			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		29			22			6			20	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			Yes	
Maximum Recall		No			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	28	28	28	56	56	56	23	23	23	23	25	25	25
g / C, Green / Cycle	0.18	0.18	0.18	0.38	0.38	0.38	0.15	0.15	0.15	0.15	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.02	0.15	0.15	0.00	0.08	0.12	0.13	0.12	0.14	0.14	0.14
s, saturation flow rate [veh/h]	1810	1825	1448	1772	1817	1567	1774	1892	1892	1491	1734	1805	1635
c, Capacity [veh/h]	333	336	267	666	683	589	268	285	285	225	288	300	272
d1, Uniform Delay [s]	50.69	60.24	51.05	34.27	34.27	0.00	58.62	61.66	62.20	61.06	60.69	60.67	60.77
k, delay calibration	0.11	0.37	0.11	0.50	0.50	0.50	0.11	0.20	0.23	0.18	0.15	0.15	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	28.04	0.22	1.75	1.70	0.00	1.54	10.02	15.11	9.73	9.47	9.03	10.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.08	0.93	0.13	0.39	0.39	0.00	0.52	0.82	0.87	0.79	0.85	0.85	0.86
d, Delay for Lane Group [s/veh]	50.80	88.28	51.27	36.02	35.97	0.00	60.16	71.68	77.31	70.78	70.16	69.70	71.45
Lane Group LOS	D	F	D	D	D	A	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.89	14.36	1.13	7.53	7.71	0.00	4.98	9.44	10.46	7.10	9.86	10.21	9.48
50th-Percentile Queue Length [ft/ln]	22.36	359.10	28.24	188.21	192.65	0.00	124.3	235.9	261.4	177.5	246.56	255.28	236.95
95th-Percentile Queue Length [veh/ln]	1.61	20.58	2.03	12.03	12.26	0.00	8.63	14.48	15.76	11.47	15.01	15.45	14.53
95th-Percentile Queue Length [ft/ln]	40.24	514.49	50.83	300.70	306.47	0.00	215.8	361.9	393.9	286.7	375.32	386.30	363.18

**Movement, Approach, & Intersection Results**

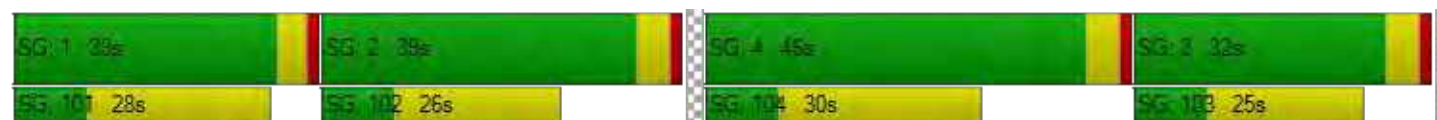
d_M, Delay for Movement [s/veh]	50.80	88.28	51.27	36.00	35.97	0.00	60.16	74.58	70.78	70.01	70.75	71.45
Movement LOS	D	F	D	D	D	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	82.04			36.00			71.24			70.41		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	64.96											
Intersection LOS	E											
Intersection V/C	0.627											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.46	63.46	63.46	63.46
I_p,int, Pedestrian LOS Score for Intersection	2.518	4.295	4.337	2.761
Crosswalk LOS	B	E	E	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	457
d_b, Bicycle Delay [s]	49.75	39.81	50.32	45.06
I_b,int, Bicycle LOS Score for Intersection	2.376	4.087	3.041	2.165
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road and US 101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	62.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.118

**Intersection Setup**

Name	Marsh Road		Marsh Road			
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road			
Base Volume Input [veh/h]	1865	0	0	896	771	1256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1865	0	0	896	771	1256
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	481	0	0	231	199	324
Total Analysis Volume [veh/h]	1923	0	0	924	795	1295
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.55	0.27	0.23	0.47
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	14.73	9.01	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.24
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.91	0.71	0.23	155.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.45	0.66	1.34
d, Delay for Lane Group [s/veh]	23.64	9.72	22.10	181.58
Lane Group LOS	C	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.72	4.07	6.00	29.52
50th-Percentile Queue Length [ft/ln]	393.07	101.80	149.89	738.03
95th-Percentile Queue Length [veh/ln]	22.23	7.33	10.01	45.37
95th-Percentile Queue Length [ft/ln]	555.64	183.25	250.29	1134.13

**Movement, Approach, & Intersection Results**

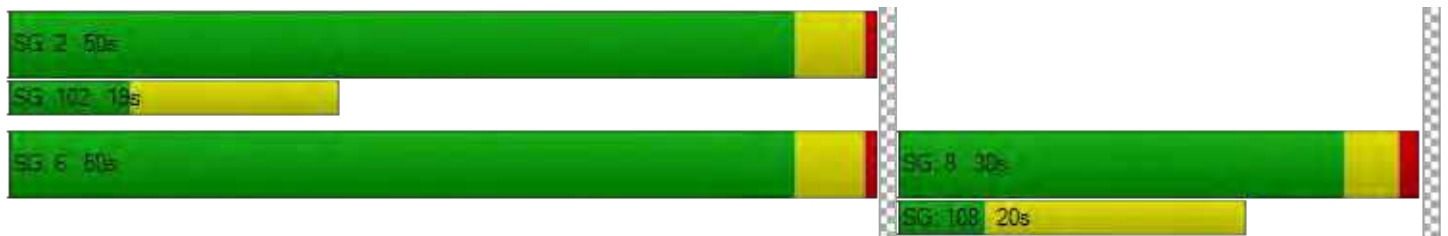
d_M, Delay for Movement [s/veh]	23.64	0.00	0.00	9.72	22.10	181.58
Movement LOS	C			A	C	F
d_A, Approach Delay [s/veh]	23.64		9.72		120.92	
Approach LOS	C		A		F	
d_I, Intersection Delay [s/veh]	62.22					
Intersection LOS	E					
Intersection V/C	1.118					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.136	2.634
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	3.146	2.322	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	27.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.875

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	472	10	81	221	45	37	41	22	22	51	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	472	10	81	221	45	37	41	22	22	51	131
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	123	3	25	69	14	12	13	7	6	14	36
Total Analysis Volume [veh/h]	14	493	10	101	276	56	47	52	28	24	56	144
Pedestrian Volume [ped/h]	3			3			9			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	591	579	482	528
Degree of Utilization, x	0.87	0.75	0.26	0.42

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	10.04	6.55	1.05	2.09
95th-Percentile Queue Length [ft]	251.03	163.86	26.24	52.34
Approach Delay [s/veh]	37.38	25.39	13.13	14.74
Approach LOS	E	D	B	B
Intersection Delay [s/veh]	27.12			
Intersection LOS	D			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	65.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	1389	10	30	7	8	535	296	2094	710	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1389	10	30	7	8	535	296	2094	710	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	362	3	8	2	2	139	77	545	185	9
Total Analysis Volume [veh/h]	169	28	1447	10	31	7	8	557	308	2181	740	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			1			1			0	
v_di, Inbound Pedestrian Volume crossing in		0			1			1			0	
v_co, Outbound Pedestrian Volume crossing		0			22			0			22	
v_ci, Inbound Pedestrian Volume crossing mi		0			22			0			22	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			13			25			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	69	11	11	0	32	25	32	48	32	48	69	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	18	87	29	29	36	36	36	67	67
g / C, Green / Cycle	0.11	0.54	0.18	0.18	0.23	0.23	0.23	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.01	0.01	0.18	0.18	0.21	0.43	0.43
s, saturation flow rate [veh/h]	1822	4114	1863	1610	1625	1480	1444	5075	1805
c, Capacity [veh/h]	206	2140	339	293	369	336	328	2122	754
d1, Uniform Delay [s]	70.55	28.30	54.28	54.32	58.44	58.44	60.17	46.56	46.56
k, delay calibration	0.50	0.50	0.04	0.04	0.21	0.21	0.30	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	52.18	1.74	0.03	0.04	7.71	8.40	25.99	27.07	39.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	0.68	0.07	0.08	0.80	0.80	0.94	1.03	1.03
d, Delay for Lane Group [s/veh]	122.74	30.04	54.31	54.36	66.15	66.84	86.15	73.63	86.49
Lane Group LOS	F	C	D	D	E	E	F	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	11.06	14.02	0.86	0.78	12.16	11.15	14.57	33.23	38.14
50th-Percentile Queue Length [ft/ln]	276.50	350.53	21.43	19.47	304.07	278.69	364.16	830.69	953.41
95th-Percentile Queue Length [veh/ln]	16.51	20.16	1.54	1.40	17.88	16.62	20.83	43.60	49.29
95th-Percentile Queue Length [ft/ln]	412.85	504.06	38.58	35.04	447.06	415.58	520.64	1089.92	1232.32

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	122.74	122.74	30.04	54.31	54.34	54.36	66.15	66.48	86.15	73.63	86.49	86.49
Movement LOS	F	F	C	D	D	D	E	E	F	F	F	F
d_A, Approach Delay [s/veh]	41.15			54.33			73.42			77.00		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	65.56											
Intersection LOS	E											
Intersection V/C	0.846											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.596			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			555			791		
d_b, Bicycle Delay [s]	73.76			54.89			42.29			29.24		
I_b,int, Bicycle LOS Score for Intersection	4.272			1.599			2.280			6.437		
Bicycle LOS	E			A			B			F		

**Sequence**

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	99.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.727

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		



**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1360	623	0	1264	888	0	0	0	1188	0	415
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	3.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1360	623	0	1264	888	0	0	0	1188	0	415
Peak Hour Factor	1.0000	0.9700	1.0000	1.0000	0.9700	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	351	156	0	326	229	0	0	0	297	0	115
Total Analysis Volume [veh/h]	0	1402	623	0	1303	915	0	0	0	1188	0	461
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	41	41	41		31	31
g / C, Green / Cycle	0.51	0.51	0.51		0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.28	0.26	1.04		0.34	0.16
s, saturation flow rate [veh/h]	5053	5053	877		3514	2859
c, Capacity [veh/h]	2595	2595	450		1357	1104
d1, Uniform Delay [s]	13.07	12.73	19.00		22.70	17.92
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.81	0.70	471.83		1.94	0.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.54	0.50	2.03		0.88	0.42
d, Delay for Lane Group [s/veh]	13.88	13.42	490.82		24.65	18.17
Lane Group LOS	B	B	F		C	B
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	5.32	4.81	66.22		9.99	2.99
50th-Percentile Queue Length [ft/ln]	133.05	120.16	1655.48		249.68	74.63
95th-Percentile Queue Length [veh/ln]	9.11	8.40	110.89		15.17	5.37
95th-Percentile Queue Length [ft/ln]	227.63	210.05	2772.37		379.26	134.33

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	13.88	0.00	0.00	13.42	490.82	0.00	0.00	0.00	24.65	0.00	18.17
Movement LOS		B			B	F				C		B
d_A, Approach Delay [s/veh]	13.88		210.37				0.00		22.84			
Approach LOS	B		F				A		C			
d_I, Intersection Delay [s/veh]	99.40											
Intersection LOS	F											
Intersection V/C	1.727											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.030	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.10	12.07	39.95	12.06
I_b,int, Bicycle LOS Score for Intersection	2.331	2.780	4.132	1.560
Bicycle LOS	B	C	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	128.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.569

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1827	740	0	1831	424	0	0	0	402	0	789
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	2.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1827	740	0	1831	424	0	0	0	402	0	789
Peak Hour Factor	1.0000	0.9700	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	471	191	0	472	106	0	0	0	101	0	219
Total Analysis Volume [veh/h]	0	1884	763	0	1888	424	0	0	0	402	0	877
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			3			0			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	L	R
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	36	36	36
g / C, Green / Cycle	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.38	0.49	0.70	0.11	0.56
s, saturation flow rate [veh/h]	5012	1551	2715	3514	1567
c, Capacity [veh/h]	2253	697	1220	1582	706
d1, Uniform Delay [s]	19.38	21.54	21.97	13.61	21.71
k, delay calibration	0.50	0.50	0.50	0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.88	62.77	250.39	0.08	113.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.84	1.09	1.55	0.25	1.24
d, Delay for Lane Group [s/veh]	23.26	84.31	272.36	13.70	135.28
Lane Group LOS	C	F	F	B	F
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.20	23.74	35.18	2.13	17.06
50th-Percentile Queue Length [ft/ln]	254.90	593.49	879.52	53.34	426.40
95th-Percentile Queue Length [veh/ln]	15.43	33.85	57.06	3.84	27.23
95th-Percentile Queue Length [ft/ln]	385.82	846.28	1426.42	96.01	680.81



**Movement, Approach, & Intersection Results**

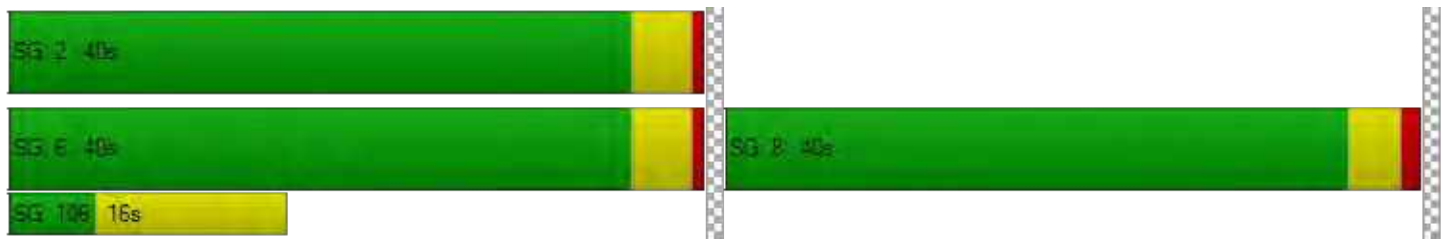
d_M, Delay for Movement [s/veh]	0.00	23.26	84.31	0.00	272.36	0.00	0.00	0.00	0.00	13.70	0.00	135.28
Movement LOS		C	F		F					B		F
d_A, Approach Delay [s/veh]	40.86			272.36			0.00			97.07		
Approach LOS	D			F			A			F		
d_I, Intersection Delay [s/veh]	128.40											
Intersection LOS	F											
Intersection V/C	1.569											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.09	12.08	39.95	12.07
I_b,int, Bicycle LOS Score for Intersection	3.015	2.598	4.132	1.560
Bicycle LOS	C	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	49.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.064

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	284	283	1268	813	616	1963
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	284	283	1268	813	616	1963
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	75	74	334	214	162	517
Total Analysis Volume [veh/h]	299	298	1335	856	648	2066
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	79	79
g / C, Green / Cycle	0.18	0.18	0.46	0.46	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.09	0.23	0.27	0.55	0.76	0.41
s, saturation flow rate [veh/h]	3420	1320	4967	1547	849	5020
c, Capacity [veh/h]	627	242	2278	710	635	3643
d1, Uniform Delay [s]	39.82	44.50	21.84	29.50	29.58	6.97
k, delay calibration	0.04	0.50	0.04	0.50	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	134.20	0.09	105.70	41.13	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.48	1.23	0.59	1.21	1.02	0.57
d, Delay for Lane Group [s/veh]	40.02	178.70	21.93	135.20	70.71	7.02
Lane Group LOS	D	F	C	F	F	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.60	15.51	7.68	37.36	12.02	5.57
50th-Percentile Queue Length [ft/ln]	89.89	387.75	192.11	933.97	300.51	139.13
95th-Percentile Queue Length [veh/ln]	6.47	24.18	12.23	53.97	18.01	9.43
95th-Percentile Queue Length [ft/ln]	161.81	604.44	305.76	1349.31	450.18	235.85

**Movement, Approach, & Intersection Results**

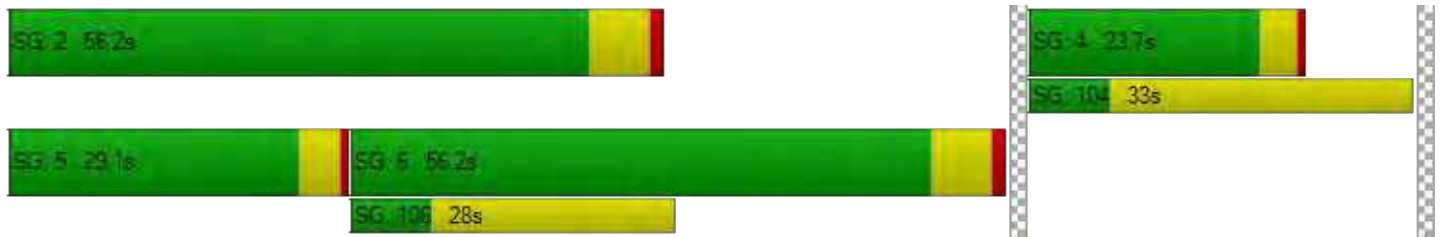
d_M, Delay for Movement [s/veh]	40.02	178.70	21.93	135.20	70.71	7.02
Movement LOS	D	F	C	F	F	A
d_A, Approach Delay [s/veh]	109.25		66.18		22.23	
Approach LOS	F		E		C	
d_I, Intersection Delay [s/veh]	49.17					
Intersection LOS	D					
Intersection V/C	1.064					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.06	44.06	44.06
I_p,int, Pedestrian LOS Score for Intersection	3.243	3.660	3.511
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	917	917
d_b, Bicycle Delay [s]	36.33	15.97	15.97
I_b,int, Bicycle LOS Score for Intersection	1.560	2.765	3.052
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.762

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	442	93	1889	459	164	2299
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	442	93	1889	459	164	2299
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	24	487	118	42	593
Total Analysis Volume [veh/h]	456	96	1947	473	169	2370
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	52	52	52	52	52	52
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	9	9	22	22	6	32
g / C, Green / Cycle	0.18	0.18	0.42	0.42	0.12	0.61
(v / s)_i Volume / Saturation Flow Rate	0.14	0.06	0.39	0.32	0.09	0.47
s, saturation flow rate [veh/h]	3173	1509	4959	1493	1810	5024
c, Capacity [veh/h]	564	268	2071	623	215	3091
d1, Uniform Delay [s]	20.59	18.83	14.56	12.82	22.32	7.31
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.07	0.30	1.05	0.72	2.39	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.36	0.94	0.76	0.79	0.77
d, Delay for Lane Group [s/veh]	21.66	19.13	15.61	13.54	24.71	7.46
Lane Group LOS	C	B	B	B	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.54	0.97	5.39	3.45	1.85	3.03
50th-Percentile Queue Length [ft/ln]	63.50	24.20	134.72	86.36	46.29	75.86
95th-Percentile Queue Length [veh/ln]	4.57	1.74	9.20	6.22	3.33	5.46
95th-Percentile Queue Length [ft/ln]	114.30	43.56	229.90	155.44	83.32	136.55

**Movement, Approach, & Intersection Results**

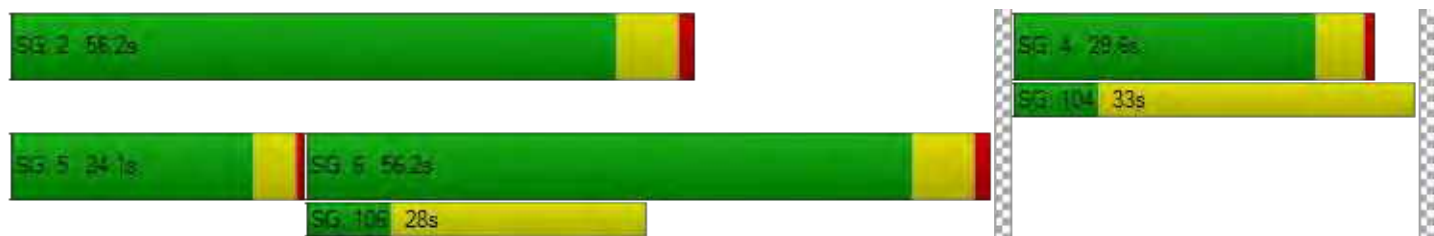
d_M, Delay for Movement [s/veh]	21.66	19.13	15.61	13.54	24.71	7.46
Movement LOS	C	B	B	B	C	A
d_A, Approach Delay [s/veh]	21.22		15.21		8.61	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	12.77					
Intersection LOS	B					
Intersection V/C	0.762					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	16.17	16.17	16.17
I_p,int, Pedestrian LOS Score for Intersection	2.343	3.653	3.520
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	961	1922	1922
d_b, Bicycle Delay [s]	7.02	0.04	0.04
I_b,int, Bicycle LOS Score for Intersection	1.560	2.891	2.956
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bayfront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	5.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

**Intersection Setup**

Name	Bldg 21		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑⇐		⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	66	51	1135	396	247	2441
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	35.50	35.50	11.60	11.60	4.40	4.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	51	1135	396	247	2441
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	13	296	103	64	636
Total Analysis Volume [veh/h]	69	53	1182	413	257	2543
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	25	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	5	5	41	41	50	50
g / C, Green / Cycle	0.08	0.08	0.63	0.63	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.28	0.31	0.23	0.57
s, saturation flow rate [veh/h]	1172	1058	4231	1320	1134	4496
c, Capacity [veh/h]	92	83	2656	829	953	3457
d1, Uniform Delay [s]	29.06	29.16	6.23	6.53	2.99	3.98
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.26	4.28	0.04	0.17	0.06	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.68	0.72	0.45	0.50	0.27	0.74
d, Delay for Lane Group [s/veh]	32.33	33.44	6.27	6.71	3.05	4.10
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.99	0.96	1.71	1.90	0.09	1.16
50th-Percentile Queue Length [ft/ln]	24.64	24.06	42.69	47.62	2.21	29.03
95th-Percentile Queue Length [veh/ln]	1.77	1.73	3.07	3.43	0.16	2.09
95th-Percentile Queue Length [ft/ln]	44.35	43.30	76.84	85.72	3.97	52.26

**Movement, Approach, & Intersection Results**

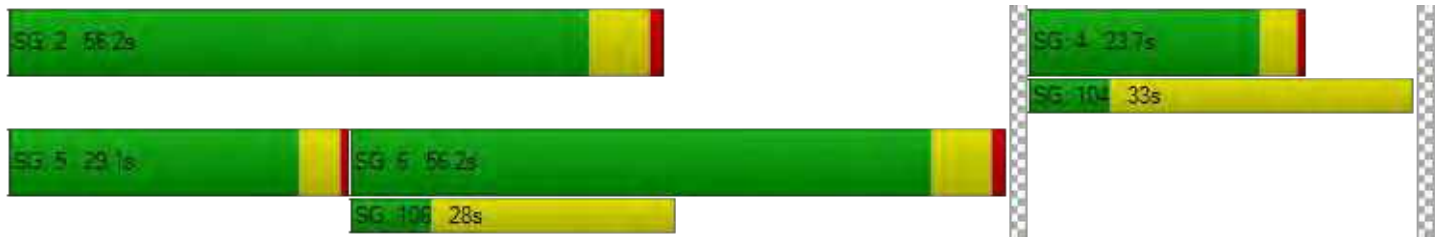
d_M, Delay for Movement [s/veh]	32.45	33.44	6.27	6.71	3.05	4.10
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	32.87		6.39		4.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	5.62					
Intersection LOS	A					
Intersection V/C	0.722					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.26	22.26	22.26
I_p,int, Pedestrian LOS Score for Intersection	2.547	3.455	3.445
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	619	1547	1547
d_b, Bicycle Delay [s]	15.42	1.66	1.66
I_b,int, Bicycle LOS Score for Intersection	1.761	2.437	3.100
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	276.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.020

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	663	270	74	388	210	257
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	663	270	74	388	210	257
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	188	77	21	110	60	73
Total Analysis Volume [veh/h]	753	307	84	441	239	292
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	1060	525	531
Degree of Utilization, x	2.02	1.03	1.00

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	72.41	15.04	14.19
95th-Percentile Queue Length [ft]	1810.26	376.02	354.77
Approach Delay [s/veh]	482.28	74.63	65.71
Approach LOS	F	F	F
Intersection Delay [s/veh]	276.60		
Intersection LOS	F		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.933

**Intersection Setup**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	980.00	760.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	

**Volumes**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Base Volume Input [veh/h]	0	48	989	234	86	2729
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	88.60	11.70	11.70	6.30	6.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	48	989	234	86	2729
Peak Hour Factor	0.9500	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	263	62	23	726
Total Analysis Volume [veh/h]	0	51	1052	249	91	2903
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	25	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	52	52	52	52	52
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	3	31	31	39	39
g / C, Green / Cycle	0.06	0.59	0.59	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.12	0.25	0.19	0.14	0.66
s, saturation flow rate [veh/h]	436	4227	1319	640	4426
c, Capacity [veh/h]	29	2485	775	611	3301
d1, Uniform Delay [s]	24.50	5.93	5.49	2.39	4.92
k, delay calibration	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	366.15	0.04	0.09	0.04	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.79	0.42	0.32	0.15	0.88
d, Delay for Lane Group [s/veh]	390.66	5.97	5.58	2.44	5.24
Lane Group LOS	F	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.25	1.14	0.76	0.02	0.45
50th-Percentile Queue Length [ft/ln]	81.16	28.55	19.08	0.48	11.25
95th-Percentile Queue Length [veh/ln]	5.84	2.06	1.37	0.03	0.81
95th-Percentile Queue Length [ft/ln]	146.10	51.39	34.35	0.86	20.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	390.66	5.97	5.58	2.44	5.24
Movement LOS		F	A	A	A	A
d_A, Approach Delay [s/veh]	390.66		5.90		5.15	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	9.90					
Intersection LOS	A					
Intersection V/C	0.933					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	16.31	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.441	0.000
Crosswalk LOS	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	765	1912	1912
d_b, Bicycle Delay [s]	9.97	0.05	0.05
I_b,int, Bicycle LOS Score for Intersection	1.560	2.275	3.206
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	51.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

**Intersection Setup**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	274	356	196	766	348	423	80	10	116	42	24	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	274	356	196	766	348	423	80	10	116	42	24	84
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	91	50	195	89	108	20	3	30	11	6	21
Total Analysis Volume [veh/h]	280	363	200	782	355	432	82	10	118	43	24	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		76			0			0			76	
v_di, Inbound Pedestrian Volume crossing in		76			0			0			76	
v_co, Outbound Pedestrian Volume crossing		11			0			10			0	
v_ci, Inbound Pedestrian Volume crossing mi		10			0			11			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	26	57	0	35	66	0	0	19	19	0	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	10	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	84	84	84	84	84	84	84	84
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	30	22	37	10	10	6	6
g / C, Green / Cycle	0.18	0.36	0.26	0.44	0.12	0.12	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.16	0.34	0.23	0.47	0.05	0.08	0.04	0.05
s, saturation flow rate [veh/h]	1767	1650	3431	1691	1776	1437	1760	1577
c, Capacity [veh/h]	327	585	911	735	211	170	127	114
d1, Uniform Delay [s]	33.36	26.74	29.56	23.91	34.66	35.52	38.11	38.20
k, delay calibration	0.11	0.42	0.11	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.38	26.15	2.50	53.73	1.43	4.96	4.85	6.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.96	0.86	1.07	0.44	0.69	0.62	0.65
d, Delay for Lane Group [s/veh]	39.74	52.89	32.06	77.64	36.08	40.49	42.96	44.32
Lane Group LOS	D	D	C	F	D	D	D	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.98	14.70	7.59	24.44	1.81	2.50	1.73	1.66
50th-Percentile Queue Length [ft/ln]	149.53	367.60	189.64	610.89	45.24	62.61	43.24	41.57
95th-Percentile Queue Length [veh/ln]	9.99	20.99	12.10	34.20	3.26	4.51	3.11	2.99
95th-Percentile Queue Length [ft/ln]	249.80	524.82	302.56	854.88	81.44	112.69	77.82	74.82

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	39.74	52.89	52.89	32.06	77.64	77.64	36.08	36.08	40.49	42.96	42.96	44.16
Movement LOS	D	D	D	C	E	E	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	48.52			54.92			38.56			43.62		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	51.12											
Intersection LOS	D											
Intersection V/C	0.753											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.69	33.69	33.69	33.69
I_p,int, Pedestrian LOS Score for Intersection	2.380	2.708	2.246	2.409
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1256	1469	355	355
d_b, Bicycle Delay [s]	5.85	2.98	28.54	28.54
I_b,int, Bicycle LOS Score for Intersection	2.951	4.148	1.906	1.812
Bicycle LOS	C	D	A	A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	345.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.631

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
	181	332	115	192	314	346	39	34	190	0	255	25
Base Volume Input [veh/h]	181	332	115	192	314	346	39	34	190	0	255	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80	0.00	17.90	100.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	181	332	115	192	314	346	39	34	190	0	255	25
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	92	32	53	87	96	11	9	53	0	71	7
Total Analysis Volume [veh/h]	201	369	128	213	349	384	43	38	211	0	283	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		13			14			5			5	
v_di, Inbound Pedestrian Volume crossing in		14			13			5			5	
v_co, Outbound Pedestrian Volume crossing		0			1			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	25	0	0	19	0	0	46	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	30
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.88	0.16	0.47	0.28	0.12	0.12
s, saturation flow rate [veh/h]	797	1357	1552	1031	1371	1289
c, Capacity [veh/h]	280	399	457	302	439	380
d1, Uniform Delay [s]	42.84	30.09	35.94	35.49	28.43	28.75
k, delay calibration	0.50	0.11	0.50	0.42	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	681.49	1.11	281.92	39.71	0.50	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.49	0.53	1.60	0.97	0.36	0.40
d, Delay for Lane Group [s/veh]	724.34	31.19	317.86	75.19	28.93	29.43
Lane Group LOS	F	C	F	E	C	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	60.17	4.44	46.86	10.31	3.11	3.02
50th-Percentile Queue Length [ft/ln]	1504.30	111.08	1171.47	257.70	77.69	75.53
95th-Percentile Queue Length [veh/ln]	98.67	7.90	72.91	15.57	5.59	5.44
95th-Percentile Queue Length [ft/ln]	2466.74	197.51	1822.80	389.33	139.83	135.95



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	724.34	724.34	724.34	31.19	317.86	317.86	75.19	75.19	75.19	28.93	29.15	29.43
Movement LOS	F	F	F	C	F	F	E	E	E	C	C	C
d_A, Approach Delay [s/veh]	724.34			253.31			75.19			29.18		
Approach LOS	F			F			E			C		
d_I, Intersection Delay [s/veh]	345.46											
Intersection LOS	F											
Intersection V/C	1.631											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.56	40.56	40.56	40.56
I_p,int, Pedestrian LOS Score for Intersection	2.403	2.307	2.431	2.306
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	824	412	294	824
d_b, Bicycle Delay [s]	17.62	32.13	37.07	17.62
I_b,int, Bicycle LOS Score for Intersection	2.711	3.121	2.041	1.816
Bicycle LOS	B	C	B	A

**Sequence**




Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	373.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.075

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	33	72	155	353	762	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	72	155	353	762	112
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	23	50	115	247	36
Total Analysis Volume [veh/h]	43	94	201	458	990	145
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	1.08	0.35	0.33	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	373.37	296.80	13.90	0.00	0.00	0.00
Movement LOS	F	F	B	A	A	A
95th-Percentile Queue Length [veh/ln]	10.17	10.17	1.45	1.45	0.00	0.00
95th-Percentile Queue Length [ft/ln]	254.27	254.27	36.33	36.33	0.00	0.00
d_A, Approach Delay [s/veh]	320.83		4.24		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	24.21					
Intersection LOS	F					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.049

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	192	42	60	128	13	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.50	12.50	15.60	15.60	46.80	46.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	192	42	60	128	13	69
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	12	18	38	4	20
Total Analysis Volume [veh/h]	226	49	71	151	15	81
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.18	0.00	0.00	0.00	0.05	0.10
d_M, Delay for Movement [s/veh]	8.39	0.00	0.00	0.00	17.81	10.54
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.64	0.64	0.00	0.00	0.53	0.53
95th-Percentile Queue Length [ft/ln]	15.90	15.90	0.00	0.00	13.25	13.25
d_A, Approach Delay [s/veh]	6.90		0.00		11.67	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.09					
Intersection LOS	C					

**Intersection Level Of Service Report**  
**Intersection 267: Willow Road(SR114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		↔↑↑		↔↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	1052	368	54	1363	293	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1052	368	54	1363	293	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	263	92	14	341	73	7
Total Analysis Volume [veh/h]	1052	368	54	1363	293	26
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	8	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	90	0	10	100	60	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	81	0	24	105	55	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	11	0	0	11	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	0.0	2.5	2.5	2.5	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	77	77	20	101	51	51
g / C, Green / Cycle	0.48	0.48	0.12	0.63	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.38	0.41	0.02	0.38	0.09	0.09
s, saturation flow rate [veh/h]	1870	1713	3459	3560	1781	1746
c, Capacity [veh/h]	894	819	422	2236	562	551
d1, Uniform Delay [s]	35.12	37.21	62.67	17.93	41.19	41.20
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.20	11.92	0.63	1.25	1.28	1.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.87	0.13	0.61	0.29	0.29
d, Delay for Lane Group [s/veh]	42.33	49.13	63.29	19.17	42.47	42.51
Lane Group LOS	D	D	E	B	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	24.52	26.79	1.02	14.95	5.07	4.99
50th-Percentile Queue Length [ft/ln]	612.92	669.70	25.39	373.80	126.73	124.67
95th-Percentile Queue Length [veh/ln]	32.64	35.28	1.83	21.29	8.76	8.65
95th-Percentile Queue Length [ft/ln]	815.93	881.91	45.70	532.34	219.04	216.23

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.54	49.13	63.29	19.17	42.49	42.51
Movement LOS	D	D	E	B	D	D
d_A, Approach Delay [s/veh]	45.73		20.85		42.49	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	34.23					
Intersection LOS	C					
Intersection V/C	0.521					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38
I_p,int, Pedestrian LOS Score for Intersection	3.158	3.021	2.339
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	956	1256	631
d_b, Bicycle Delay [s]	21.79	11.06	37.47
I_b,int, Bicycle LOS Score for Intersection	2.731	2.729	2.086
Bicycle LOS	B	B	B

**Sequence**

Ring 1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 269: O'Brien Drive/Loop Road**

Control Type:	Roundabout	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	14	325	222	62	71	29	125	69	68	94	27	285
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	325	222	62	71	29	125	69	68	94	27	285
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	81	56	16	18	7	31	17	17	24	7	71
Total Analysis Volume [veh/h]	14	325	222	62	71	29	125	69	68	94	27	285
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	261			138			232			473		
Exiting Flow Rate [veh/h]	238			750			71			360		
Demand Flow Rate [veh/h]	14	325	222	62	71	29	125	69	68	94	27	285
Adjusted Demand Flow Rate [veh/h]	14	325	222	62	71	29	125	69	68	94	27	285

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.98			0.98		
Entry Flow Rate [veh/h]	573			166			268			415		
Capacity of Entry and Bypass Lanes [veh/h]	1058			1200			1090			852		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1037			1176			1069			835		
X, volume / capacity	0.54			0.14			0.25			0.49		

**Movement, Approach, & Intersection Results**

Lane LOS	B			A			A			B		
95th-Percentile Queue Length [veh]	3.35			0.48			0.97			2.70		
95th-Percentile Queue Length [ft]	83.75			11.94			24.14			67.59		
Approach Delay [s/veh]	10.20			4.24			5.69			10.76		
Approach LOS	B			A			A			B		
Intersection Delay [s/veh]	8.82											
Intersection LOS	A											

Vistro File: P:\...\Vistro\_AllScenarios\_AM - 12.9.2021.vistro

Scenario 20 Cumulative AM (2040 vols)+Project

Report File: P:\...\Cumulative + P AM.pdf

12/30/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	1038		1462		1369	551	4420

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	42	1321	7	448	1225	346	13	4	68	355	20	0	3849

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	228	974	126	29	1014	413	629	77	230	38	22	25	3805

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	0	839	82	425	755	47	338	69	2	48	57	339	3001

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	87	590	520	508	501	104	2310

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	6	11	9	129	28	342	21	686	211	301	756	56	2556

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	857	67	1319	2955	241	416	5855

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	253	596	277	38	76	72	391	439	235	1160	2513	72	6122

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	100	900	80	488	1351	48	47	16	48	18	6	161	3263

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	266	1221	1418	28	172	95	3200

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1323	995	42	1172	237	138	3907

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	143	1874	423	40	1370	7	17	93	421	262	121	305	5076

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1387	1216	627	469	60	3824

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	22	909	7	36	928	108	68	15	32	59	12	363	2559

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	37	783	7	4	878	181	280	6	64	1	2	6	2249

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	7	686	148	52	914	0	20	109	11	146	97	93	2283

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	27	300	153	374	136	452	132	462	170	344	341	20	2911

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road and US 101 NB Ramps	1865		896		771	1256	4788

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	472	10	81	221	45	37	41	22	22	51	131	1146

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	162	27	1389	10	30	7	8	535	296	2094	710	34	5302

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	1360	623	1264	888	1188	415	5738

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1827	740	1831	424	402	789	6013

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	284	283	1268	813	616	1963	5227

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	442	93	1889	459	164	2299	5346

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	66	51	1135	396	247	2441	4336

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	663	270	74	388	210	257	1862

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	48		989	234	86	2729	4086

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	274	356	196	766	348	423	80	10	116	42	24	84	2719

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	181	332	115	192	314	346	39	34	190	0	255	25	2023

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	33	72	155	353	762	112	1487

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	192	42	60	128	13	69	504



ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
267	Willow Road(SR114)/Park Street	1052	368	54	1363	293	26	3156

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	O'Brien Drive/Loop Road	14	325	222	62	71	29	125	69	68	94	27	285	1391

Vistro File: P:\...\Vistro\_AllScenarios\_AM - 12.9.2021.vistro

Scenario 20 Cumulative AM (2040 vols)+Project

Report File: P:\...\Cumulative + P AM.pdf

12/30/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	1038		1462		1369	551	4420
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>1038</b>		<b>1462</b>		<b>1369</b>	<b>551</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	42	1321	7	448	1225	346	13	4	68	355	20	0	3849	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>42</b>	<b>1321</b>	<b>7</b>	<b>448</b>	<b>1225</b>	<b>346</b>	<b>13</b>	<b>4</b>	<b>68</b>	<b>355</b>	<b>20</b>	<b>0</b>	<b>3849</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	228	974	126	29	1014	413	629	77	230	38	22	25	3805	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>228</b>	<b>974</b>	<b>126</b>	<b>29</b>	<b>1014</b>	<b>413</b>	<b>629</b>	<b>77</b>	<b>230</b>	<b>38</b>	<b>22</b>	<b>25</b>	<b>3805</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	0	839	82	425	755	47	338	69	2	48	57	339	3001	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>0</b>	<b>839</b>	<b>82</b>	<b>425</b>	<b>755</b>	<b>47</b>	<b>338</b>	<b>69</b>	<b>2</b>	<b>48</b>	<b>57</b>	<b>339</b>	<b>3001</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	87	590	520	508	501	104	2310
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>87</b>	<b>590</b>	<b>520</b>	<b>508</b>	<b>501</b>	<b>104</b>	<b>2310</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	Final Base	6	11	9	129	28	342	21	686	211	301	756	56	2556
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>6</b>	<b>11</b>	<b>9</b>	<b>129</b>	<b>28</b>	<b>342</b>	<b>21</b>	<b>686</b>	<b>211</b>	<b>301</b>	<b>756</b>	<b>56</b>	<b>2556</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	857	67	1319	2955	241	416	5855
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>857</b>	<b>67</b>	<b>1319</b>	<b>2955</b>	<b>241</b>	<b>416</b>	<b>5855</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	253	596	277	38	76	72	391	439	235	1160	2513	72	6122
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>253</b>	<b>596</b>	<b>277</b>	<b>38</b>	<b>76</b>	<b>72</b>	<b>391</b>	<b>439</b>	<b>235</b>	<b>1160</b>	<b>2513</b>	<b>72</b>	<b>6122</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	100	900	80	488	1351	48	47	16	48	18	6	161	3263
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>100</b>	<b>900</b>	<b>80</b>	<b>488</b>	<b>1351</b>	<b>48</b>	<b>47</b>	<b>16</b>	<b>48</b>	<b>18</b>	<b>6</b>	<b>161</b>	<b>3263</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	266	1221	1418	28	172	95	3200
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>266</b>	<b>1221</b>	<b>1418</b>	<b>28</b>	<b>172</b>	<b>95</b>	<b>3200</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1323	995	42	1172	237	138	3907
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1323</b>	<b>995</b>	<b>42</b>	<b>1172</b>	<b>237</b>	<b>138</b>	<b>3907</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	143	1874	423	40	1370	7	17	93	421	262	121	305	5076
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>143</b>	<b>1874</b>	<b>423</b>	<b>40</b>	<b>1370</b>	<b>7</b>	<b>17</b>	<b>93</b>	<b>421</b>	<b>262</b>	<b>121</b>	<b>305</b>	<b>5076</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1387	1216	627	469	60	3824
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1387</b>	<b>1216</b>	<b>627</b>	<b>469</b>	<b>60</b>	<b>3824</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	22	909	7	36	928	108	68	15	32	59	12	363	2559
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>909</b>	<b>7</b>	<b>36</b>	<b>928</b>	<b>108</b>	<b>68</b>	<b>15</b>	<b>32</b>	<b>59</b>	<b>12</b>	<b>363</b>	<b>2559</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	37	783	7	4	878	181	280	6	64	1	2	6	2249
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>37</b>	<b>783</b>	<b>7</b>	<b>4</b>	<b>878</b>	<b>181</b>	<b>280</b>	<b>6</b>	<b>64</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>2249</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	7	686	148	52	914	0	20	109	11	146	97	93	2283
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>7</b>	<b>686</b>	<b>148</b>	<b>52</b>	<b>914</b>	<b>0</b>	<b>20</b>	<b>109</b>	<b>11</b>	<b>146</b>	<b>97</b>	<b>93</b>	<b>2283</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
25	Middlefield Rd- Willow Rd	Final Base	27	300	153	374	136	452	132	462	170	344	341	20	2911	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>27</b>	<b>300</b>	<b>153</b>	<b>374</b>	<b>136</b>	<b>452</b>	<b>132</b>	<b>462</b>	<b>170</b>	<b>344</b>	<b>341</b>	<b>20</b>	<b>2911</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road and US 101 NB Ramps	Final Base	1865		896		771	1256	4788
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1865</b>		<b>896</b>		<b>771</b>	<b>1256</b>	<b>4788</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
131	Chilco Street/Hamilton Avenue	Final Base	13	472	10	81	221	45	37	41	22	22	51	131	1146	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>472</b>	<b>10</b>	<b>81</b>	<b>221</b>	<b>45</b>	<b>37</b>	<b>41</b>	<b>22</b>	<b>22</b>	<b>51</b>	<b>131</b>	<b>1146</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
163	Bayfront Expy/Marsh Rd	Final Base	162	27	1389	10	30	7	8	535	296	2094	710	34	5302	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>162</b>	<b>27</b>	<b>1389</b>	<b>10</b>	<b>30</b>	<b>7</b>	<b>8</b>	<b>535</b>	<b>296</b>	<b>2094</b>	<b>710</b>	<b>34</b>	<b>5302</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1360	623	1264	888	1188	415	5738
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1360</b>	<b>623</b>	<b>1264</b>	<b>888</b>	<b>1188</b>	<b>415</b>	<b>5738</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1827	740	1831	424	402	789	6013
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1827</b>	<b>740</b>	<b>1831</b>	<b>424</b>	<b>402</b>	<b>789</b>	<b>6013</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	284	283	1268	813	616	1963	5227
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>284</b>	<b>283</b>	<b>1268</b>	<b>813</b>	<b>616</b>	<b>1963</b>	<b>5227</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	442	93	1889	459	164	2299	5346
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>442</b>	<b>93</b>	<b>1889</b>	<b>459</b>	<b>164</b>	<b>2299</b>	<b>5346</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	Final Base	66	51	1135	396	247	2441	4336
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>66</b>	<b>51</b>	<b>1135</b>	<b>396</b>	<b>247</b>	<b>2441</b>	<b>4336</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	663	270	74	388	210	257	1862
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>663</b>	<b>270</b>	<b>74</b>	<b>388</b>	<b>210</b>	<b>257</b>	<b>1862</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	48	989	234	86	2729	4086	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>48</b>	<b>989</b>	<b>234</b>	<b>86</b>	<b>2729</b>	<b>4086</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	274	356	196	766	348	423	80	10	116	42	24	84	2719
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>274</b>	<b>356</b>	<b>196</b>	<b>766</b>	<b>348</b>	<b>423</b>	<b>80</b>	<b>10</b>	<b>116</b>	<b>42</b>	<b>24</b>	<b>84</b>	<b>2719</b>



ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	181	332	115	192	314	346	39	34	190	0	255	25	2023
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>181</b>	<b>332</b>	<b>115</b>	<b>192</b>	<b>314</b>	<b>346</b>	<b>39</b>	<b>34</b>	<b>190</b>	<b>0</b>	<b>255</b>	<b>25</b>	<b>2023</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	33	72	155	353	762	112	1487
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>33</b>	<b>72</b>	<b>155</b>	<b>353</b>	<b>762</b>	<b>112</b>	<b>1487</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	Final Base	192	42	60	128	13	69	504
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>192</b>	<b>42</b>	<b>60</b>	<b>128</b>	<b>13</b>	<b>69</b>	<b>504</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
267	Willow Road (SR114)/Park Street	Final Base	1052	368	54	1363	293	26	3156
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1052</b>	<b>368</b>	<b>54</b>	<b>1363</b>	<b>293</b>	<b>26</b>	<b>3156</b>

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ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	O'Brien Drive/Loop Road	Final Base	14	325	222	62	71	29	125	69	68	94	27	285	1391
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>14</b>	<b>325</b>	<b>222</b>	<b>62</b>	<b>71</b>	<b>29</b>	<b>125</b>	<b>69</b>	<b>68</b>	<b>94</b>	<b>27</b>	<b>285</b>	<b>1391</b>

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## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	495	347	204	100
2	480	337	198	97
3	470	330	194	95
4	441	309	182	89
5	391	274	161	79
6	386	271	159	78
7	381	267	157	77
8	347	243	143	70
9	342	239	141	69
10	337	236	139	68
11	292	205	120	59
12	272	191	112	55
13	267	187	110	54
14	198	139	82	40
15	198	139	82	40
16	139	97	57	28
17	79	56	33	16
18	79	56	33	16
19	45	31	18	9
20	25	17	10	5
21	15	10	6	3
22	5	3	2	1
23	5	3	2	1
24	5	3	2	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	842	1	204	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	817	1	198	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	800	1	194	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	750	1	182	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	665	1	161	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	657	1	159	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	648	1	157	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	590	1	143	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
9	1	581	1	141	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
10	1	573	1	139	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
11	1	497	1	120	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	463	1	112	No	No	Yes	Yes	No	No	No	Yes	No	No
13	1	454	1	110	No	No	Yes	Yes	No	No	No	Yes	No	No
14	1	337	1	82	No	No	No	No	No	No	No	No	No	No
15	1	337	1	82	No	No	No	No	No	No	No	No	No	No
16	1	236	1	57	No	No	No	No	No	No	No	No	No	No
17	1	135	1	33	No	No	No	No	No	No	No	No	No	No
18	1	135	1	33	No	No	No	No	No	No	No	No	No	No
19	1	76	1	18	No	No	No	No	No	No	No	No	No	No
20	1	42	1	10	No	No	No	No	No	No	No	No	No	No
21	1	25	1	6	No	No	No	No	No	No	No	No	No	No
22	1	8	1	2	No	No	No	No	No	No	No	No	No	No
23	1	8	1	2	No	No	No	No	No	No	No	No	No	No
24	1	8	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	13	4	7	10	13	4	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.7	13.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:50	0:21
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	204	100
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1146	1146
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	462	933	467
2	448	905	453
3	439	886	444
4	411	830	416
5	365	737	369
6	360	728	364
7	356	718	360
8	323	653	327
9	319	644	322
10	314	634	318
11	273	550	276
12	254	513	257
13	249	504	252
14	185	373	187
15	185	373	187
16	129	261	131
17	74	149	75
18	74	149	75
19	42	84	42
20	23	47	23
21	14	28	14
22	5	9	5
23	5	9	5
24	5	9	5

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1395	1	467	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1353	1	453	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1325	1	444	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1241	1	416	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1102	1	369	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1088	1	364	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1074	1	360	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	976	1	327	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	963	1	322	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	948	1	318	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	823	1	276	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	1	767	1	257	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	1	753	1	252	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
14	1	558	1	187	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
15	1	558	1	187	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
16	1	390	1	131	No	No	Yes	Yes	No	No	No	No	No	No
17	1	223	1	75	No	No	No	No	No	No	No	No	No	No
18	1	223	1	75	No	No	No	No	No	No	No	No	No	No
19	1	126	1	42	No	No	No	No	No	No	No	No	No	No
20	1	70	1	23	No	No	No	No	No	No	No	No	No	No
21	1	42	1	14	No	No	No	No	No	No	No	No	No	No
22	1	14	1	5	No	No	No	No	No	No	No	No	No	No
23	1	14	1	5	No	No	No	No	No	No	No	No	No	No
24	1	14	1	5	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	13	13	15	15	13	10

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	65.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	8:31
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	467
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1862
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	874	508	105
2	848	493	102
3	830	483	100
4	778	452	93
5	690	401	83
6	682	396	82
7	673	391	81
8	612	356	74
9	603	351	72
10	594	345	71
11	516	300	62
12	481	279	58
13	472	274	57
14	350	203	42
15	350	203	42
16	245	142	29
17	140	81	17
18	140	81	17
19	79	46	9
20	44	25	5
21	26	15	3
22	9	5	1
23	9	5	1
24	9	5	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1382	1	105	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1341	1	102	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1313	1	100	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	1230	1	93	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	1091	1	83	No	No	No	No	Yes	Yes	Yes	Yes	No	No
6	1	1078	1	82	No	No	No	No	Yes	Yes	Yes	Yes	No	No
7	1	1064	1	81	No	No	No	No	Yes	Yes	Yes	Yes	No	No
8	1	968	1	74	No	No	No	No	No	Yes	Yes	Yes	No	No
9	1	954	1	72	No	No	No	No	No	Yes	Yes	Yes	No	No
10	1	939	1	71	No	No	No	No	No	Yes	Yes	Yes	No	No
11	1	816	1	62	No	No	No	No	No	Yes	Yes	Yes	No	No
12	1	760	1	58	No	No	No	No	No	No	Yes	Yes	No	No
13	1	746	1	57	No	No	No	No	No	No	Yes	Yes	No	No
14	1	553	1	42	No	No	No	No	No	No	No	Yes	No	No
15	1	553	1	42	No	No	No	No	No	No	No	Yes	No	No
16	1	387	1	29	No	No	No	No	No	No	No	No	No	No
17	1	221	1	17	No	No	No	No	No	No	No	No	No	No
18	1	221	1	17	No	No	No	No	No	No	No	No	No	No
19	1	125	1	9	No	No	No	No	No	No	No	No	No	No
20	1	69	1	5	No	No	No	No	No	No	No	No	No	No
21	1	41	1	3	No	No	No	No	No	No	No	No	No	No
22	1	14	1	1	No	No	No	No	No	No	No	No	No	No
23	1	14	1	1	No	No	No	No	No	No	No	No	No	No
24	1	14	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	1	4	7	11	13	15	4	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	320.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	9:21
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	105
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1487
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>



## Signal Warrants Report For Intersection 265: Adam Court/Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	234	188	82
2	227	182	80
3	222	179	78
4	208	167	73
5	185	149	65
6	183	147	64
7	180	145	63
8	164	132	57
9	161	130	57
10	159	128	56
11	138	111	48
12	129	103	45
13	126	102	44
14	94	75	33
15	94	75	33
16	66	53	23
17	37	30	13
18	37	30	13
19	21	17	7
20	12	9	4
21	7	6	2
22	2	2	1
23	2	2	1
24	2	2	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	422	1	82	No	No	No	No	No	No	No	Yes	No	No
2	1	409	1	80	No	No	No	No	No	No	No	No	No	No
3	1	401	1	78	No	No	No	No	No	No	No	No	No	No
4	1	375	1	73	No	No	No	No	No	No	No	No	No	No
5	1	334	1	65	No	No	No	No	No	No	No	No	No	No
6	1	330	1	64	No	No	No	No	No	No	No	No	No	No
7	1	325	1	63	No	No	No	No	No	No	No	No	No	No
8	1	296	1	57	No	No	No	No	No	No	No	No	No	No
9	1	291	1	57	No	No	No	No	No	No	No	No	No	No
10	1	287	1	56	No	No	No	No	No	No	No	No	No	No
11	1	249	1	48	No	No	No	No	No	No	No	No	No	No
12	1	232	1	45	No	No	No	No	No	No	No	No	No	No
13	1	228	1	44	No	No	No	No	No	No	No	No	No	No
14	1	169	1	33	No	No	No	No	No	No	No	No	No	No
15	1	169	1	33	No	No	No	No	No	No	No	No	No	No
16	1	119	1	23	No	No	No	No	No	No	No	No	No	No
17	1	67	1	13	No	No	No	No	No	No	No	No	No	No
18	1	67	1	13	No	No	No	No	No	No	No	No	No	No
19	1	38	1	7	No	No	No	No	No	No	No	No	No	No
20	1	21	1	4	No	No	No	No	No	No	No	No	No	No
21	1	13	1	2	No	No	No	No	No	No	No	No	No	No
22	1	4	1	1	No	No	No	No	No	No	No	No	No	No
23	1	4	1	1	No	No	No	No	No	No	No	No	No	No
24	1	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	1	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:15
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	82
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	504
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections

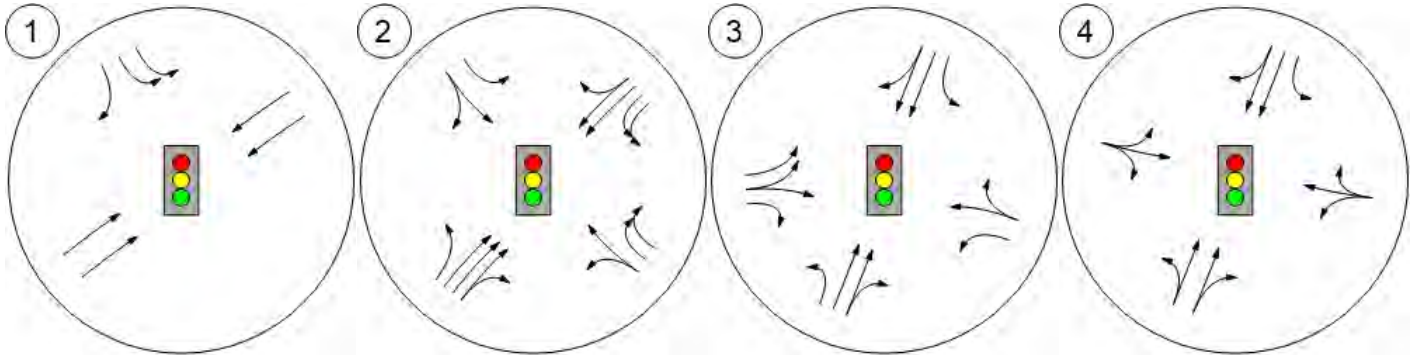


Lane Configuration and Traffic Control

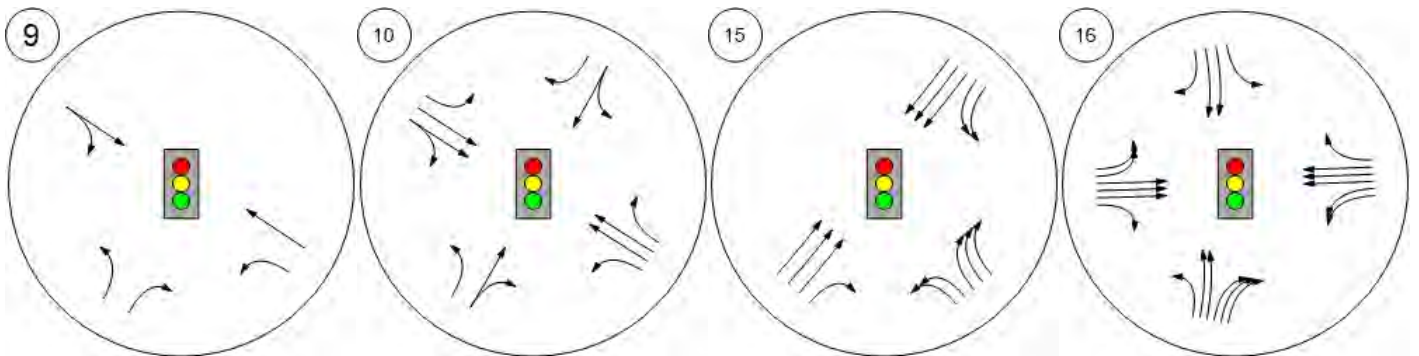


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



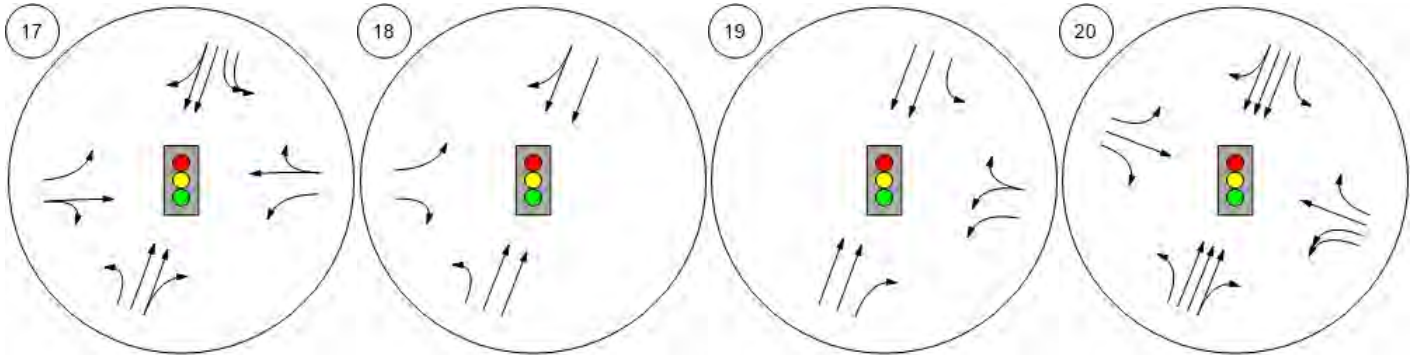
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



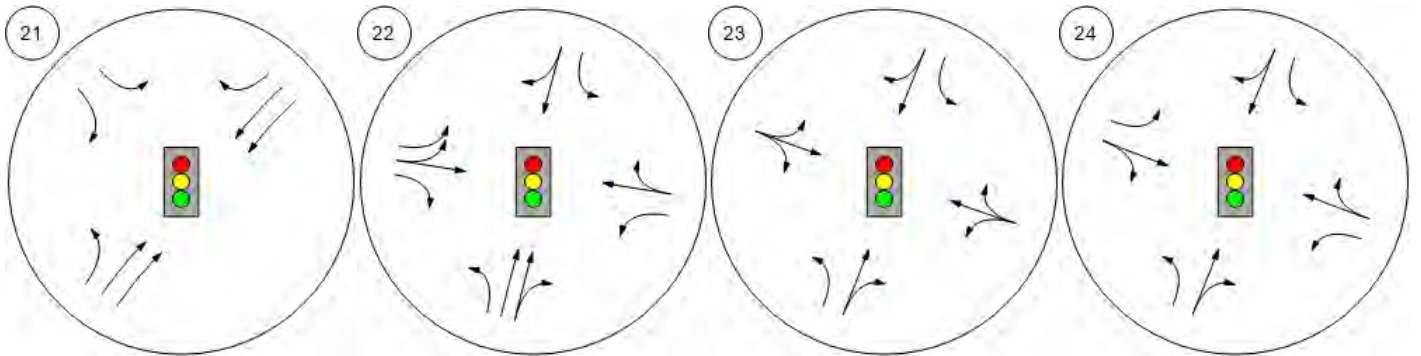
Lane Configuration and Traffic Control



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



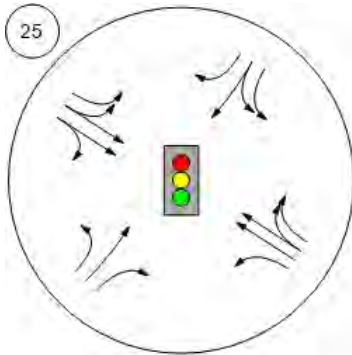
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



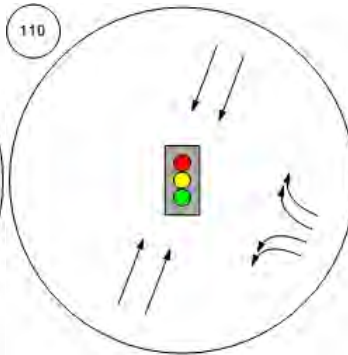
Lane Configuration and Traffic Control



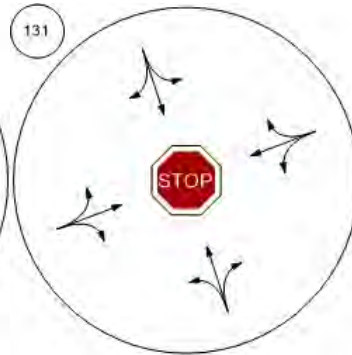
Middlefield Rd-Willow Rd



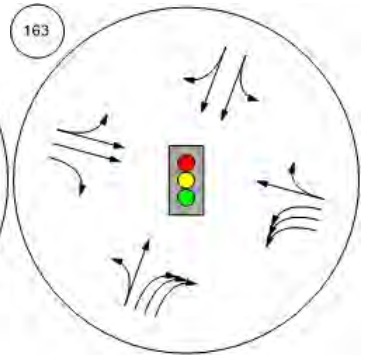
Marsh Road and US 101 NB



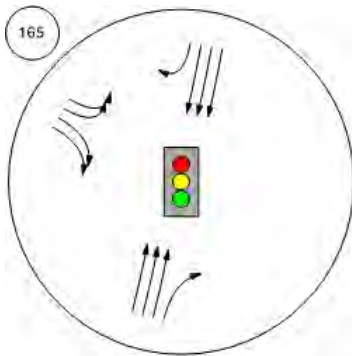
Chilco Street/Hamilton Avenue



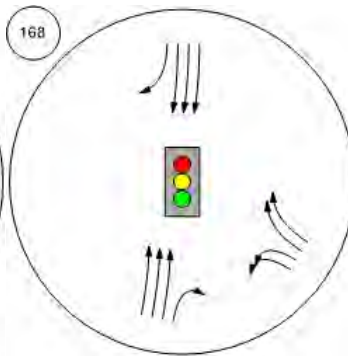
Bayfront Expy/Marsh Rd



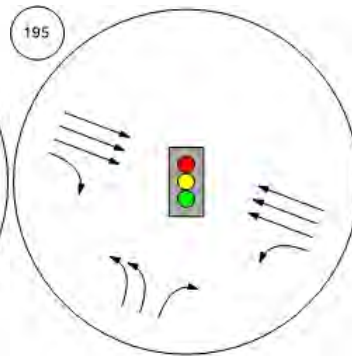
Willow Rd/US-101 SB Ramps



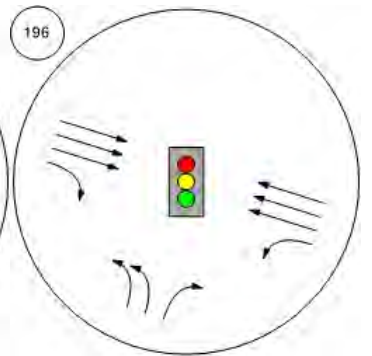
Willow Rd/US-101 NB Ramp



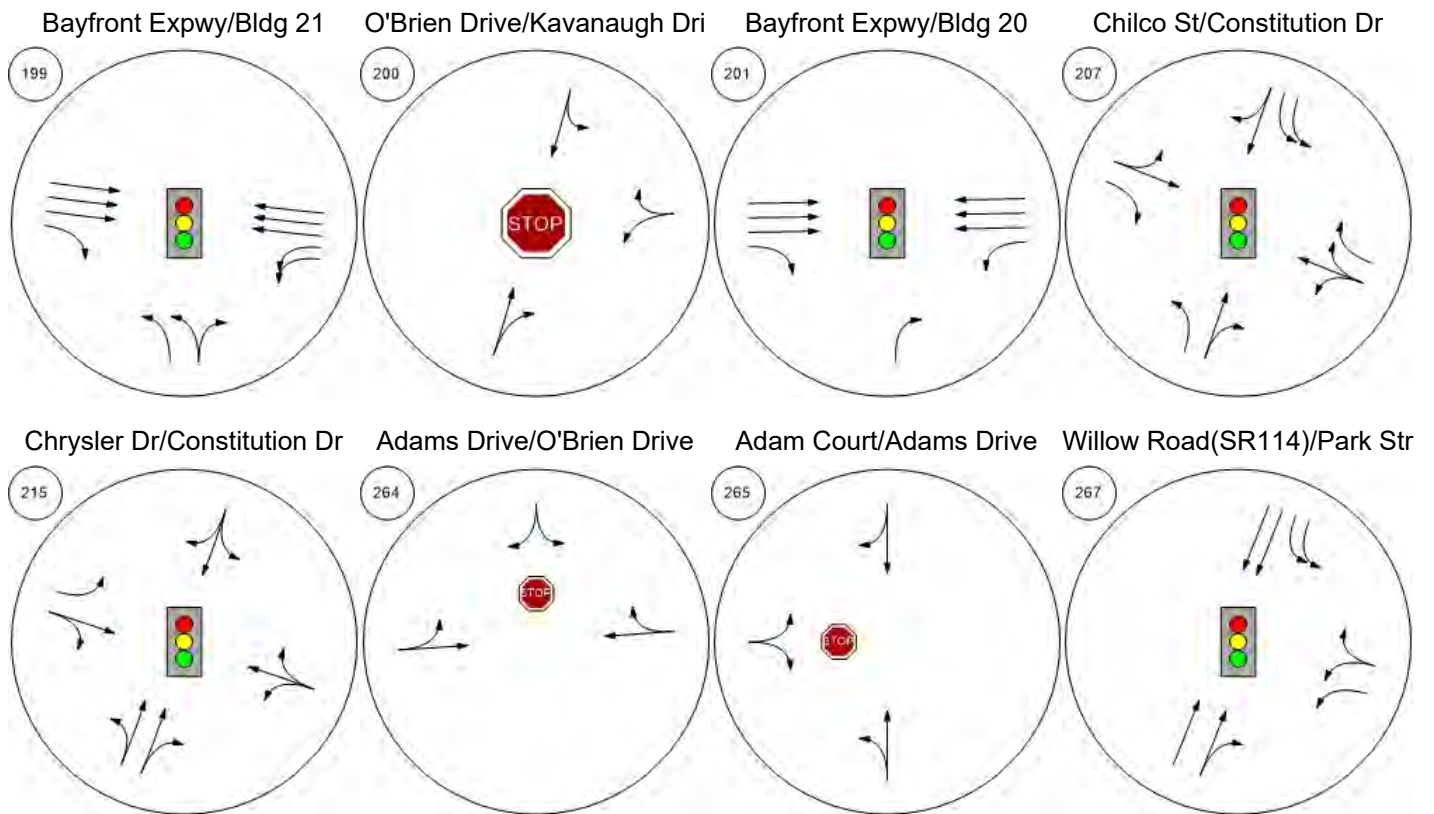
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



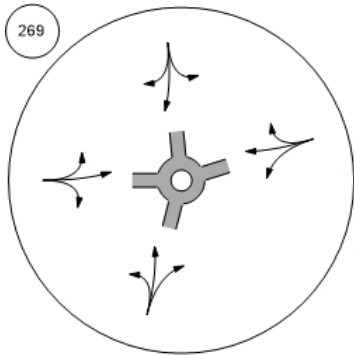
Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



O'Brien Drive/Loop Road



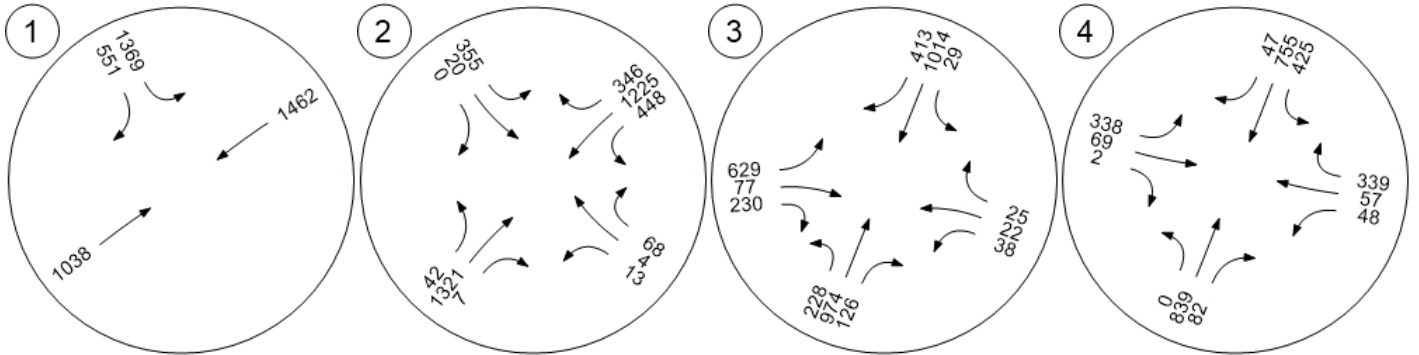


Traffic Volume - Base Volume

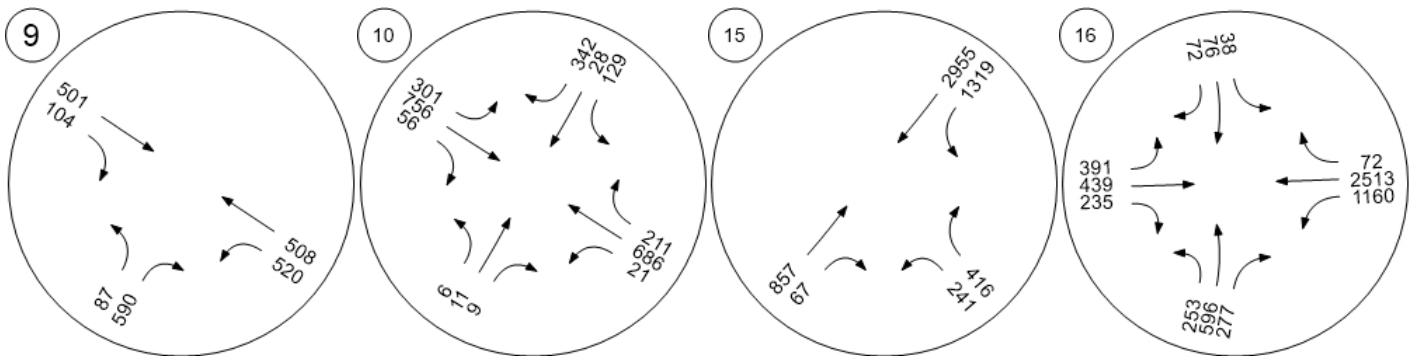


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



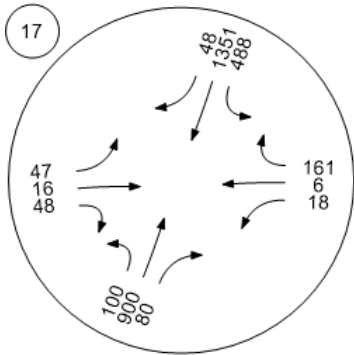
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



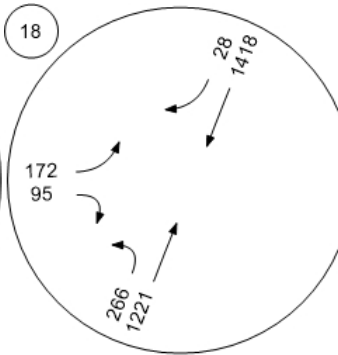
Traffic Volume - Base Volume



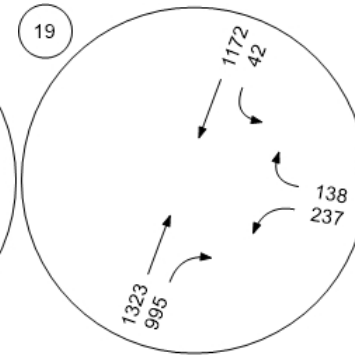
Willow Rd (SR 114)/Hamilton



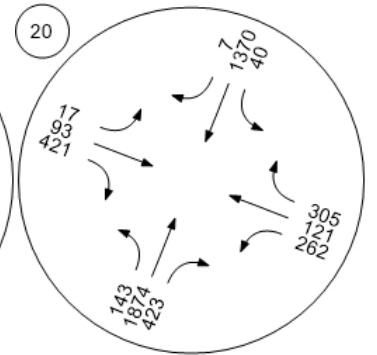
Willow Rd (SR 114)/Ivy Dr



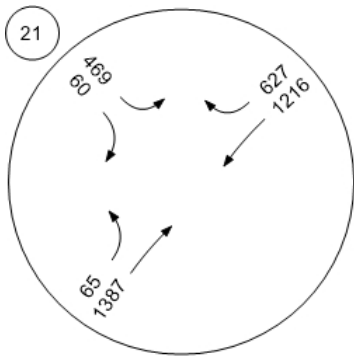
Willow Rd (SR 114)/O'Brien



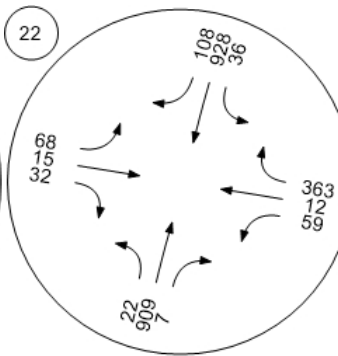
Willow Rd (SR 114)/Newbrid



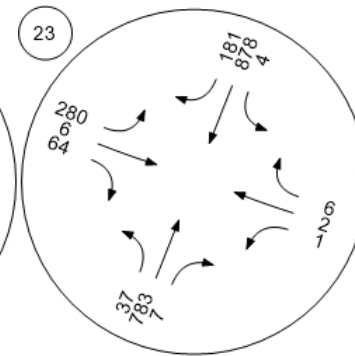
Willow Rd/Bay Rd



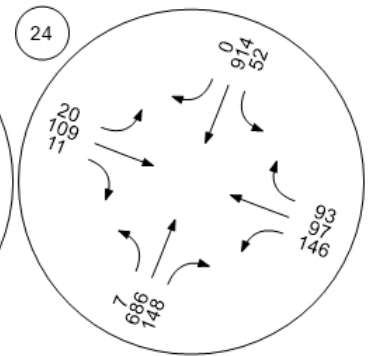
Willow Rd/Durham St-VA Me



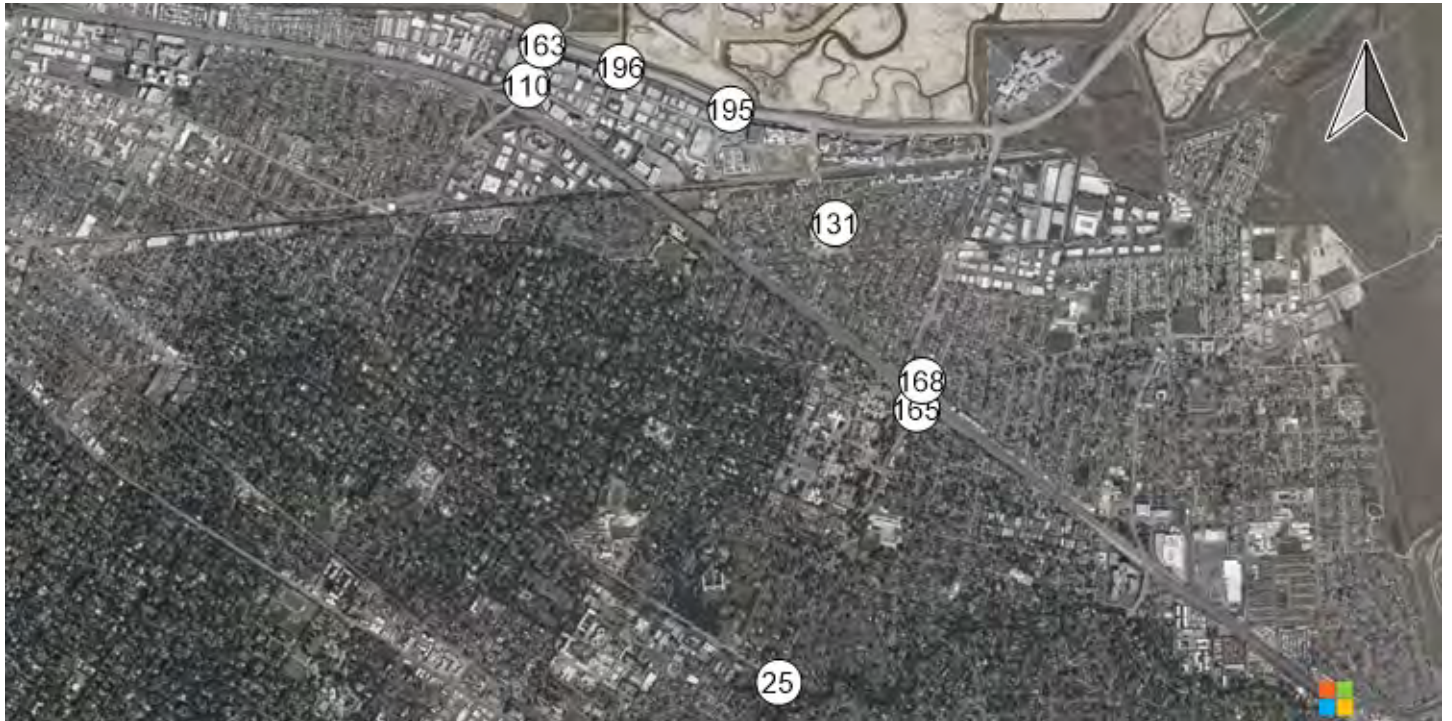
Willow Rd/Coleman Ave



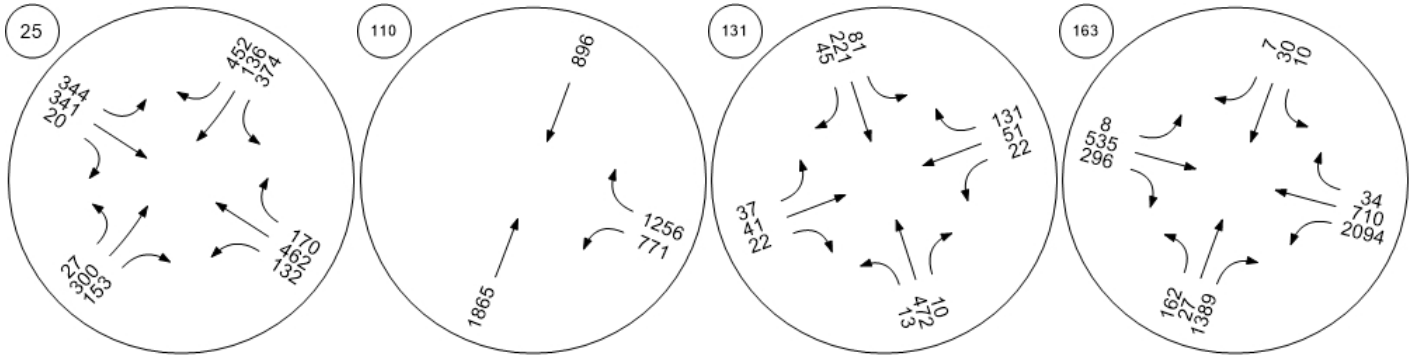
Willow Rd/Gilbert Ave



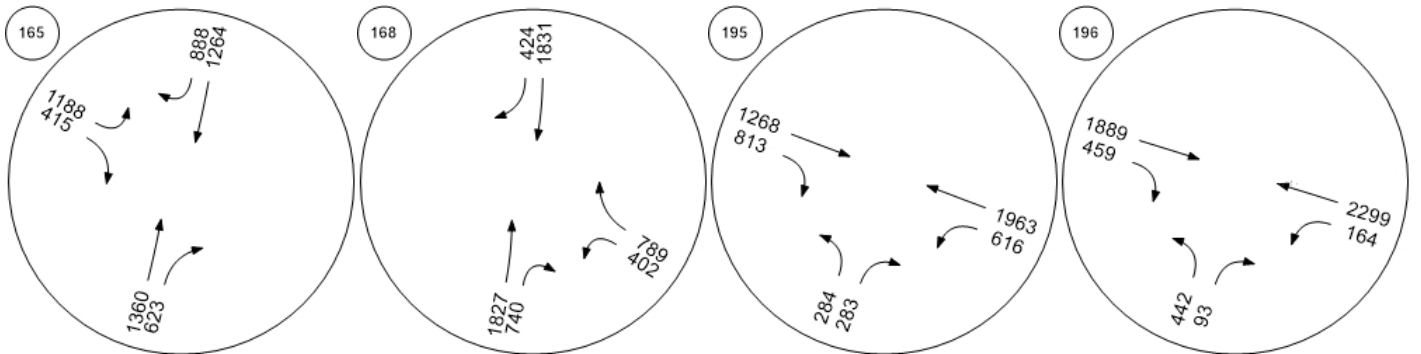
Traffic Volume - Base Volume



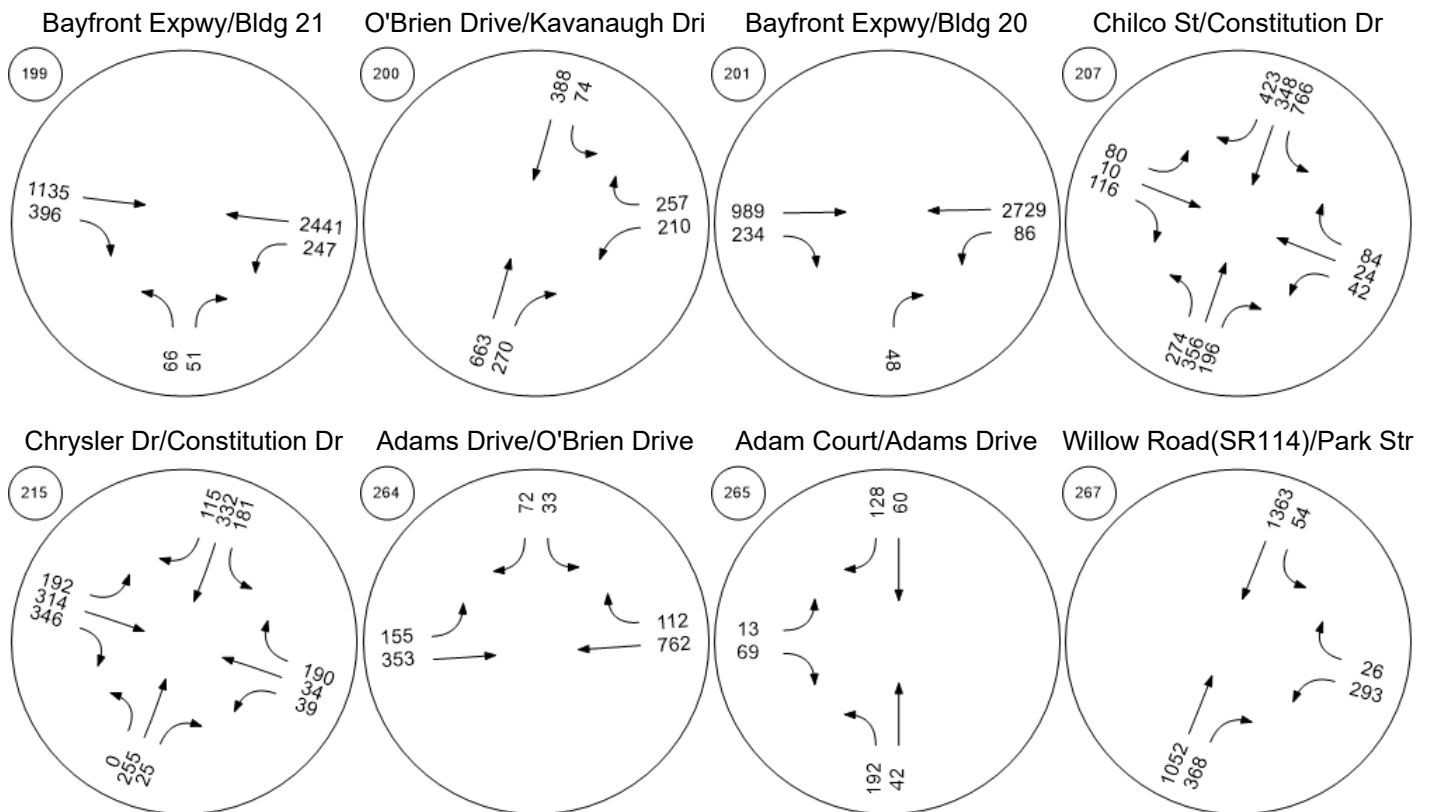
Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



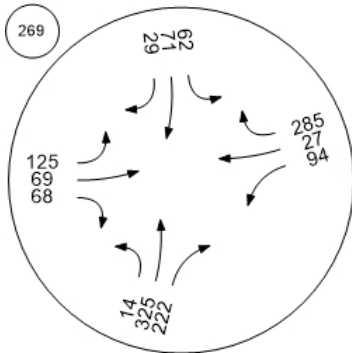
Traffic Volume - Base Volume



Traffic Volume - Base Volume



O'Brien Drive/Loop Road

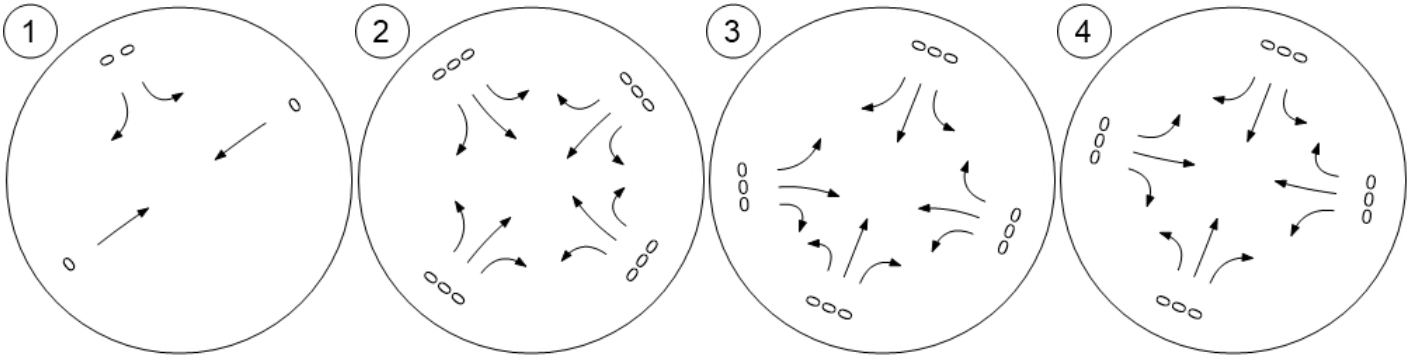


Traffic Volume - In-Process Volume

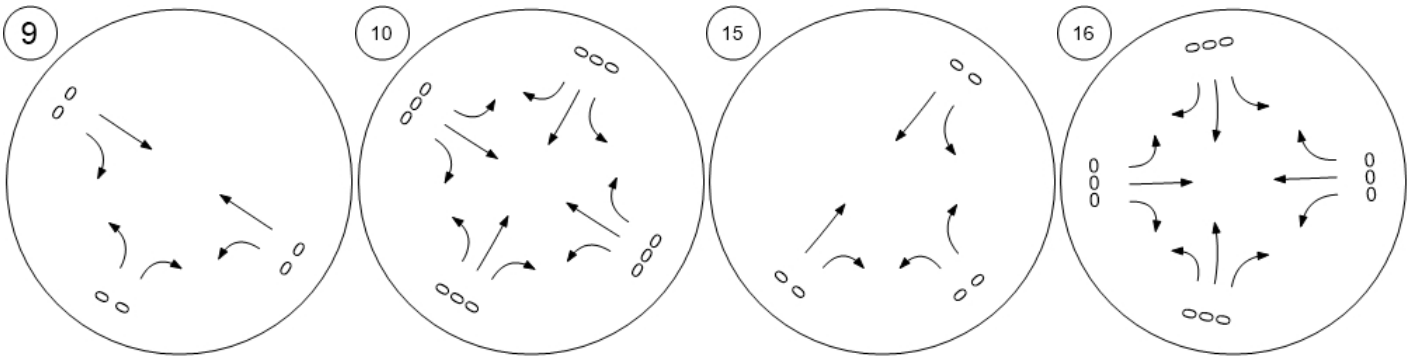


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



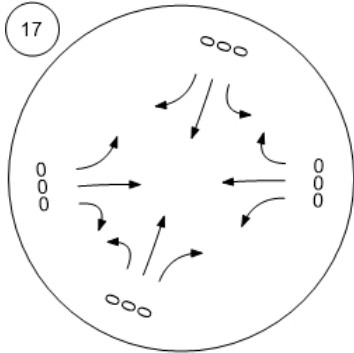
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



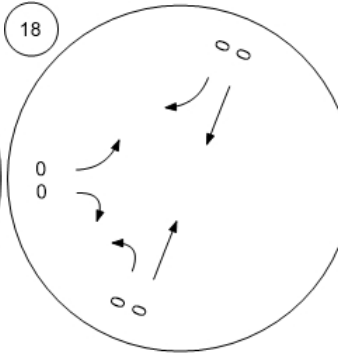
Traffic Volume - In-Process Volume



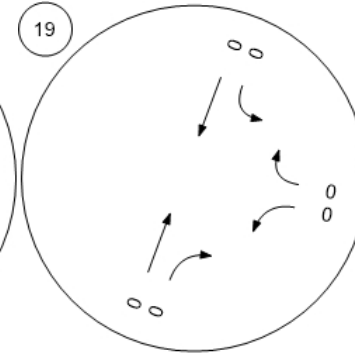
Willow Rd (SR 114)/Hamilton



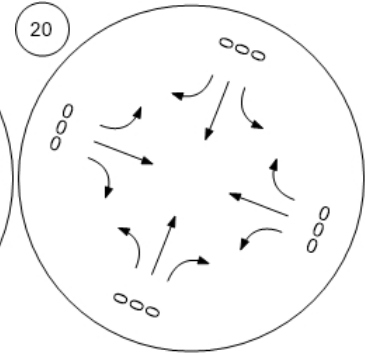
Willow Rd (SR 114)/Ivy Dr



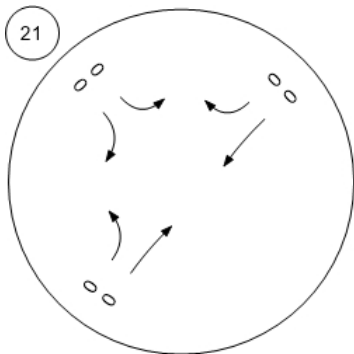
Willow Rd (SR 114)/O'Brien



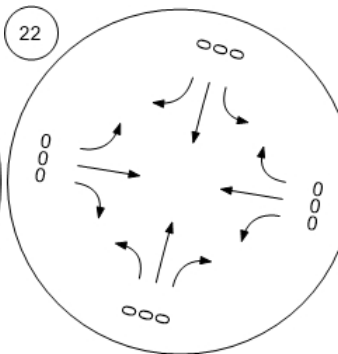
Willow Rd (SR 114)/Newbrid



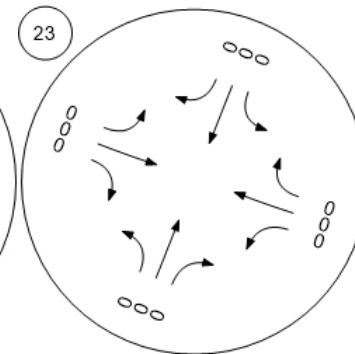
Willow Rd/Bay Rd



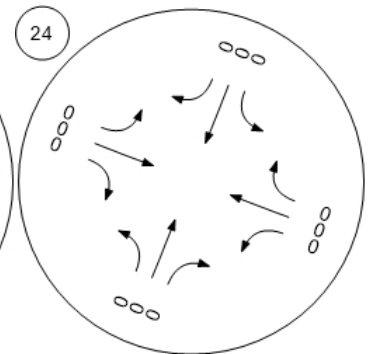
Willow Rd/Durham St-VA Me



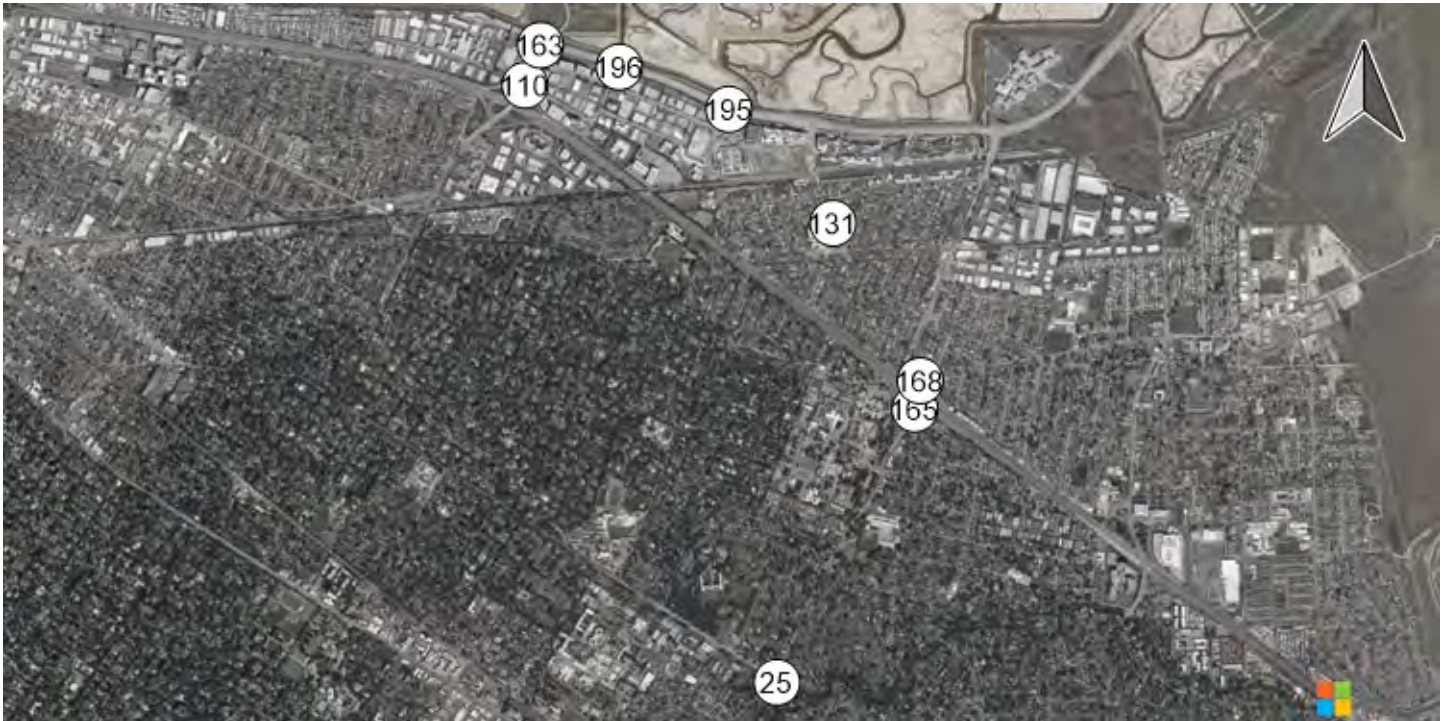
Willow Rd/Coleman Ave



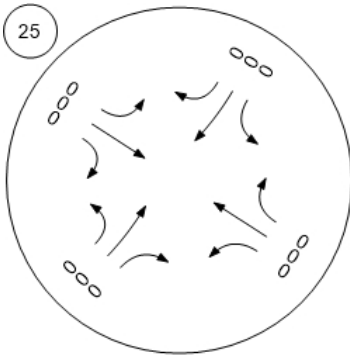
Willow Rd/Gilbert Ave



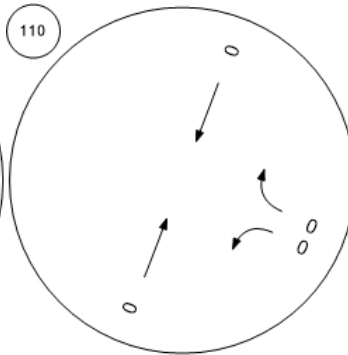
Traffic Volume - In-Process Volume



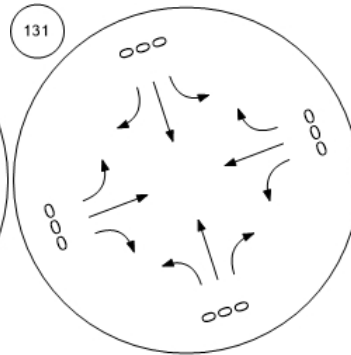
Middlefield Rd-Willow Rd



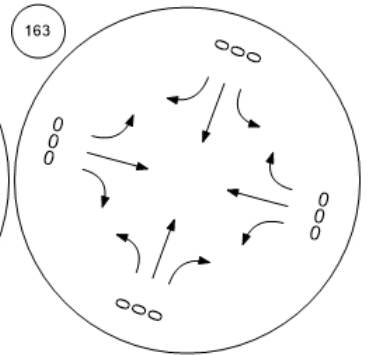
Marsh Road and US 101 NB



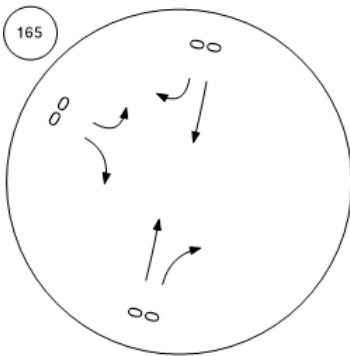
Chilco Street/Hamilton Avenue



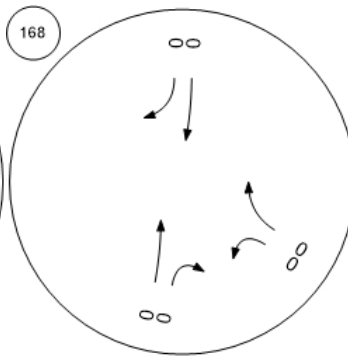
Bayfront Expy/Marsh Rd



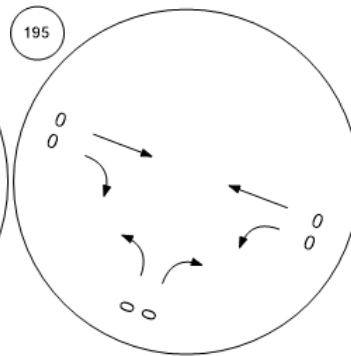
Willow Rd/US-101 SB Ramps



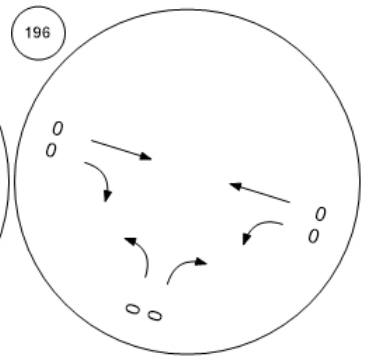
Willow Rd/US-101 NB Ramp



Bayfront Expy/Chilco St

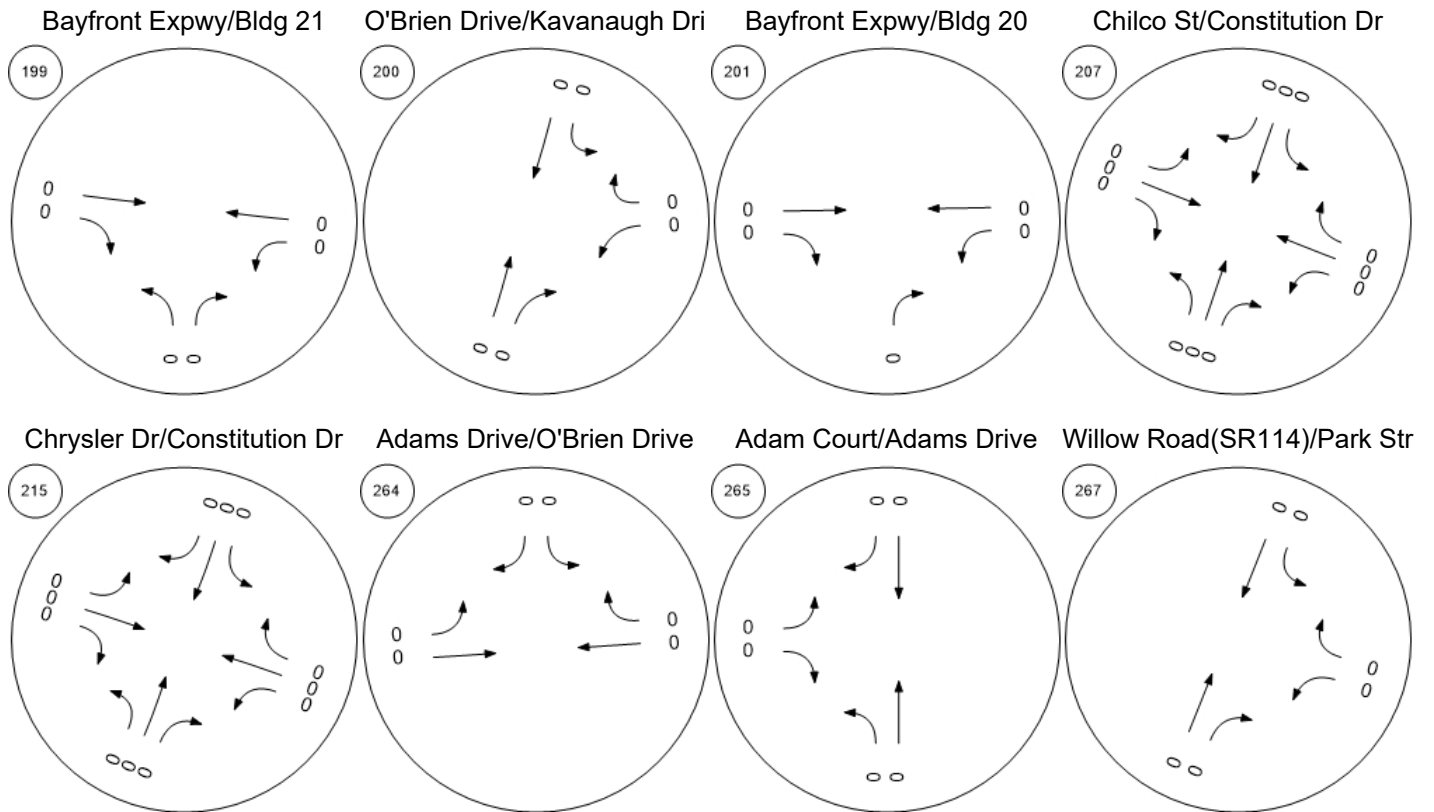


Bayfront Expy/Chrysler Drive





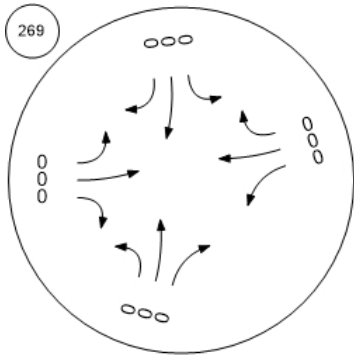
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

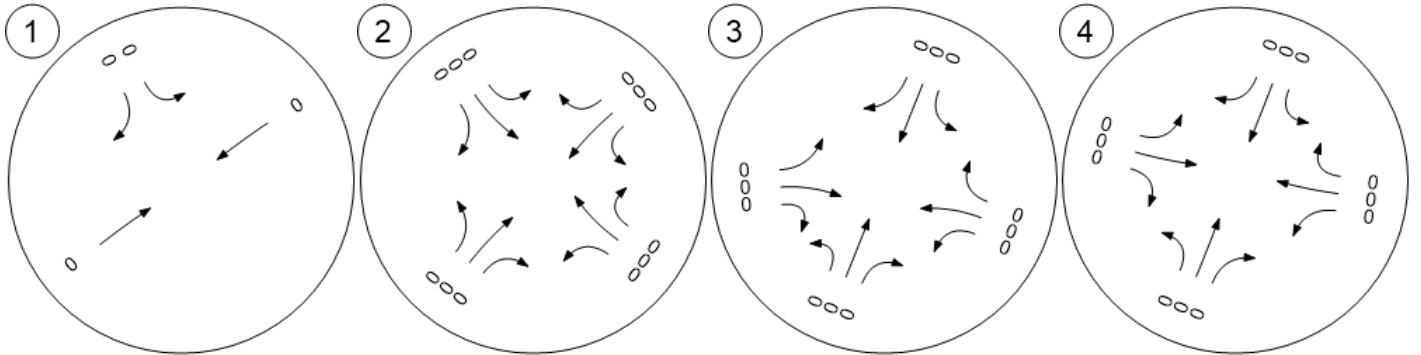


Traffic Volume - Net New Site Trips

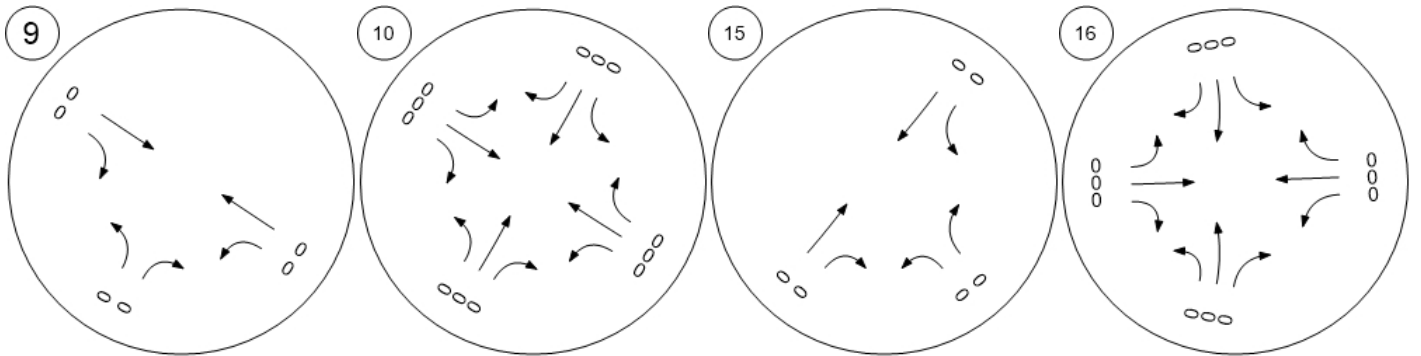


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



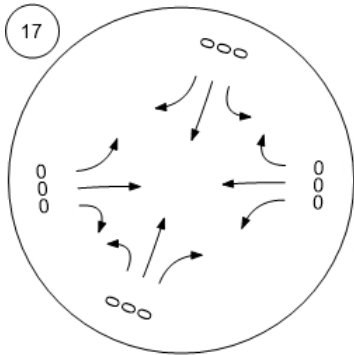
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



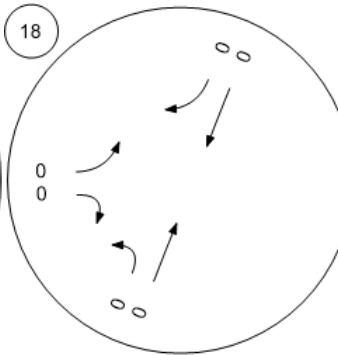
Traffic Volume - Net New Site Trips



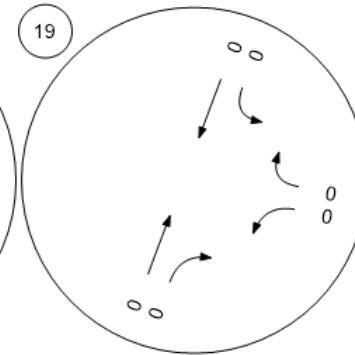
Willow Rd (SR 114)/Hamilton



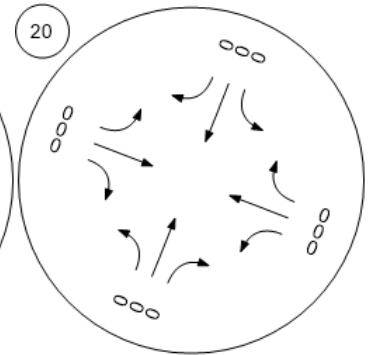
Willow Rd (SR 114)/Ivy Dr



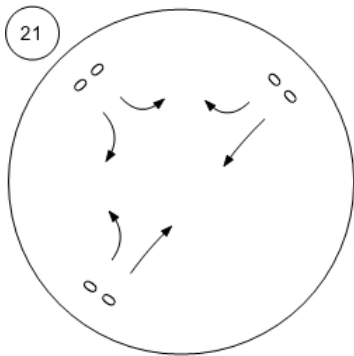
Willow Rd (SR 114)/O'Brien



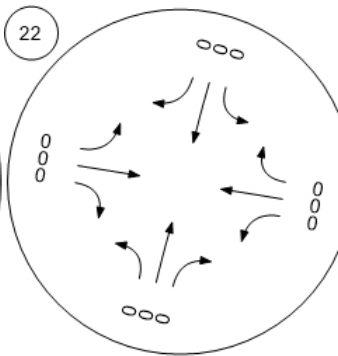
Willow Rd (SR 114)/Newbrid



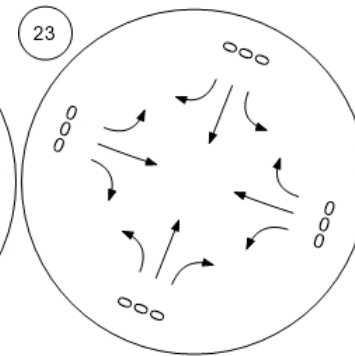
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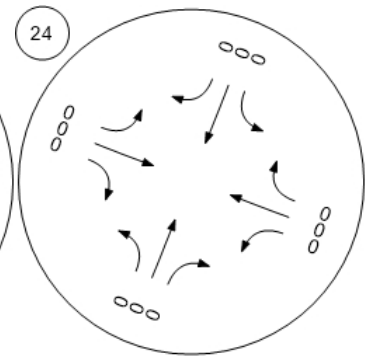
Willow Rd/Durham St-VA Me



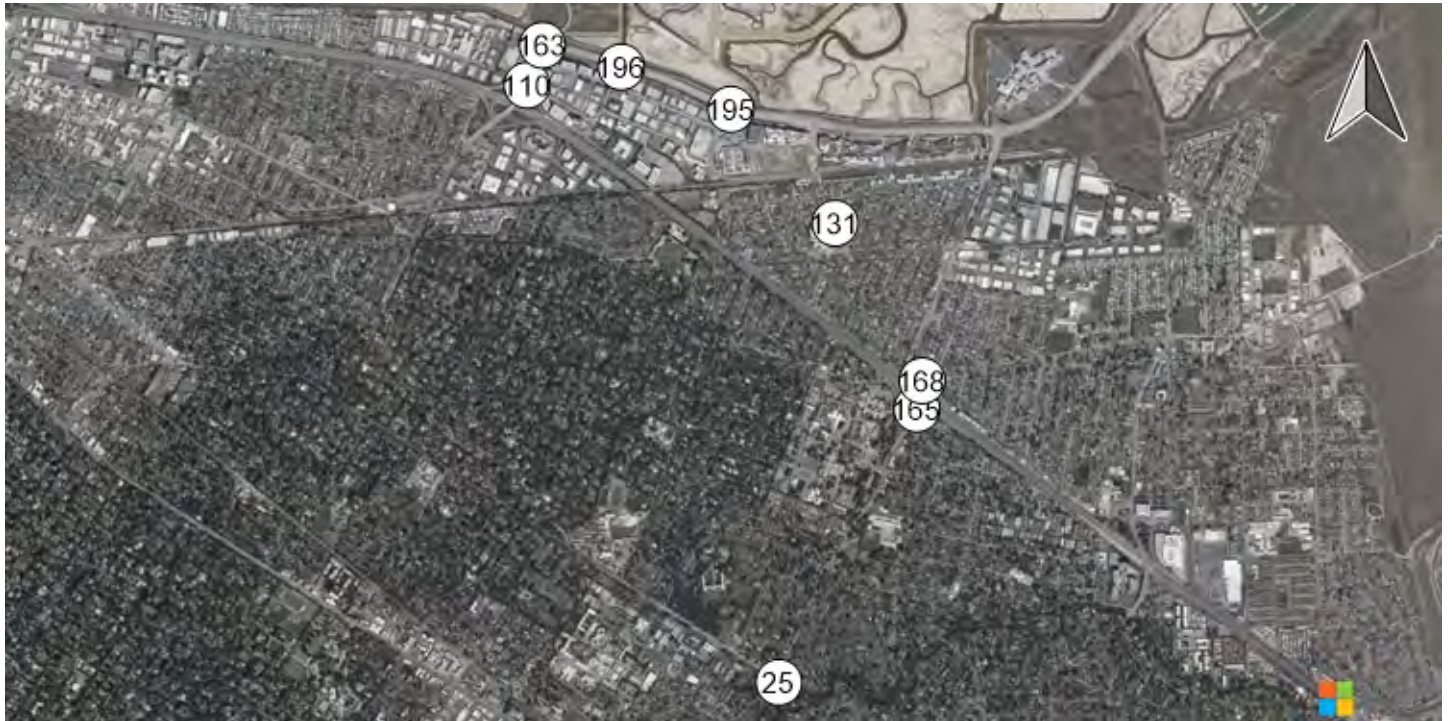
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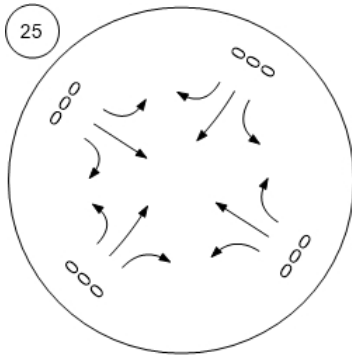
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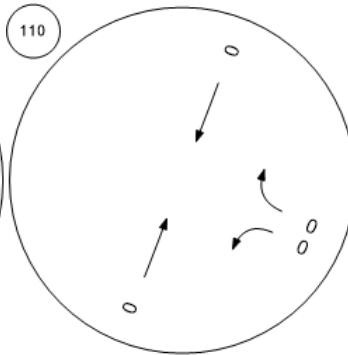
Traffic Volume - Net New Site Trips



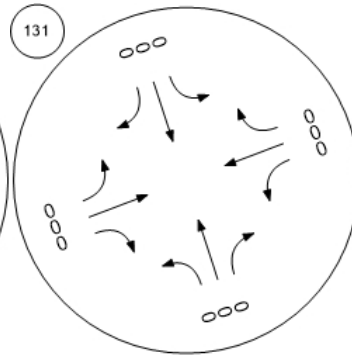
Middlefield Rd-Willow Rd



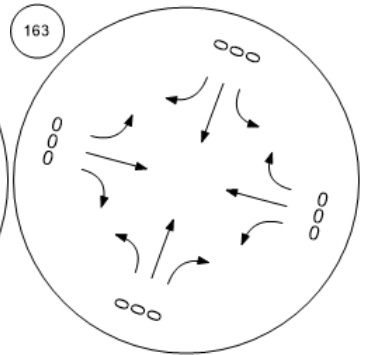
Marsh Road and US 101 NB



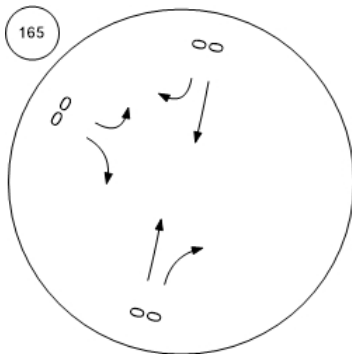
Chilco Street/Hamilton Avenue



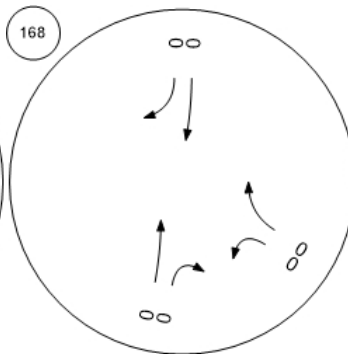
Bayfront Expy/Marsh Rd



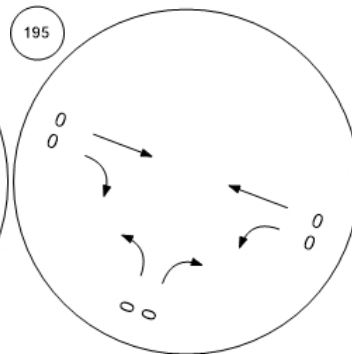
Willow Rd/US-101 SB Ramps



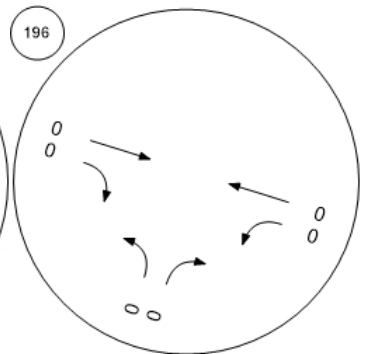
Willow Rd/US-101 NB Ramp



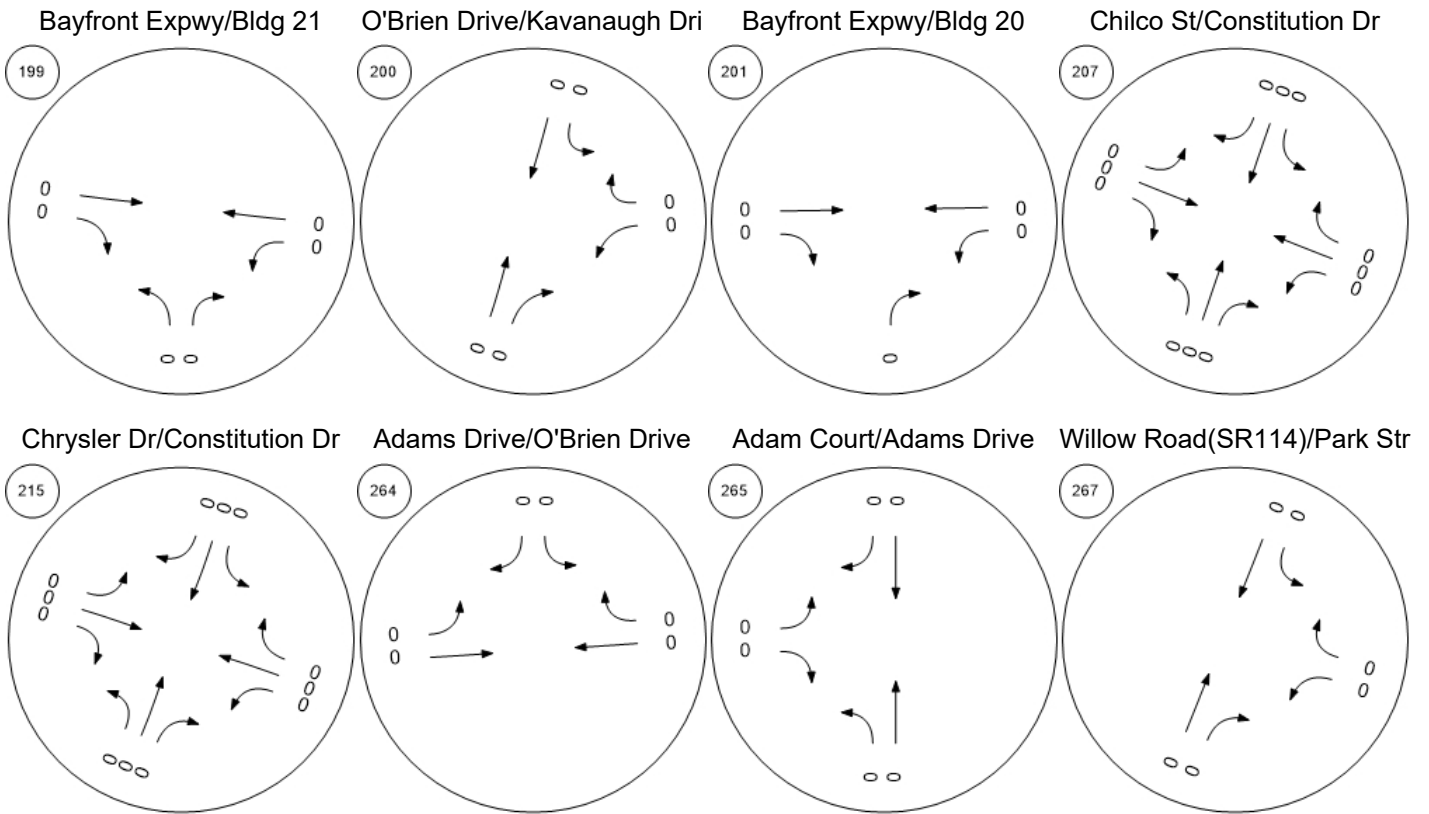
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



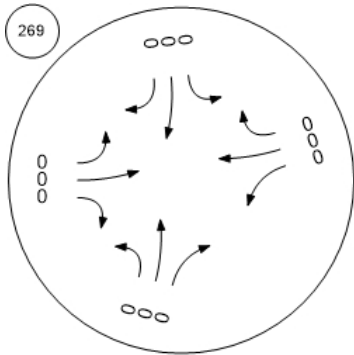
Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road

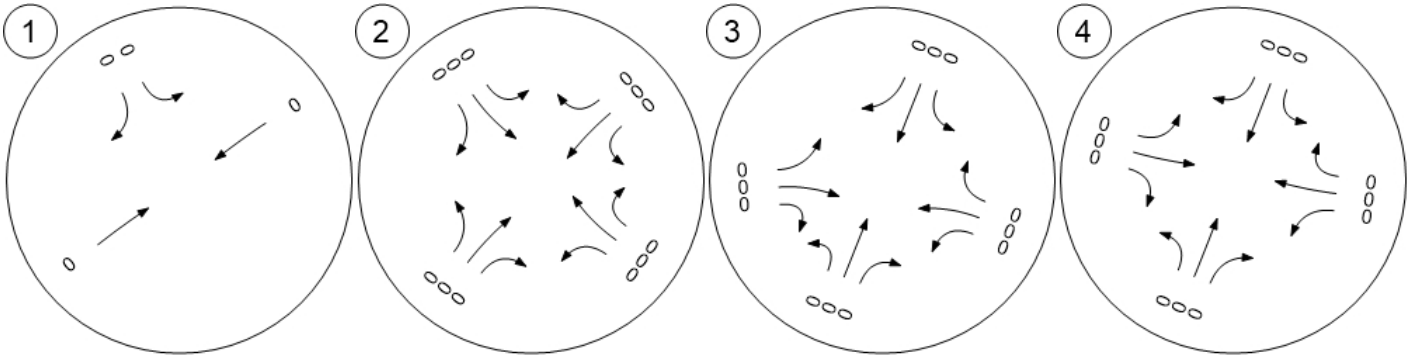


Traffic Volume - Other Volume

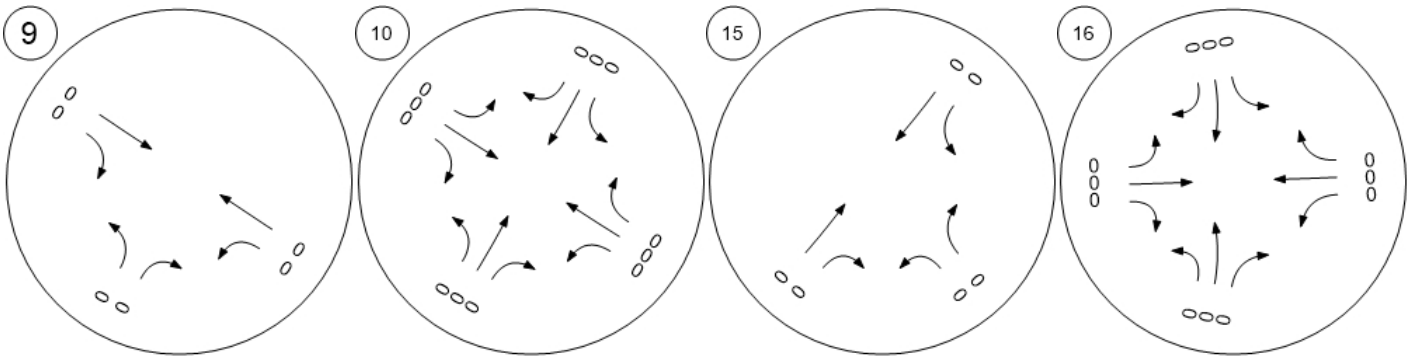


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow

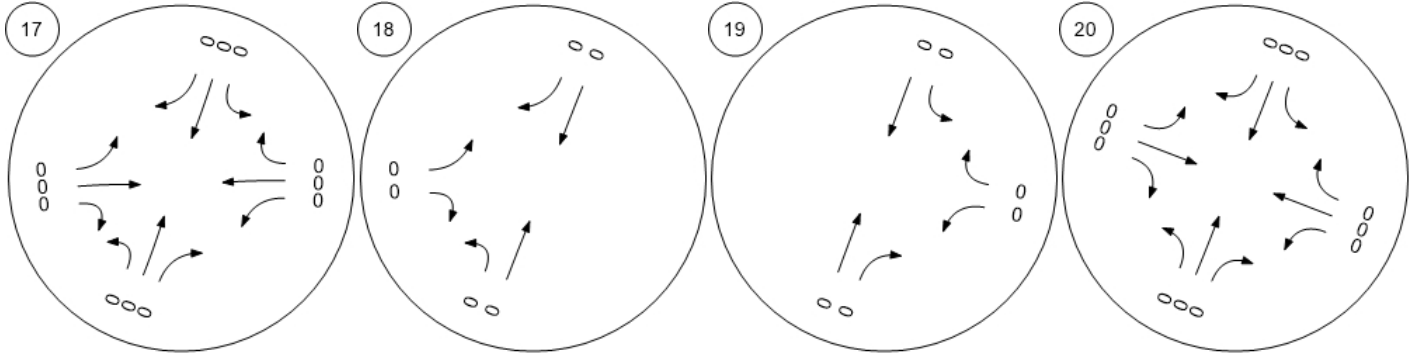




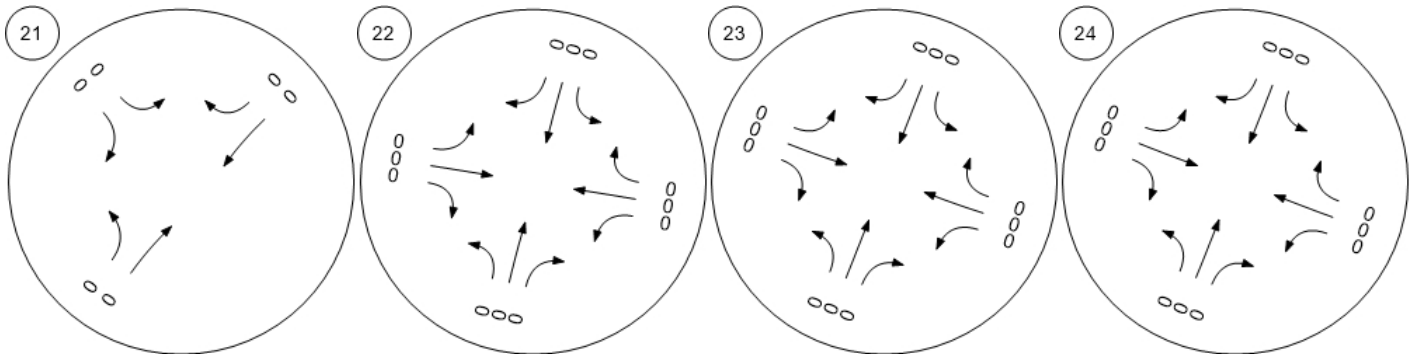
Traffic Volume - Other Volume



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



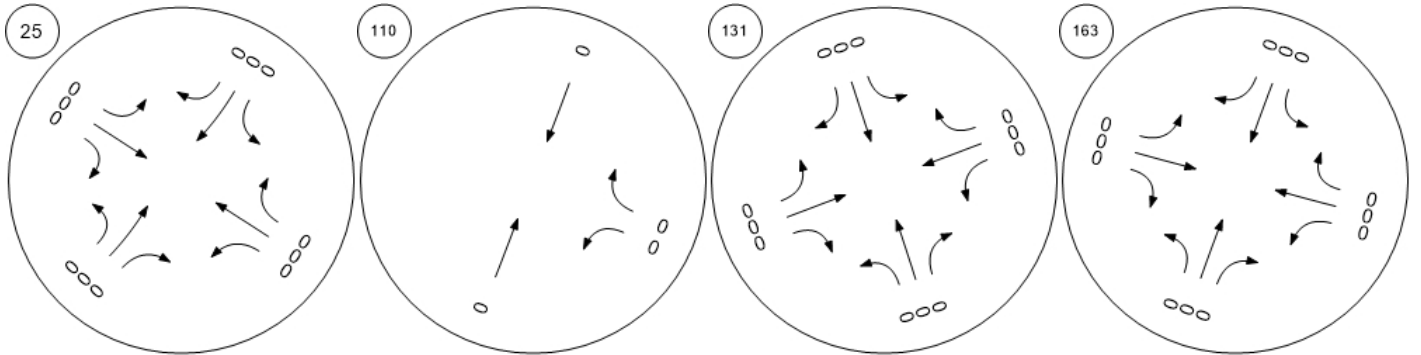
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



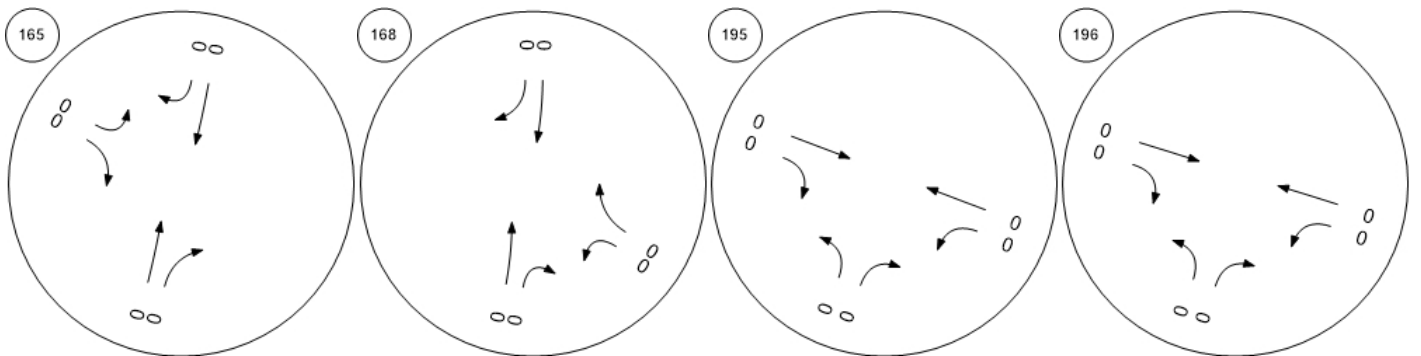
Traffic Volume - Other Volume



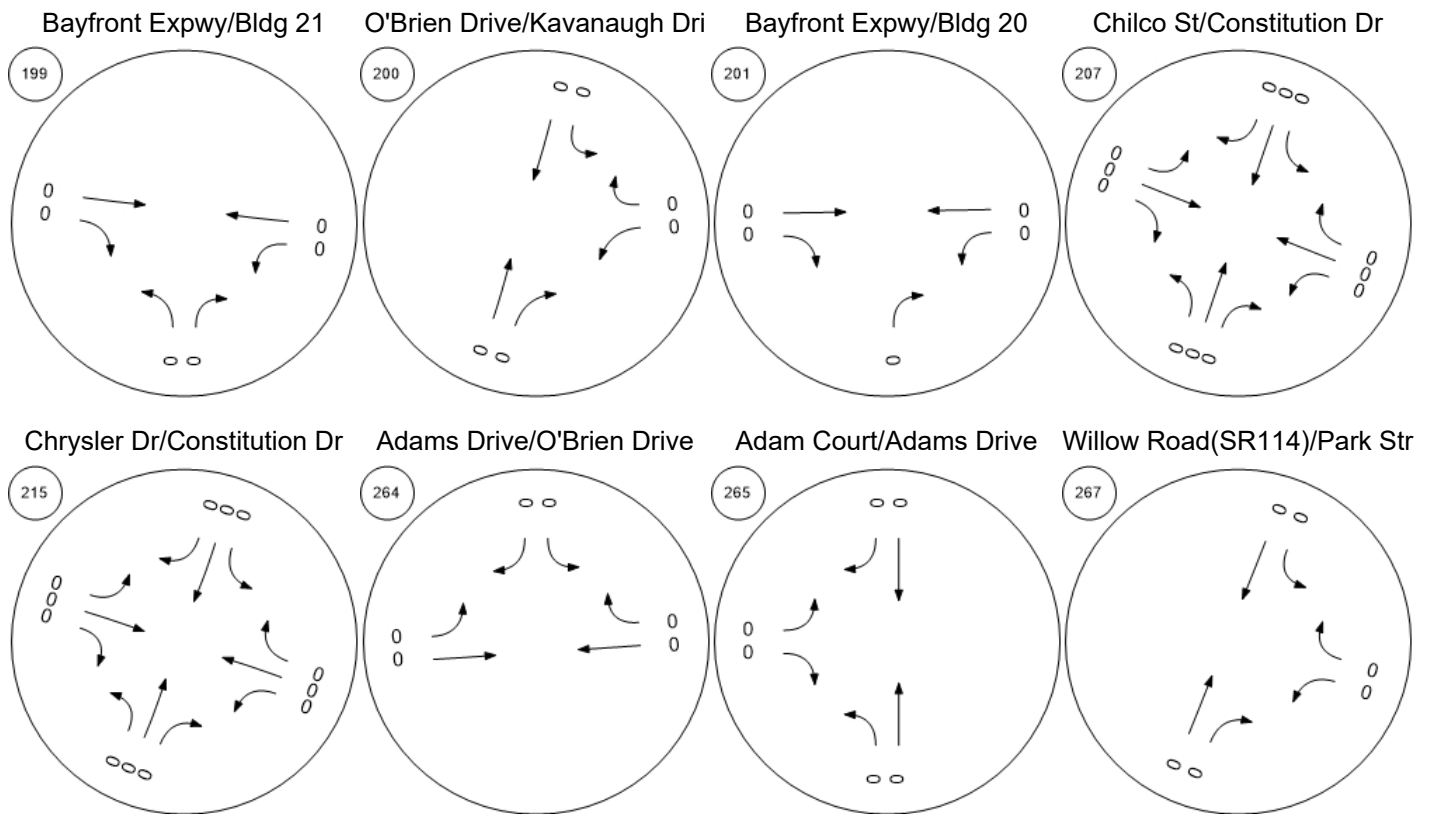
Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



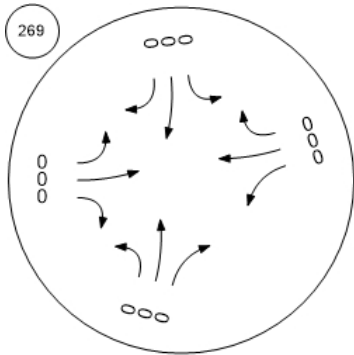
Traffic Volume - Other Volume



Traffic Volume - Other Volume



O'Brien Drive/Loop Road

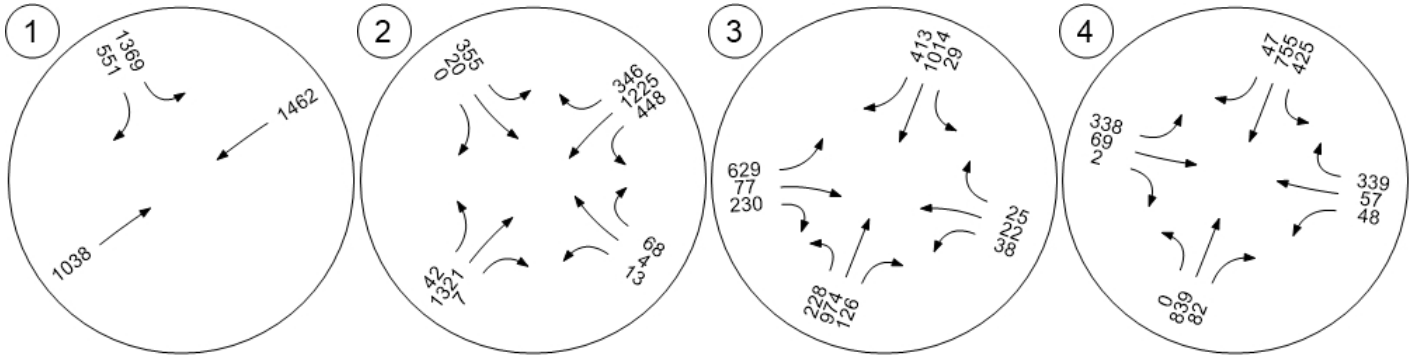


Traffic Volume - Future Total Volume

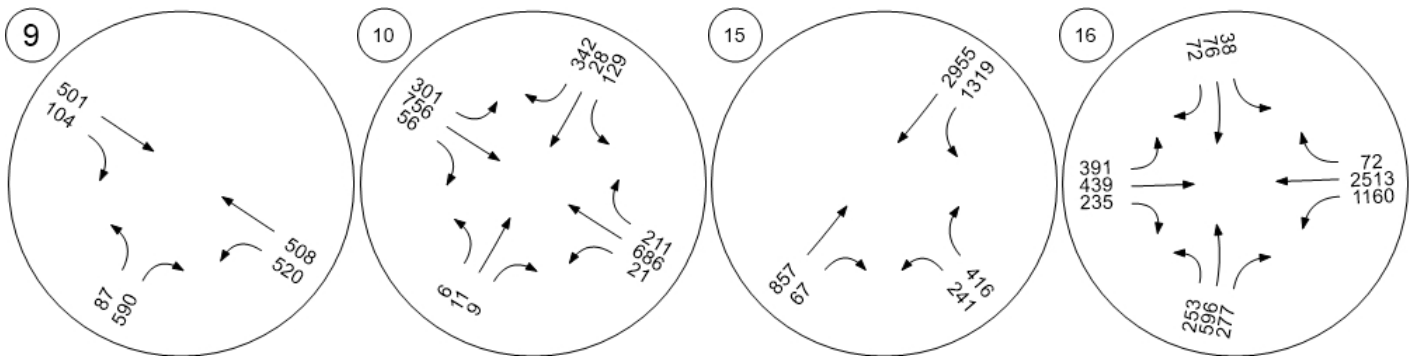


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



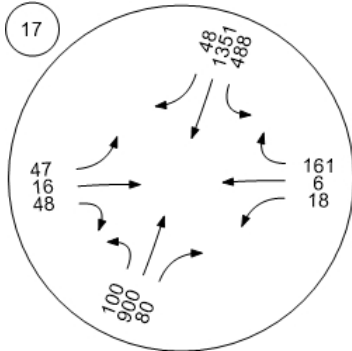
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



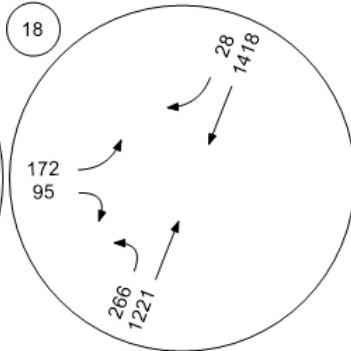
Traffic Volume - Future Total Volume



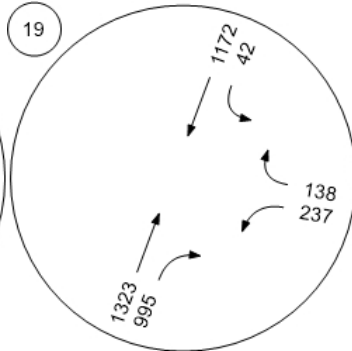
Willow Rd (SR 114)/Hamilton



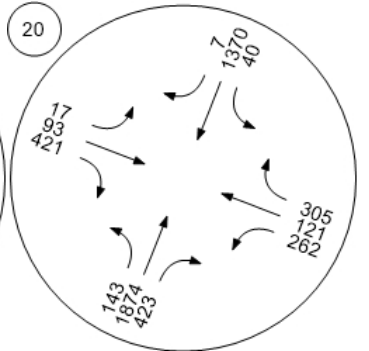
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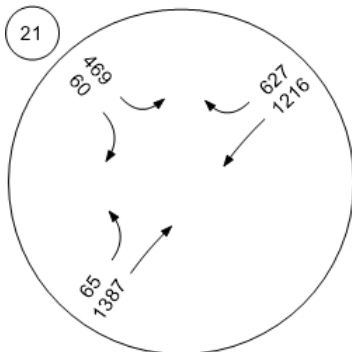
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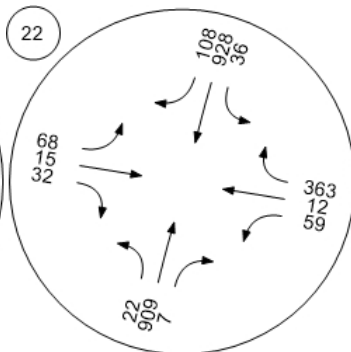
Willow Rd (SR 114)/Newbrid



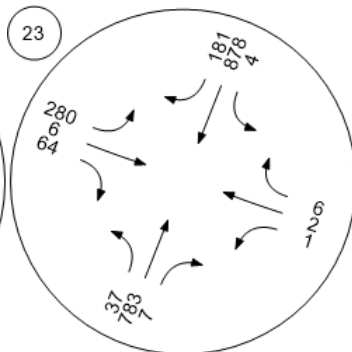
Willow Rd/Bay Rd



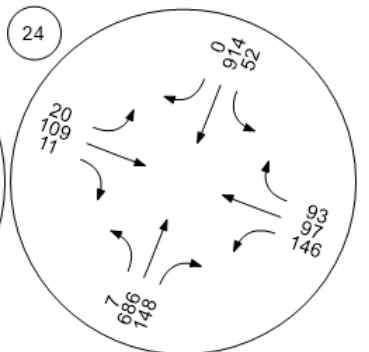
Willow Rd/Durham St-VA Me



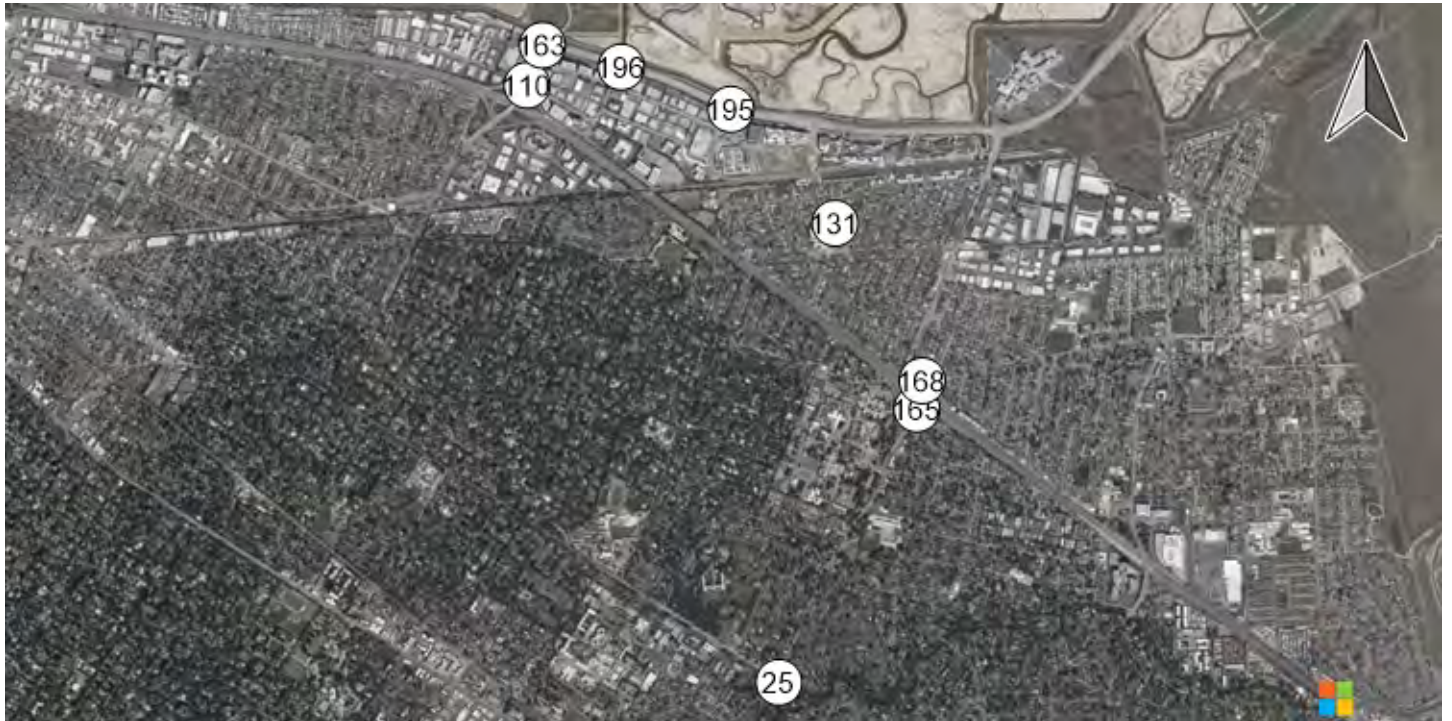
Willow Rd/Coleman Ave



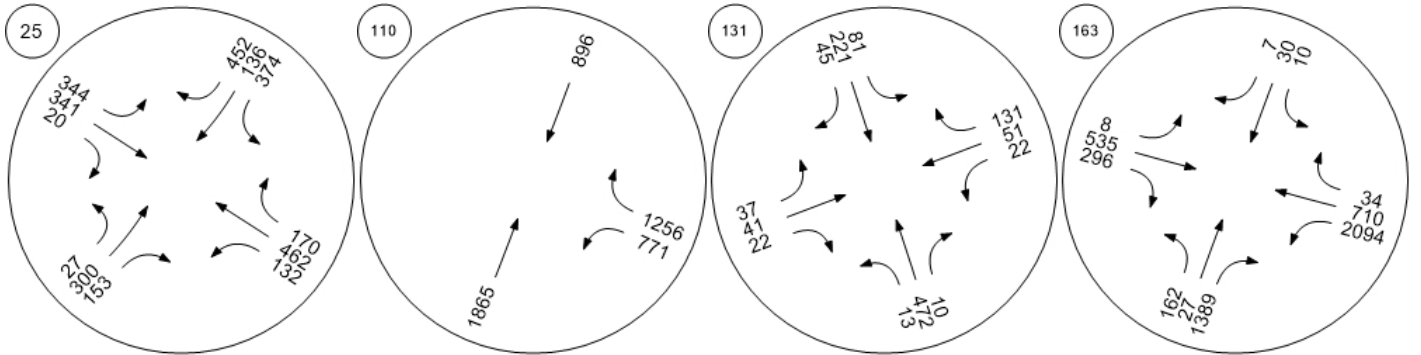
Willow Rd/Gilbert Ave



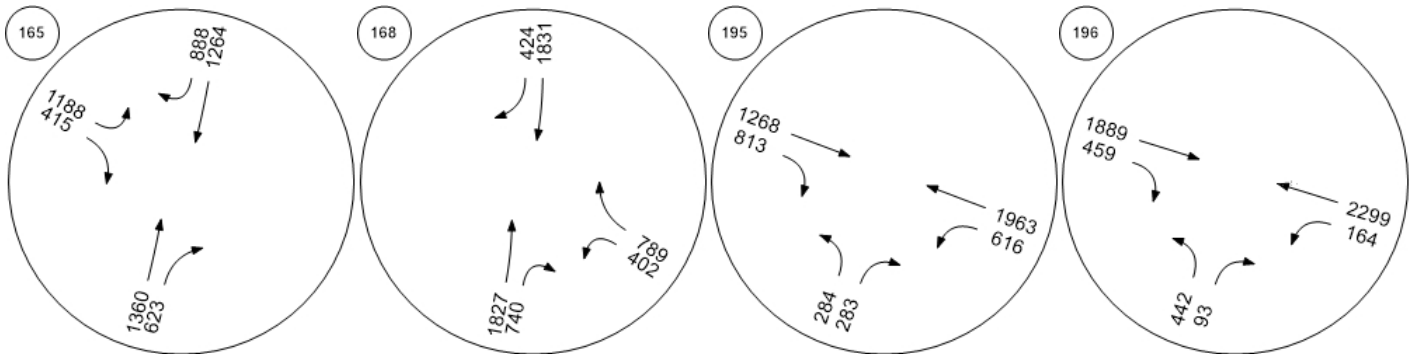
Traffic Volume - Future Total Volume



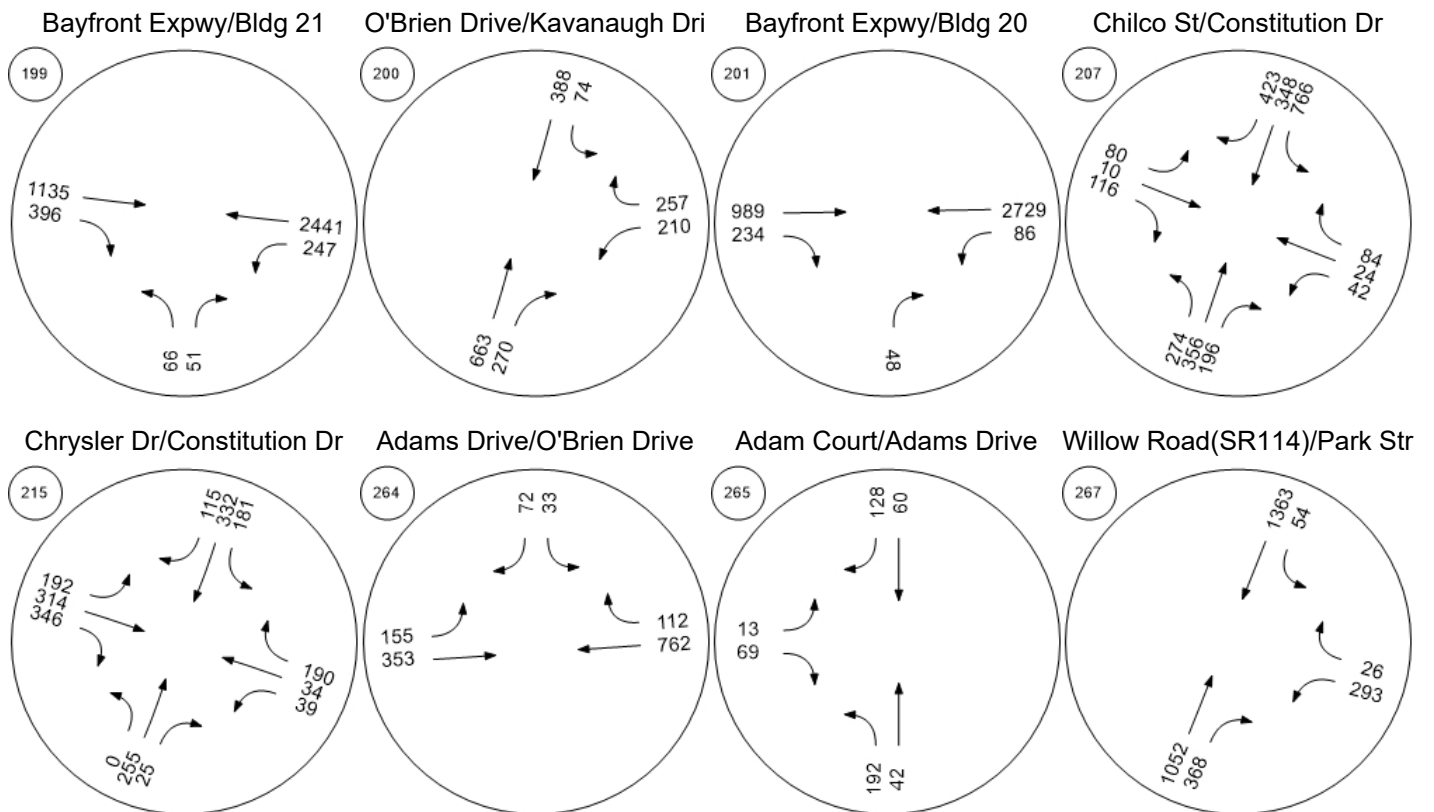
Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



Traffic Volume - Future Total Volume

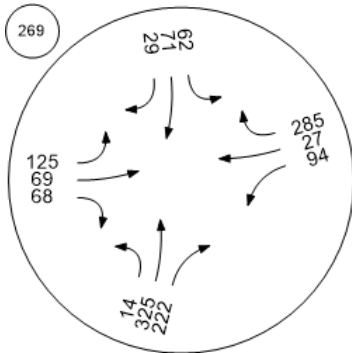




Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road

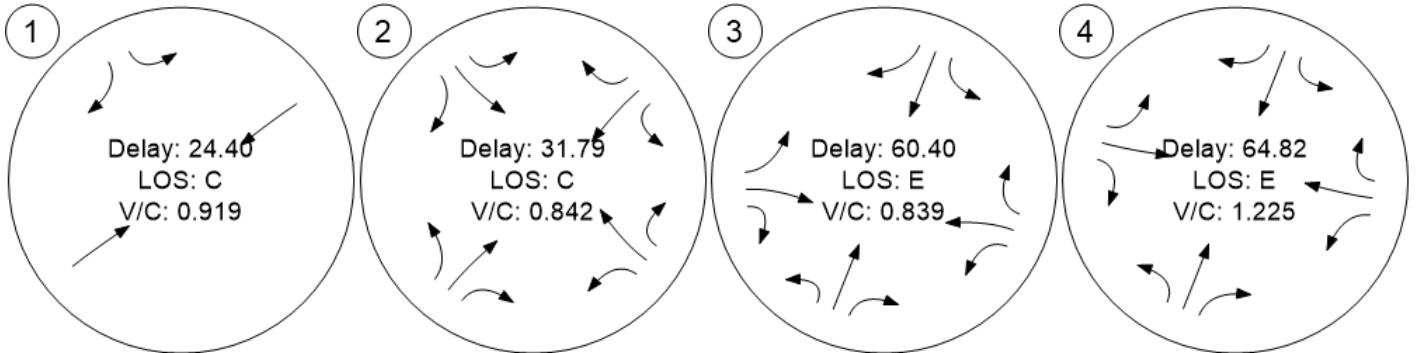


Traffic Conditions

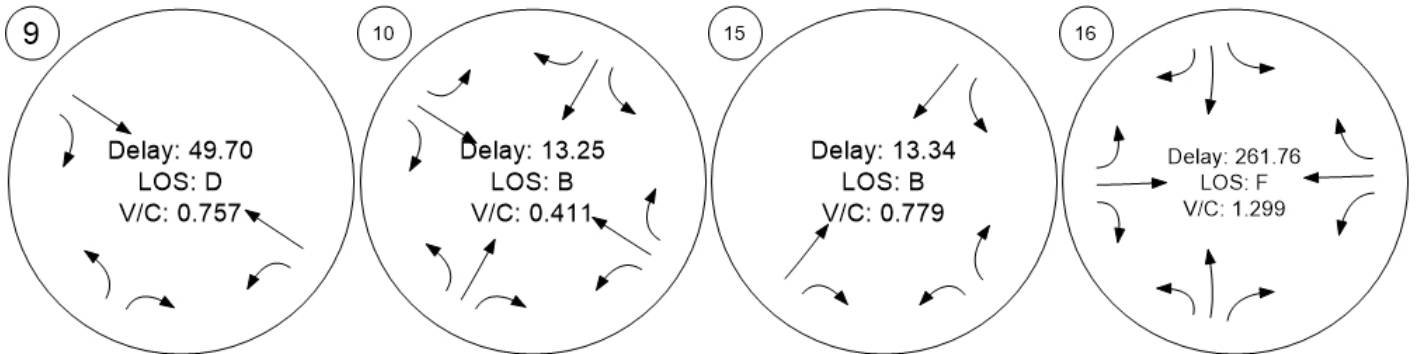


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



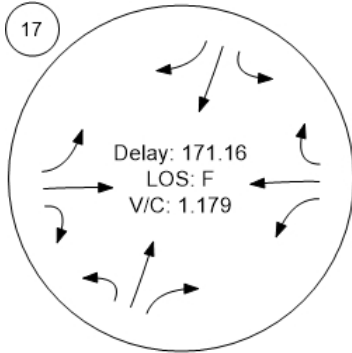
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



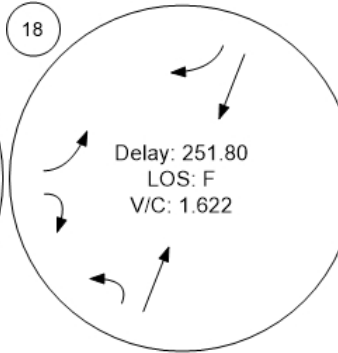
Traffic Conditions



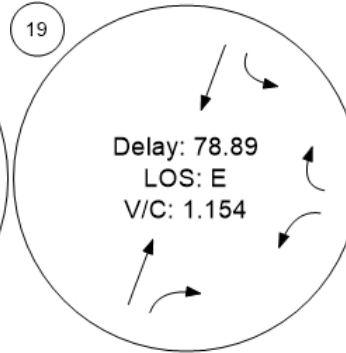
Willow Rd (SR 114)/Hamilton



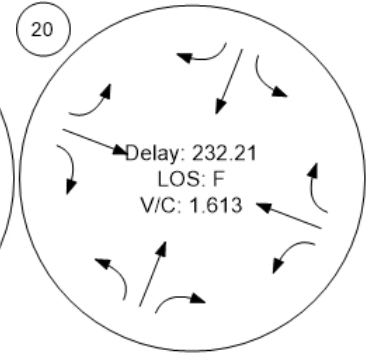
Willow Rd (SR 114)/Ivy Dr



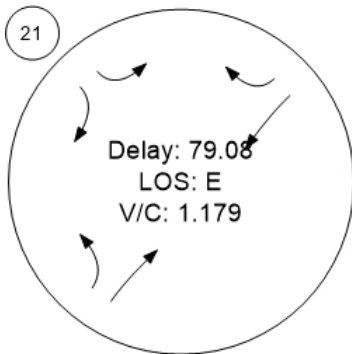
Willow Rd (SR 114)/O'Brien



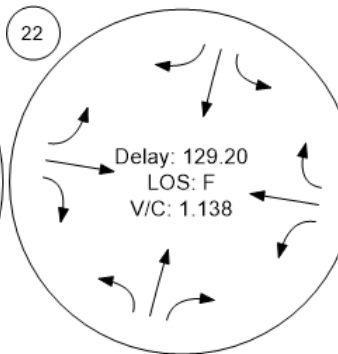
Willow Rd (SR 114)/Newbrid



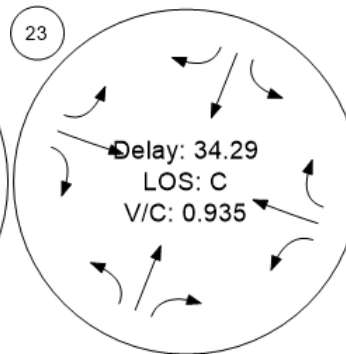
Willow Rd/Bay Rd



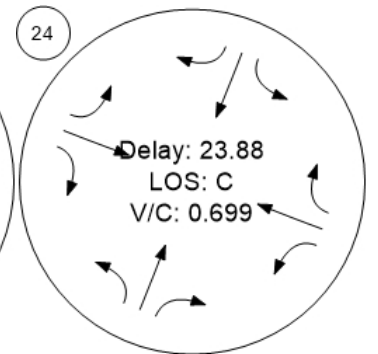
Willow Rd/Durham St-VA Me



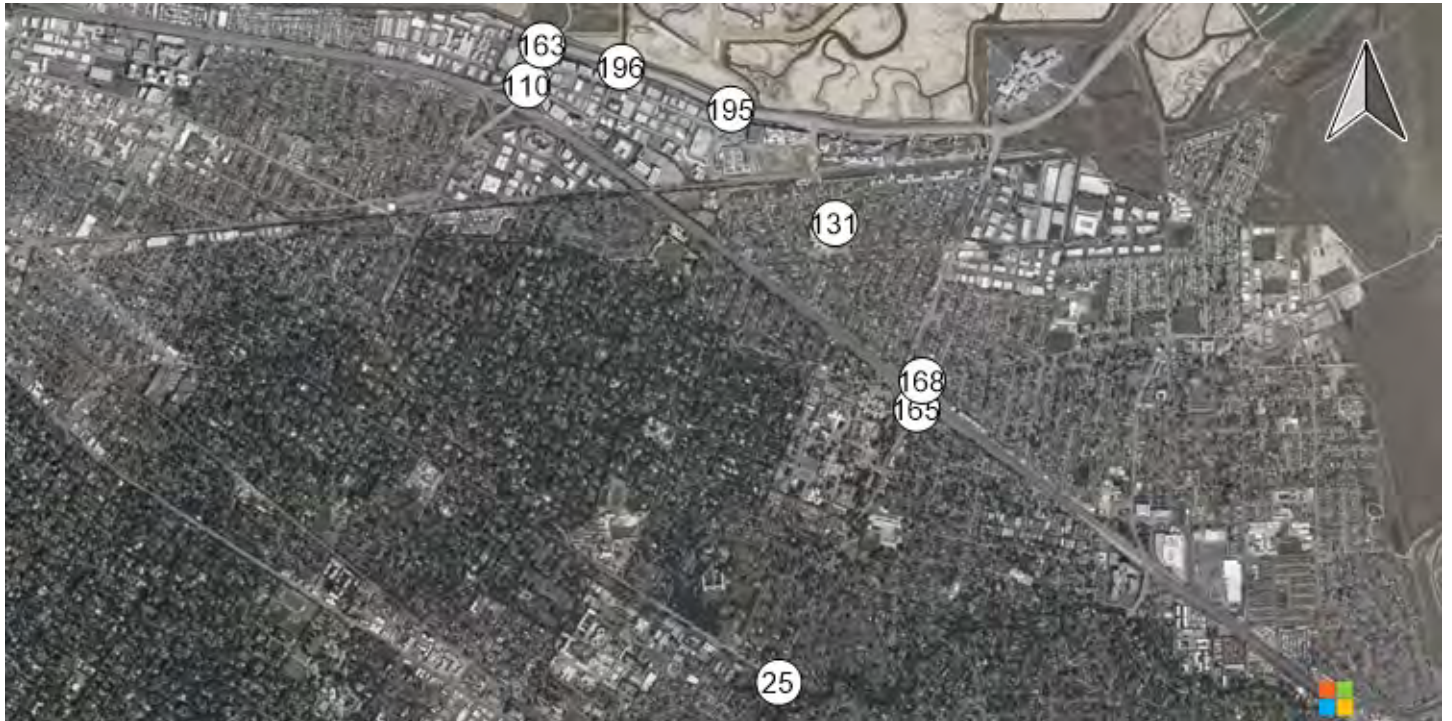
Willow Rd/Coleman Ave



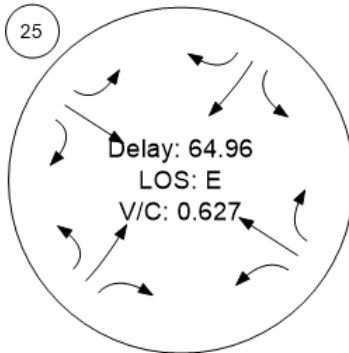
Willow Rd/Gilbert Ave



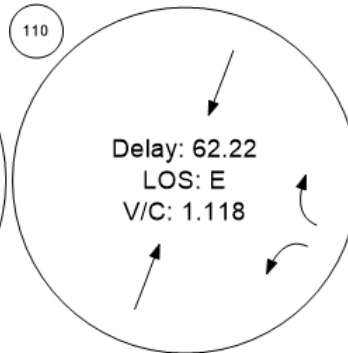
Traffic Conditions



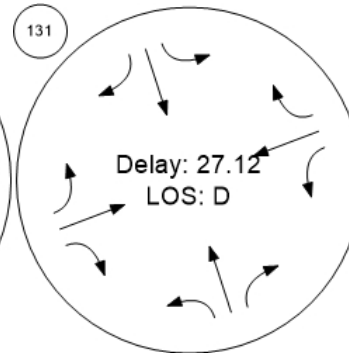
Middlefield Rd-Willow Rd



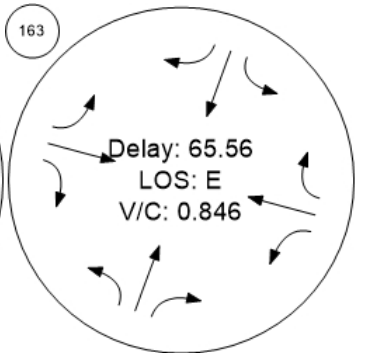
Marsh Road and US 101 NB



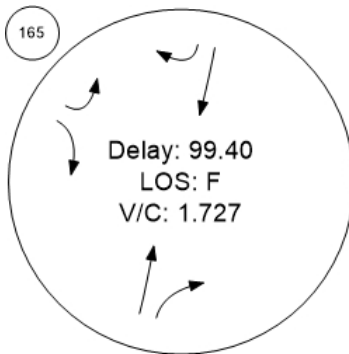
Chilco Street/Hamilton Avenue



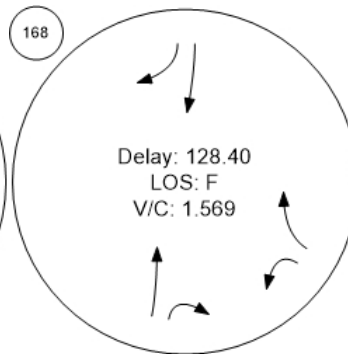
Bayfront Expy/Marsh Rd



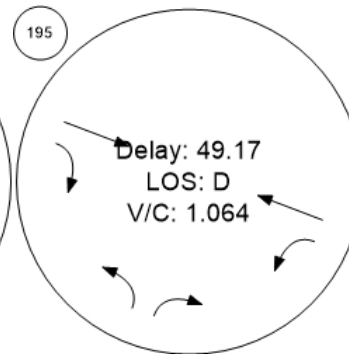
Willow Rd/US-101 SB Ramps



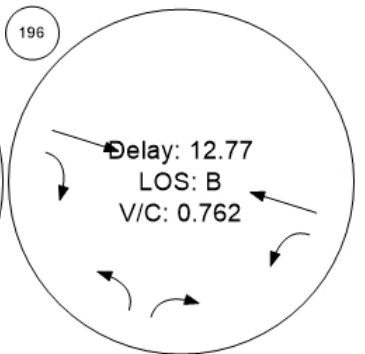
Willow Rd/US-101 NB Ramp



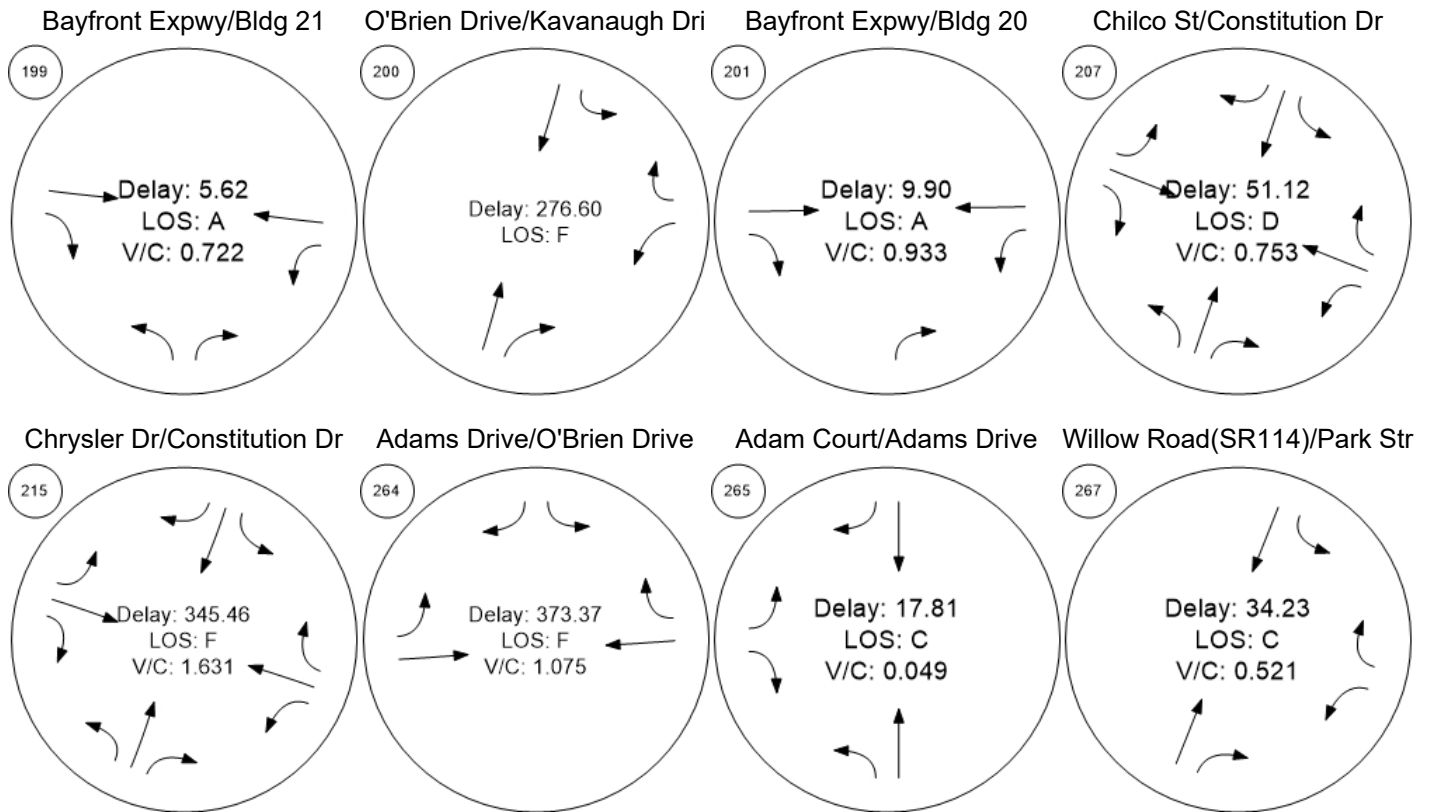
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



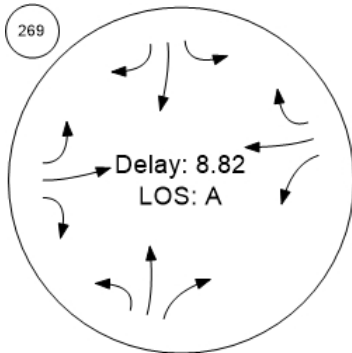
Traffic Conditions

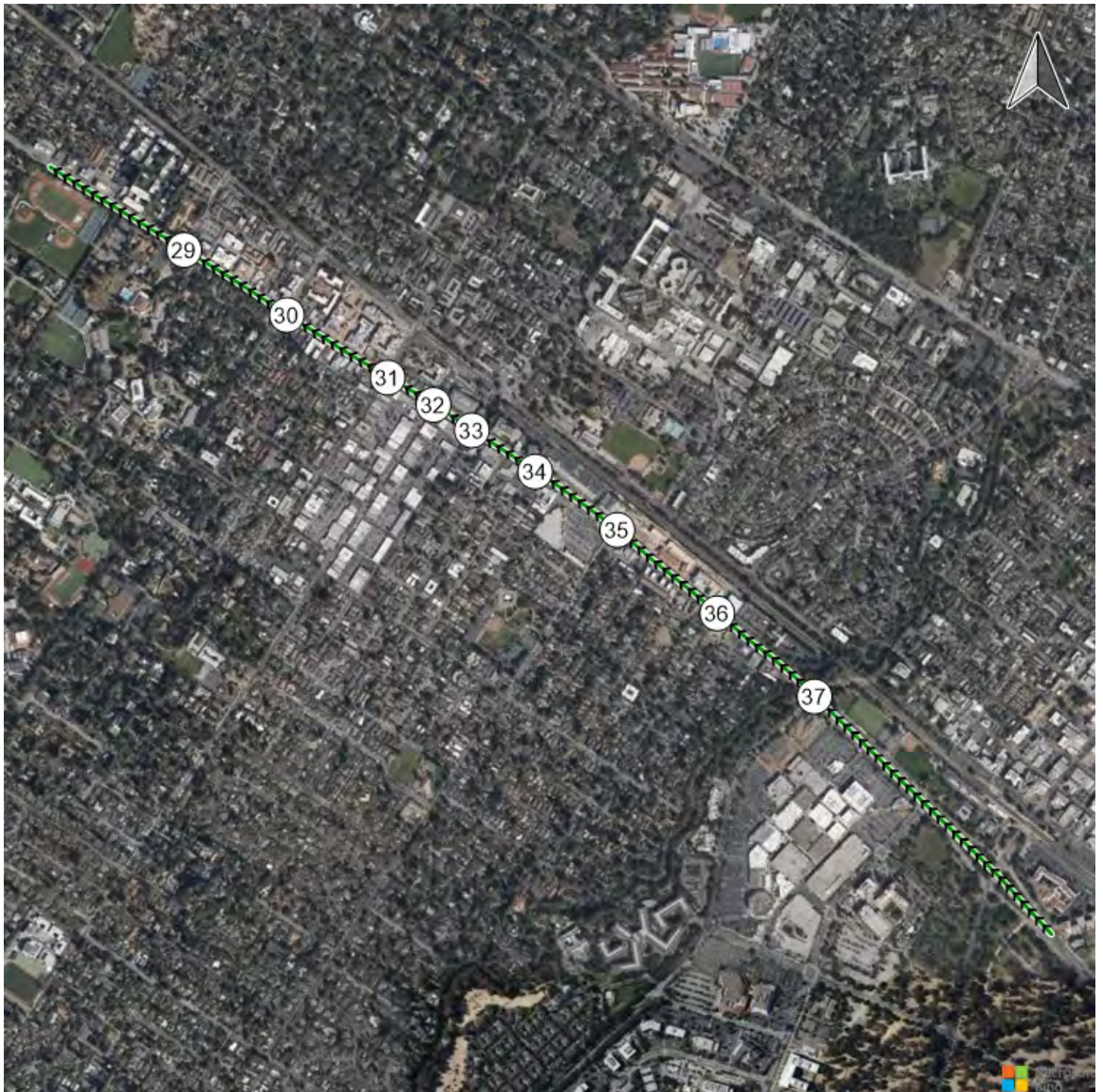


Traffic Conditions



O'Brien Drive/Loop Road





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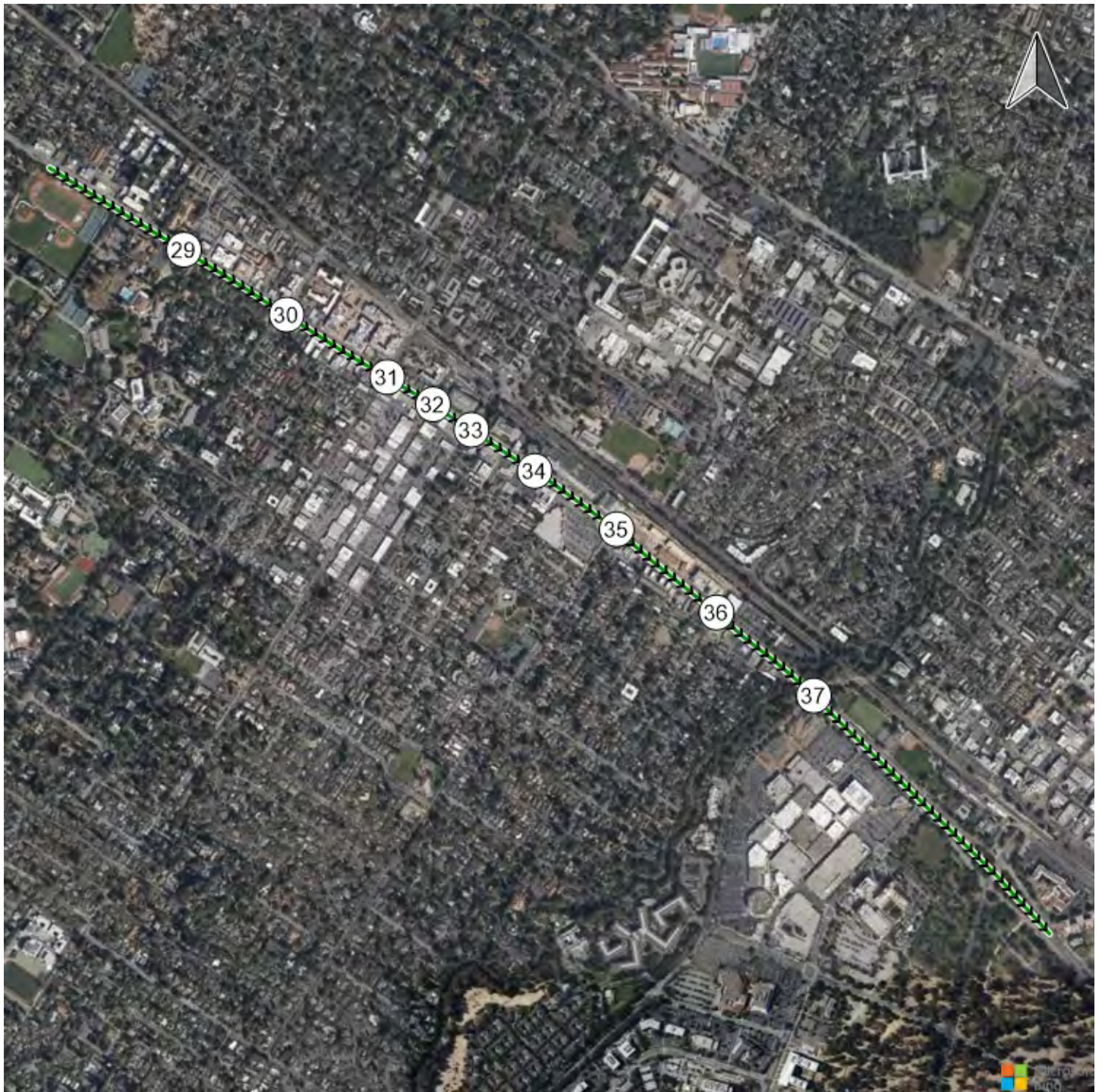
Version 2021 (SP 0-6)

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Route 1: ECR NB

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Version 2021 (SP 0-6)

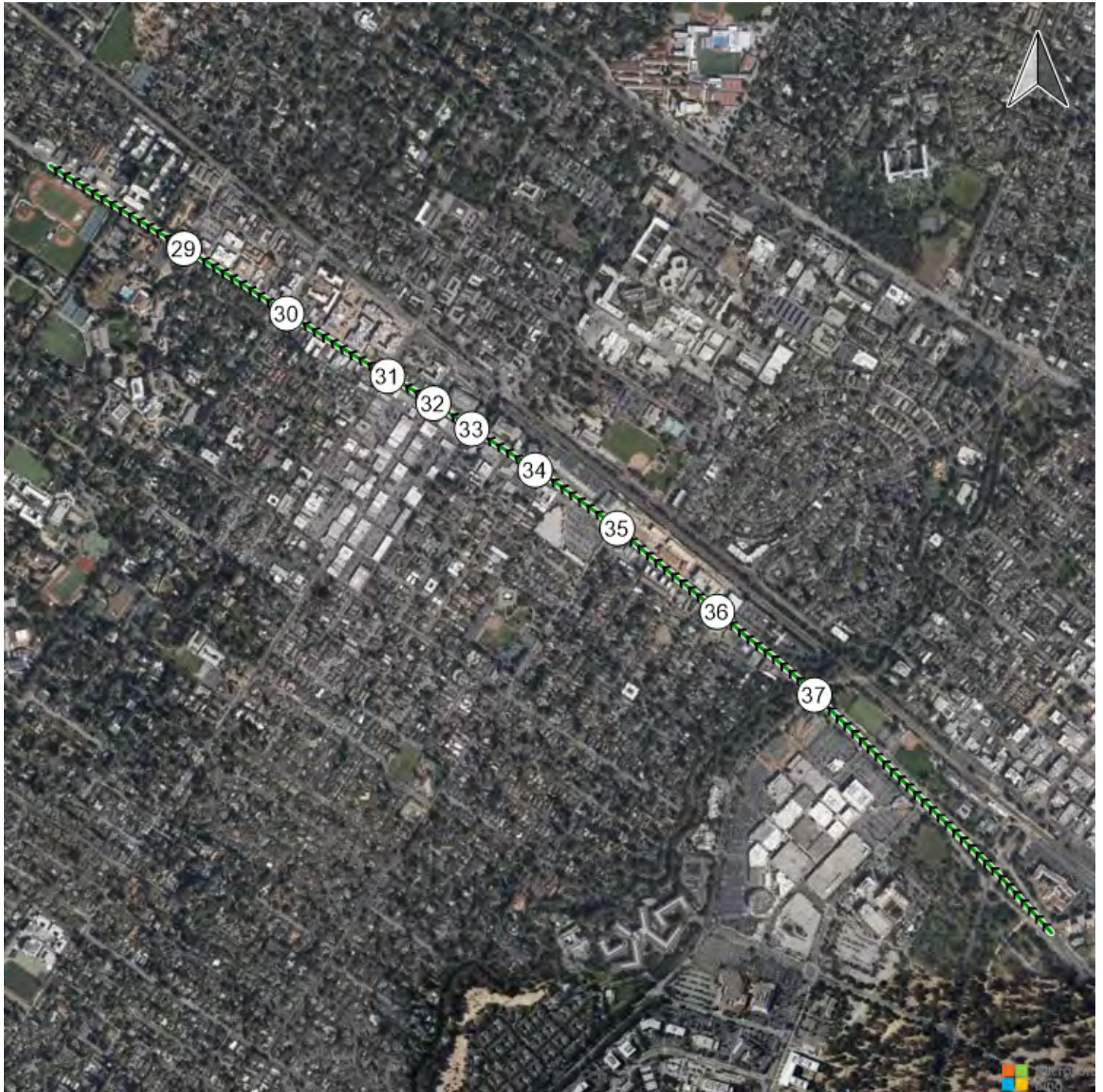
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



Generated with  PTV VISTRO

Version 2021 (SP 0-6)

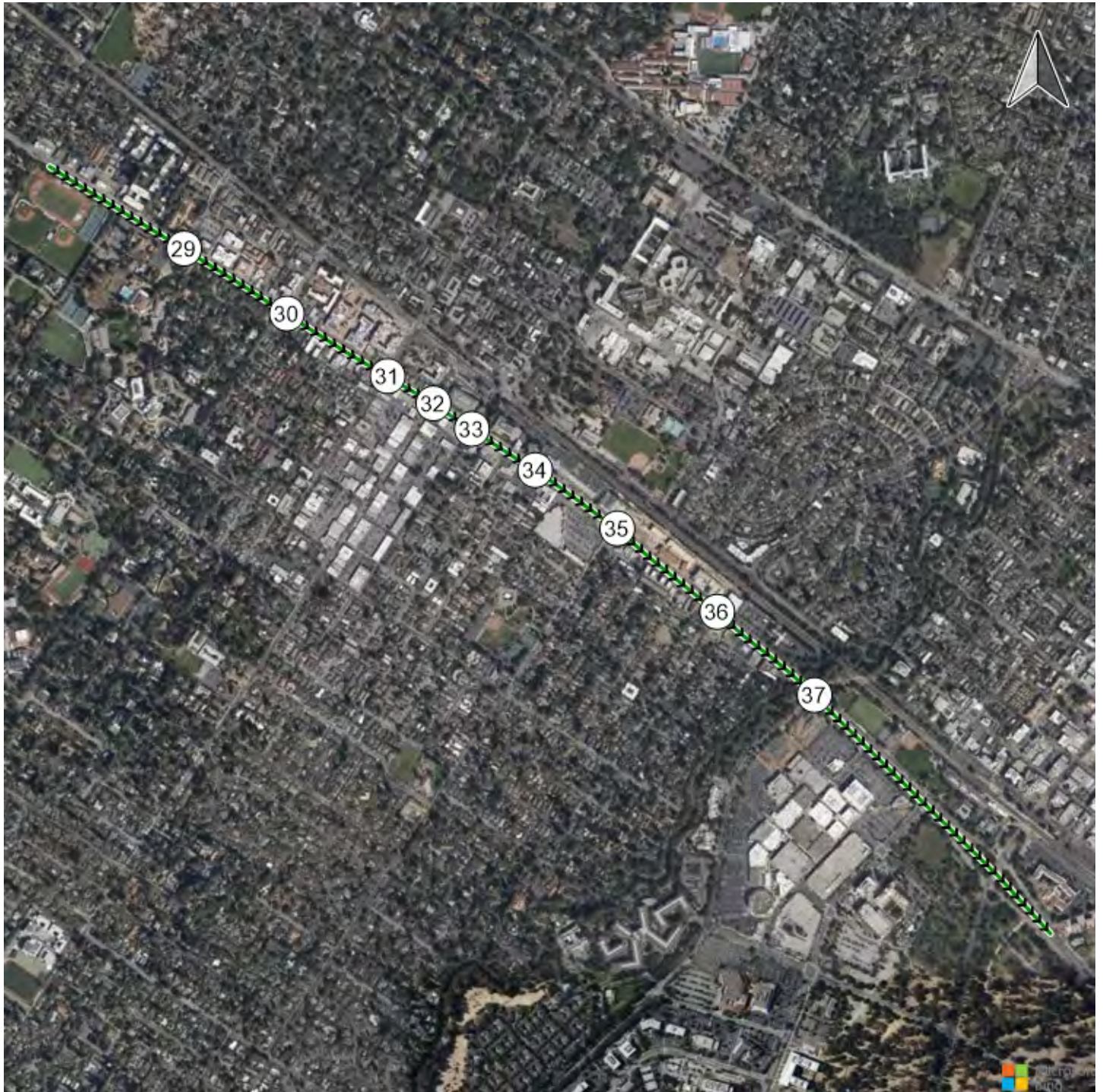
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



Generated with 

Version 2021 (SP 0-6)

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Route 2: ECR SB

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Vistro File: P:\...\Vistro\_AllScenarios\_PM\_2021-12-29\_ChilconConstitution\_OZ.vistro

Scenario 20 Cumulative PM (2040 vols)+Project

Report File: P:\...\Cumulative + P PM.pdf

12/30/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Left	0.809	18.8	B
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.602	18.1	B
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.857	53.6	D
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.894	54.9	D
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NEB Left	2.313	19.5	B
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 6th Edition	NEB Left	0.544	21.1	C
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NEB Thru	1.168	141.8	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	SB Thru	1.367	238.9	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	EB Left	1.673	447.6	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	SB Right	1.485	212.1	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	WB Right	1.716	279.8	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.477	210.2	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.412	223.5	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.281	224.2	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.696	13.2	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.560	14.1	B
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.711	42.4	D
			HCM 6th				

110	Marsh Road/101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	0.988	22.8	C
131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	SB Thru	1.599	175.8	F
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	WB Thru	1.094	77.9	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	2.058	155.8	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.237	231.3	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.102	66.9	E
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	NB Left	0.970	36.3	D
199	Bafront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.941	36.1	D
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	1.656	181.3	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.888	18.8	B
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	WB Right	1.191	101.8	F
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	WB Right	1.368	141.8	F
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	2.707	966.6	F
265	Adam Court/ Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.076	12.7	B
267	Willow Road(SR114)/Park Street	Signalized	HCM 6th Edition	SB Left	0.694	17.2	B
269	O'Brien Drive/Loop Road	Roundabout	HCM 6th Edition	SB Thru		11.0	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.



**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.809

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↵↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	969	1201	279	1311	427
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	969	1201	279	1311	427
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	247	306	70	334	109
Total Analysis Volume [veh/h]	0	989	1226	279	1338	436
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	7	0	5	0
Pedestrian Clearance [s]	0	0	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.25	0.35	0.39	0.27
s, saturation flow rate [veh/h]	4000	3540	3414	1609
c, Capacity [veh/h]	2122	1785	1411	665
d1, Uniform Delay [s]	11.68	15.00	22.59	18.84
k, delay calibration	0.50	0.50	0.04	0.20
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.74	2.18	1.75	2.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.47	0.69	0.95	0.66
d, Delay for Lane Group [s/veh]	12.42	17.18	24.34	20.90
Lane Group LOS	B	B	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.01	7.93	11.50	6.45
50th-Percentile Queue Length [ft/ln]	125.33	198.31	287.61	161.19
95th-Percentile Queue Length [veh/ln]	8.69	12.55	17.07	10.61
95th-Percentile Queue Length [ft/ln]	217.13	313.79	426.68	265.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.42	17.18	0.00	24.34	20.90
Movement LOS		B	B		C	C
d_A, Approach Delay [s/veh]	12.42		17.18		23.49	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.81					
Intersection LOS	B					
Intersection V/C	0.809					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.45	0.00	29.70
I_p,int, Pedestrian LOS Score for Intersection	2.881	0.000	2.510
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	774
d_b, Bicycle Delay [s]	9.79	9.76	15.02
I_b,int, Bicycle LOS Score for Intersection	2.376	2.571	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	50	1326	7	76	1048	268	15	6	414	307	6	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	3.70	0.00	1.70	1.30	7.70	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	326	0	0	0
Total Hourly Volume [veh/h]	50	1326	7	76	1048	268	15	6	88	307	6	4
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	345	2	20	273	70	4	2	23	80	2	1
Total Analysis Volume [veh/h]	52	1381	7	79	1092	279	16	6	92	320	6	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			0			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			0			1	
v_co, Outbound Pedestrian Volume crossing		0			0			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			1			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	51	0	12	48	0	0	41	0	0	36	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	99	99	98	98	98	9	9	18	18
g / C, Green / Cycle	0.05	0.71	0.71	0.70	0.70	0.70	0.06	0.06	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.26	0.09	0.38	0.39	0.01	0.03	0.09	0.09
s, saturation flow rate [veh/h]	1761	3549	1859	900	1877	1731	1833	2820	1791	1697
c, Capacity [veh/h]	91	2513	1317	648	1310	1208	115	178	233	221
d1, Uniform Delay [s]	64.78	8.01	8.01	8.40	10.21	10.38	62.16	63.48	58.48	58.48
k, delay calibration	0.08	0.50	0.50	0.15	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	0.41	0.78	0.11	1.58	1.82	0.59	1.73	3.23	3.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.36	0.36	0.12	0.54	0.55	0.19	0.52	0.73	0.73
d, Delay for Lane Group [s/veh]	68.86	8.42	8.79	8.52	11.79	12.20	62.75	65.21	61.72	61.89
Lane Group LOS	E	A	A	A	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.91	5.18	5.57	0.39	10.30	9.97	0.77	1.65	6.04	5.74
50th-Percentile Queue Length [ft/ln]	47.79	129.61	139.16	9.82	257.49	249.20	19.27	41.21	150.99	143.39
95th-Percentile Queue Length [veh/ln]	3.44	8.92	9.44	0.71	15.56	15.15	1.39	2.97	10.07	9.66
95th-Percentile Queue Length [ft/ln]	86.03	222.96	235.90	17.67	389.07	378.65	34.69	74.19	251.75	241.58

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	68.86	8.55	8.79	8.52	11.94	12.20	62.75	62.75	65.21	61.80	61.89	61.89
Movement LOS	E	A	A	A	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	10.72			11.80			64.74			61.80		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	18.09											
Intersection LOS	B											
Intersection V/C	0.602											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	58.49			58.49			59.41			59.41		
I_p,int, Pedestrian LOS Score for Intersection	2.957			3.194			2.945			2.142		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	657			615			526			454		
d_b, Bicycle Delay [s]	31.53			33.60			38.01			41.79		
I_b,int, Bicycle LOS Score for Intersection	2.352			2.756			2.286			2.104		
Bicycle LOS	B			C			B			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	53.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	296	675	54	13	1013	354	474	34	235	126	87	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	174	0	0	0
Total Hourly Volume [veh/h]	296	675	54	13	1013	354	474	34	61	126	87	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	181	15	3	272	95	127	9	16	34	23	11
Total Analysis Volume [veh/h]	318	726	58	14	1089	381	510	37	66	135	94	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			1			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			2			1	
v_co, Outbound Pedestrian Volume crossing		0			3			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			2			3			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	55	55	12	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	86	86	4	70	70	26	26	26	16	16
g / C, Green / Cycle	0.14	0.62	0.62	0.03	0.50	0.50	0.19	0.19	0.19	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.22	0.01	0.41	0.42	0.15	0.15	0.04	0.08	0.08
s, saturation flow rate [veh/h]	1771	1852	1797	1714	1867	1678	1774	1821	1572	1751	1788
c, Capacity [veh/h]	253	1141	1108	45	933	839	332	341	294	198	202
d1, Uniform Delay [s]	59.96	13.11	13.12	66.87	29.49	30.35	54.49	54.49	48.18	59.62	59.59
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	144.34	0.84	0.87	1.45	7.72	10.34	3.61	3.52	0.28	3.06	2.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.26	0.35	0.35	0.31	0.81	0.85	0.81	0.81	0.22	0.68	0.68
d, Delay for Lane Group [s/veh]	204.30	13.95	13.99	68.31	37.21	40.68	58.10	58.00	48.46	62.68	62.53
Lane Group LOS	F	B	B	E	D	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.03	6.24	6.10	0.51	22.93	22.57	9.54	9.78	2.01	4.82	4.89
50th-Percentile Queue Length [ft/ln]	475.84	156.05	152.48	12.71	573.32	564.15	238.57	244.59	50.35	120.54	122.13
95th-Percentile Queue Length [veh/ln]	28.92	10.34	10.15	0.92	30.79	30.36	14.61	14.91	3.63	8.42	8.51
95th-Percentile Queue Length [ft/ln]	723.01	258.49	253.73	22.88	769.66	758.92	365.23	372.83	90.63	210.57	212.75

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	204.30	13.97	13.99	68.31	38.26	40.68	58.05	58.00	48.46	62.68	62.53	62.53
Movement LOS	F	B	B	E	D	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	68.89			39.17			57.02			62.60		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	53.59											
Intersection LOS	D											
Intersection V/C	0.857											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	59.40			59.40			59.40			59.40		
I_p,int, Pedestrian LOS Score for Intersection	2.960			3.064			2.721			2.064		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	720			577			457			469		
d_b, Bicycle Delay [s]	28.66			35.44			41.69			41.03		
I_b,int, Bicycle LOS Score for Intersection	2.469			2.784			2.858			2.008		
Bicycle LOS	B			C			C			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	54.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.894

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		



**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	745	61	441	723	56	100	26	2	65	114	310
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	745	61	441	723	56	100	26	2	65	114	310
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	209	17	124	203	16	28	7	1	18	32	87
Total Analysis Volume [veh/h]	2	837	69	496	812	63	112	29	2	73	128	348
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			6			0			6	
v_di, Inbound Pedestrian Volume crossing in		0			6			0			6	
v_co, Outbound Pedestrian Volume crossing		0			3			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			1			5			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	29	29
g / C, Green / Cycle	0.34	0.34	0.20	0.58	0.58	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.28	0.23	0.24	0.25	0.31
s, saturation flow rate [veh/h]	1858	1644	1795	1885	1830	569	1750
c, Capacity [veh/h]	675	557	361	1088	1056	288	691
d1, Uniform Delay [s]	23.64	23.70	32.07	9.38	9.40	21.99	23.52
k, delay calibration	0.50	0.50	0.28	0.50	0.50	0.32	0.41
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.31	9.71	178.49	1.13	1.18	3.91	7.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.71	0.77	1.38	0.41	0.41	0.50	0.80
d, Delay for Lane Group [s/veh]	29.95	33.41	210.56	10.50	10.58	25.89	31.21
Lane Group LOS	C	C	F	B	B	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.69	8.19	24.51	3.98	3.91	2.59	10.42
50th-Percentile Queue Length [ft/ln]	217.30	204.72	612.72	99.40	97.86	64.83	260.48
95th-Percentile Queue Length [veh/ln]	13.53	12.88	37.77	7.16	7.05	4.67	15.71
95th-Percentile Queue Length [ft/ln]	338.18	322.05	944.29	178.92	176.14	116.70	392.83

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.95	31.43	33.41	210.56	10.54	10.58	25.89	25.89	25.89	31.21	31.21	31.21
Movement LOS	C	C	C	F	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	31.58			82.90			25.89			31.21		
Approach LOS	C			F			C			C		
d_I, Intersection Delay [s/veh]	54.92											
Intersection LOS	D											
Intersection V/C	0.894											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	29.82	29.82	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.060	1.848	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	596	1071	681	681
d_b, Bicycle Delay [s]	19.74	8.66	17.46	17.43
I_b,int, Bicycle LOS Score for Intersection	2.309	2.691	1.796	2.465
Bicycle LOS	B	B	A	B

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.313

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	137	541	468	640	469	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.10	1.30	0.60	1.40	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	137	0	468	640	469	104
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	0	121	165	121	27
Total Analysis Volume [veh/h]	141	0	482	660	484	107
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing in	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	58.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	5	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.0	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	82	82	82	82	82
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	12	12	26	63	38
g / C, Green / Cycle	0.15	0.15	0.32	0.77	0.46
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.27	0.35	0.33
s, saturation flow rate [veh/h]	1781	1588	1791	1891	1806
c, Capacity [veh/h]	269	240	569	1454	827
d1, Uniform Delay [s]	32.13	0.00	26.13	3.37	17.91
k, delay calibration	0.08	0.08	0.21	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.18	0.00	6.71	0.22	5.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	0.85	0.45	0.71
d, Delay for Lane Group [s/veh]	33.31	0.00	32.83	3.60	23.15
Lane Group LOS	C	A	C	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.61	0.00	9.26	2.27	9.29
50th-Percentile Queue Length [ft/ln]	65.16	0.00	231.38	56.68	232.16
95th-Percentile Queue Length [veh/ln]	4.69	0.00	14.24	4.08	14.28
95th-Percentile Queue Length [ft/ln]	117.29	0.00	356.11	102.02	357.11



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.31	0.00	32.83	3.60	23.15	23.15
Movement LOS	C	A	C	A	C	C
d_A, Approach Delay [s/veh]	33.31		15.94		23.15	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	19.52					
Intersection LOS	B					
Intersection V/C	2.313					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.70	30.70	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.920	2.872	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1118	1597	742
d_b, Bicycle Delay [s]	8.01	1.69	16.28
I_b,int, Bicycle LOS Score for Intersection	1.560	3.444	2.535
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringwood Ave**

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.544

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	34	32	32	224	0	271	2	775	138	323	713	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	0.00	0.00	0.00	0.00	2.20	0.00	1.70	0.00	2.10	1.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	8	0	0	57	0	0	0
Total Hourly Volume [veh/h]	34	32	32	224	0	263	2	775	81	323	713	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	8	8	59	0	69	1	204	21	85	188	1
Total Analysis Volume [veh/h]	36	34	34	236	0	277	2	816	85	340	751	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing in	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	58.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.0	2.9	3.0	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	34	34	34	34	82	65	65	79	75	75
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.68	0.54	0.54	0.66	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.21	0.18	0.00	0.23	0.05	0.39	0.20	0.20
s, saturation flow rate [veh/h]	1421	1719	1136	1540	752	3569	1558	880	1873	1871
c, Capacity [veh/h]	156	493	386	442	531	1920	838	575	1166	1165
d1, Uniform Delay [s]	53.53	31.78	41.75	36.98	7.59	16.61	13.52	11.07	10.69	10.69
k, delay calibration	0.10	0.10	0.27	0.20	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.12	3.90	2.64	0.00	0.69	0.24	4.42	0.73	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.23	0.14	0.61	0.63	0.00	0.43	0.10	0.59	0.32	0.32
d, Delay for Lane Group [s/veh]	54.25	31.90	45.66	39.62	7.59	17.30	13.77	15.49	11.42	11.42
Lane Group LOS	D	C	D	D	A	B	B	B	B	B
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.09	1.53	6.82	7.34	0.02	6.67	1.16	4.18	4.69	4.69
50th-Percentile Queue Length [ft/ln]	27.24	38.21	170.60	183.45	0.42	166.82	28.93	104.54	117.37	117.27
95th-Percentile Queue Length [veh/ln]	1.96	2.75	11.11	11.78	0.03	10.91	2.08	7.53	8.25	8.24
95th-Percentile Queue Length [ft/ln]	49.03	68.78	277.70	294.52	0.76	272.74	52.07	188.17	206.20	206.07

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	54.25	31.90	31.90	45.66	45.66	39.62	7.59	17.30	13.77	15.49	11.42	11.42
Movement LOS	D	C	C	D	D	D	A	B	B	B	B	B
d_A, Approach Delay [s/veh]	39.64			42.40			16.95			12.69		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	21.07											
Intersection LOS	C											
Intersection V/C	0.544											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersection	1.979	2.560	3.259	2.872
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	513	513	757	507
d_b, Bicycle Delay [s]	33.24	33.50	23.40	33.69
I_b,int, Bicycle LOS Score for Intersection	1.731	2.419	2.352	2.461
Bicycle LOS	A	B	B	B

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	141.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.168

**Intersection Setup**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3775	20	359	970	68	1893
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	16.10	4.90	3.80	9.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3775	20	359	970	68	1893
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	963	5	92	247	17	483
Total Analysis Volume [veh/h]	3852	20	366	990	69	1932
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	90	140	50	140	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	5.8	1.5	5.8	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	156	156	156	156	156	156
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	7.80	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	5.80	2.00	0.00
g_i, Effective Green Time [s]	90	90	38	129	15	57
g / C, Green / Cycle	0.58	0.58	0.24	0.83	0.10	0.36
(v / s)_i Volume / Saturation Flow Rate	0.76	0.01	0.11	0.20	0.02	0.46
s, saturation flow rate [veh/h]	5077	1399	3378	5020	3264	4237
c, Capacity [veh/h]	2926	806	815	4159	314	1538
d1, Uniform Delay [s]	33.09	14.22	50.42	2.86	65.19	49.75
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	143.07	0.01	0.14	0.04	0.13	115.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.32	0.02	0.45	0.24	0.22	1.26
d, Delay for Lane Group [s/veh]	176.16	14.24	50.56	2.90	65.32	165.65
Lane Group LOS	F	B	D	A	E	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	71.77	0.29	5.95	1.42	1.28	36.23
50th-Percentile Queue Length [ft/ln]	1794.15	7.36	148.67	35.52	31.93	905.79
95th-Percentile Queue Length [veh/ln]	104.62	0.53	9.95	2.56	2.30	53.13
95th-Percentile Queue Length [ft/ln]	2615.50	13.24	248.65	63.94	57.48	1328.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	176.16	14.24	50.56	2.90	65.32	165.65
Movement LOS	F	B	D	A	E	F
d_A, Approach Delay [s/veh]	175.32		15.76		162.19	
Approach LOS	F		B		F	
d_I, Intersection Delay [s/veh]	141.75					
Intersection LOS	F					
Intersection V/C	1.168					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.31	0.00	69.31
I_p,int, Pedestrian LOS Score for Intersection	3.880	0.000	3.092
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	538	564	192
d_b, Bicycle Delay [s]	41.70	40.27	63.77
I_b,int, Bicycle LOS Score for Intersection	3.689	2.305	1.670
Bicycle LOS	D	B	A

**Sequence**

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	238.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.367

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	204	95	1142	159	332	146	76	2280	407	559	862	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	70	0	0	45	0	0	1
Total Hourly Volume [veh/h]	204	95	1142	159	332	76	76	2280	362	559	862	33
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	24	294	41	86	20	20	588	93	144	222	9
Total Analysis Volume [veh/h]	210	98	1177	164	342	78	78	2351	373	576	889	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			11			11			0	
v_di, Inbound Pedestrian Volume crossing in		0			11			11			0	
v_co, Outbound Pedestrian Volume crossing		8			0			8			0	
v_ci, Inbound Pedestrian Volume crossing mi		8			0			8			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			3			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.0	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	0	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	2.5	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	4.50	4.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	2.50	2.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	15	13	40	9	9	9	67	40	40	67	58	58
g / C, Green / Cycle	0.14	0.13	0.38	0.09	0.09	0.09	0.64	0.38	0.38	0.64	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.12	0.07	0.28	0.09	0.21	0.05	0.08	0.76	0.42	0.41	0.18	0.02
s, saturation flow rate [veh/h]	1749	1479	4141	1748	1606	1446	941	3084	889	1420	4959	1615
c, Capacity [veh/h]	245	190	1584	150	141	127	610	1177	339	929	2729	889
d1, Uniform Delay [s]	44.08	42.67	27.82	47.95	47.86	45.91	7.83	32.43	32.43	24.03	12.92	10.83
k, delay calibration	0.13	0.11	0.16	0.35	0.48	0.11	0.11	0.19	0.50	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.23	2.16	1.07	89.04	664.29	4.79	0.09	449.88	78.35	0.68	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.52	0.74	1.09	2.43	0.62	0.13	2.00	1.10	0.62	0.33	0.04
d, Delay for Lane Group [s/veh]	54.31	44.82	28.89	137.00	712.15	50.70	7.92	482.31	110.78	24.71	12.99	10.85
Lane Group LOS	D	D	C	F	F	D	A	F	F	C	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	5.88	1.21	8.15	7.67	14.84	2.15	0.32	58.62	15.67	2.76	3.70	0.36
50th-Percentile Queue Length [ft/ln]	146.89	30.32	203.87	191.86	370.88	53.63	8.08	1465.52	391.69	68.88	92.51	8.96
95th-Percentile Queue Length [veh/ln]	9.85	2.18	12.84	12.61	25.39	3.86	0.58	96.08	23.55	4.96	6.66	0.65
95th-Percentile Queue Length [ft/ln]	246.28	54.57	320.95	315.28	634.85	96.53	14.54	2402.07	588.78	123.98	166.52	16.14

**Movement, Approach, & Intersection Results**

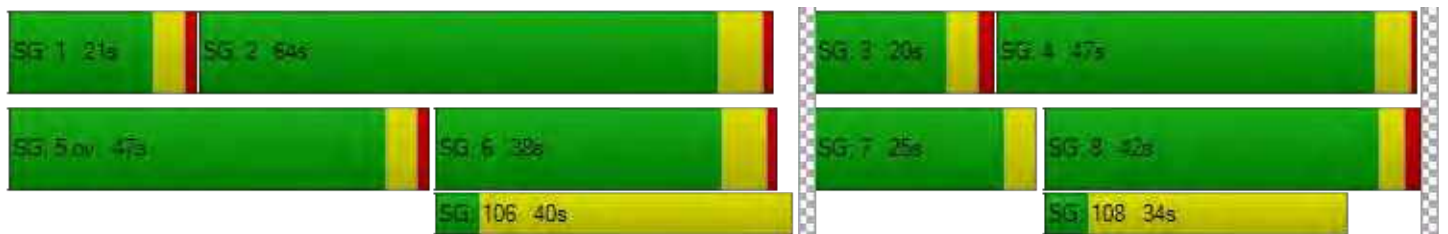
d_M, Delay for Movement [s/veh]	54.31	44.82	28.89	137.00	712.15	50.70	7.92	482.31	110.78	24.71	12.99	10.85
Movement LOS	D	D	C	F	F	D	A	F	F	C	B	B
d_A, Approach Delay [s/veh]	33.53			462.29			419.65			17.44		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	238.90											
Intersection LOS	F											
Intersection V/C	1.367											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.77	0.00	43.77	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.478	0.000	3.253	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	813	716	611	1107
d_b, Bicycle Delay [s]	18.46	21.63	25.27	10.44
I_b,int, Bicycle LOS Score for Intersection	2.785	2.099	3.125	2.385
Bicycle LOS	C	B	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	447.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.673

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵			↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	44	1292	23	284	1103	54	123	9	35	75	16	334
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.50	33.30	7.70	3.50	0.00	0.60	26.70	5.10	0.70	5.90	1.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	1292	23	284	1103	54	123	9	35	75	16	334
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	367	7	81	313	15	35	3	10	21	5	95
Total Analysis Volume [veh/h]	50	1468	26	323	1253	61	140	10	40	85	18	380
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			86			11			85	
v_di, Inbound Pedestrian Volume crossing in		11			85			12			86	
v_co, Outbound Pedestrian Volume crossing		13			14			14			13	
v_ci, Inbound Pedestrian Volume crossing mi		13			14			14			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			18			7			15	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	8	67	66	7	66	67	66	66	66	66	66	66
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	70	63	63	70	63	63	63	63	63	63
g / C, Green / Cycle	0.50	0.45	0.45	0.50	0.45	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.10	0.91	0.91	0.45	0.80	0.81	0.14	0.09	0.06	0.61
s, saturation flow rate [veh/h]	521	826	820	711	826	807	997	573	1351	656
c, Capacity [veh/h]	149	373	370	133	371	362	51	256	549	295
d1, Uniform Delay [s]	32.87	38.42	38.42	43.11	38.57	38.57	70.00	23.41	28.81	38.58
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.04	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.98	462.89	465.96	665.96	360.85	373.03	786.77	0.14	0.13	178.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.34	2.01	2.01	2.43	1.78	1.80	2.72	0.20	0.15	1.35
d, Delay for Lane Group [s/veh]	38.86	501.31	504.38	709.07	399.41	411.60	856.77	23.55	28.94	217.20
Lane Group LOS	D	F	F	F	F	F	F	C	C	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.08	60.18	60.06	13.50	49.71	49.76	13.10	1.04	1.79	24.65
50th-Percentile Queue Length [ft/ln]	26.88	1504.56	1501.39	337.50	1242.63	1244.08	327.57	26.00	44.65	616.15
95th-Percentile Queue Length [veh/ln]	1.94	99.99	99.85	24.30	81.60	81.98	23.59	1.87	3.21	39.24
95th-Percentile Queue Length [ft/ln]	48.38	2499.87	2496.33	607.49	2040.12	2049.46	589.63	46.80	80.37	980.88

**Movement, Approach, & Intersection Results**

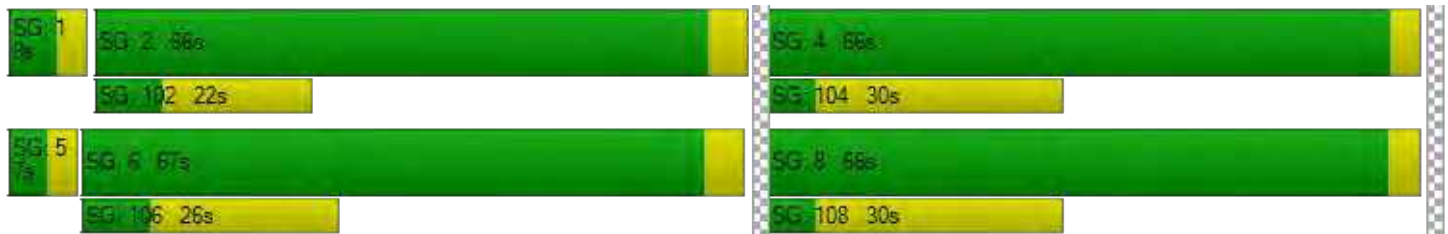
d_M, Delay for Movement [s/veh]	38.86	502.82	504.38	709.07	405.18	411.60	856.77	23.55	23.55	28.94	217.20	217.20
Movement LOS	D	F	F	F	F	F	F	C	C	C	F	F
d_A, Approach Delay [s/veh]	487.82			465.38			637.50			184.07		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	447.60											
Intersection LOS	F											
Intersection V/C	1.673											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.29	61.29	59.43	59.43
I_p,int, Pedestrian LOS Score for Intersection	3.278	3.320	2.081	2.678
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	886	897	900
d_b, Bicycle Delay [s]	21.19	21.93	21.36	21.33
I_b,int, Bicycle LOS Score for Intersection	2.833	2.910	1.873	2.357
Bicycle LOS	C	C	A	B

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	212.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.485

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↵		↵		↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	269	933	1447	52	163	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	3.30	2.80	0.00	0.00	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	269	933	1447	52	163	114
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	251	389	14	44	31
Total Analysis Volume [veh/h]	289	1003	1556	56	175	123
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing in	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	24	106	90	90	24	24
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	21	99	75	75	24	24
g / C, Green / Cycle	0.16	0.76	0.58	0.58	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.23	0.64	0.97	0.98	0.17	0.14
s, saturation flow rate [veh/h]	1270	1576	831	819	1026	899
c, Capacity [veh/h]	206	1199	479	472	190	167
d1, Uniform Delay [s]	54.41	10.23	27.54	27.54	51.92	49.71
k, delay calibration	0.50	0.50	0.50	0.50	0.26	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	209.25	7.02	316.93	327.98	30.53	7.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.41	0.84	1.68	1.71	0.92	0.74
d, Delay for Lane Group [s/veh]	263.65	17.25	344.47	355.52	82.45	56.85
Lane Group LOS	F	B	F	F	F	E
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	18.55	8.50	55.64	56.29	7.20	4.09
50th-Percentile Queue Length [ft/ln]	463.63	212.42	1391.03	1407.15	180.09	102.31
95th-Percentile Queue Length [veh/ln]	29.43	13.28	91.23	92.60	11.61	7.37
95th-Percentile Queue Length [ft/ln]	735.67	331.93	2280.76	2315.12	290.13	184.16

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	263.65	17.25	349.80	355.52	82.45	56.85
Movement LOS	F	B	F	F	F	E
d_A, Approach Delay [s/veh]	72.36		350.00		71.88	
Approach LOS	E		F		E	
d_I, Intersection Delay [s/veh]	212.09					
Intersection LOS	F					
Intersection V/C	1.485					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.091	3.057	2.167
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.00	7.44	45.70
I_b,int, Bicycle LOS Score for Intersection	2.626	2.890	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	279.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.716

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1000	524	57	1184	274	237
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	6.50	2.80	2.70	1.80	6.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1000	524	57	1184	274	237
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	269	141	15	318	74	64
Total Analysis Volume [veh/h]	1075	563	61	1273	295	255
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	16.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	84	84	13	100	23	23
g / C, Green / Cycle	0.65	0.65	0.10	0.77	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.83	1.04	0.09	0.99	0.46	0.46
s, saturation flow rate [veh/h]	1293	540	643	1286	648	555
c, Capacity [veh/h]	838	350	63	989	114	97
d1, Uniform Delay [s]	22.83	21.66	58.46	15.00	53.56	53.56
k, delay calibration	0.50	0.50	0.10	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	136.04	286.31	43.45	136.99	742.76	757.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.28	1.61	0.97	1.29	2.60	2.62
d, Delay for Lane Group [s/veh]	158.87	307.97	101.91	151.99	796.32	810.64
Lane Group LOS	F	F	F	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	27.00	36.70	2.73	29.51	27.16	23.66
50th-Percentile Queue Length [ft/ln]	674.98	917.49	68.17	737.80	678.96	591.38
95th-Percentile Queue Length [veh/ln]	42.34	61.75	4.91	46.41	45.61	40.28
95th-Percentile Queue Length [ft/ln]	1058.46	1543.73	122.71	1160.34	1140.29	1006.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	158.87	307.97	101.91	151.99	797.17	810.64
Movement LOS	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	210.12		149.70		802.96	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	279.81					
Intersection LOS	F					
Intersection V/C	1.716					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.339
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.14	3.46	44.22
I_b,int, Bicycle LOS Score for Intersection	2.911	2.660	2.467
Bicycle LOS	C	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	210.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.477

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	268	1389	355	78	1354	26	27	201	637	369	285	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	268	1389	355	78	1354	26	27	201	462	369	285	11
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	382	98	21	372	7	7	55	127	101	78	3
Total Analysis Volume [veh/h]	295	1526	390	86	1488	29	30	221	508	405	313	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	56	56	8	51	51	35	35	35	16	16	16
g / C, Green / Cycle	0.10	0.43	0.43	0.06	0.39	0.39	0.27	0.27	0.27	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.23	0.52	0.54	0.09	0.54	0.54	0.02	0.23	0.33	0.12	0.24	0.01
s, saturation flow rate [veh/h]	1273	2481	1171	952	1853	961	1810	965	1547	3409	1303	1416
c, Capacity [veh/h]	127	1072	506	59	730	378	485	258	414	420	160	174
d1, Uniform Delay [s]	58.50	36.91	36.91	61.00	39.41	39.41	35.44	45.20	46.94	56.72	57.00	50.36
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.04	0.25	0.50	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	617.13	100.13	123.25	223.20	174.23	183.34	0.02	16.30	121.54	6.70	450.13	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.32	1.20	1.24	1.47	1.37	1.37	0.06	0.86	1.23	0.97	1.95	0.07
d, Delay for Lane Group [s/veh]	675.63	137.03	160.15	284.20	213.63	222.75	35.46	61.50	168.48	63.42	507.13	50.42
Lane Group LOS	F	F	F	F	F	F	D	E	F	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	25.94	31.15	32.66	5.58	29.25	31.29	0.72	7.91	27.11	7.00	25.32	0.35
50th-Percentile Queue Length [ft/ln]	648.43	778.85	816.39	139.60	731.19	782.36	18.01	197.82	677.82	175.11	632.93	8.77
95th-Percentile Queue Length [veh/ln]	41.90	45.62	48.36	10.05	45.68	48.62	1.30	12.53	39.97	11.34	40.86	0.63
95th-Percentile Queue Length [ft/ln]	1047.48	1140.39	1209.05	251.29	1141.95	1215.46	32.41	313.16	999.33	283.62	1021.50	15.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	675.63	140.62	160.15	284.20	216.63	222.75	35.46	61.50	168.48	63.42	507.13	50.42
Movement LOS	F	F	F	F	F	F	D	E	F	E	F	D
d_A, Approach Delay [s/veh]	215.45			220.37			132.07			253.46		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	210.23											
Intersection LOS	F											
Intersection V/C	1.477											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.502	2.986	2.781	2.775
Crosswalk LOS	D	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.31	21.11	38.54	50.14
I_b,int, Bicycle LOS Score for Intersection	2.776	2.441	3.101	2.838
Bicycle LOS	C	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	223.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.412

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩ ↑		↑↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	40	1319	809	294	350	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	40	1319	809	71	350	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	340	209	18	90	0
Total Analysis Volume [veh/h]	41	1360	834	73	361	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	3	42	36	36	36	36
g / C, Green / Cycle	0.03	0.48	0.41	0.41	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.02	0.81	0.50	0.05	0.42	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	1574	850	1596
c, Capacity [veh/h]	54	805	690	645	348	654
d1, Uniform Delay [s]	42.28	22.85	25.92	16.02	25.92	0.00
k, delay calibration	0.04	0.43	0.19	0.15	0.48	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.54	314.68	99.28	0.11	56.73	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	1.69	1.21	0.11	1.04	0.00
d, Delay for Lane Group [s/veh]	49.82	337.53	125.20	16.13	82.66	0.00
Lane Group LOS	D	F	F	B	F	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.99	42.79	16.11	0.88	12.28	0.00
50th-Percentile Queue Length [ft/ln]	24.65	1069.64	402.65	22.04	307.08	0.00
95th-Percentile Queue Length [veh/ln]	1.77	70.48	25.45	1.59	18.46	0.00
95th-Percentile Queue Length [ft/ln]	44.37	1761.89	636.35	39.67	461.49	0.00



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	49.82	337.53	125.20	16.13	82.66	0.00
Movement LOS	D	F	F	B	F	A
d_A, Approach Delay [s/veh]	329.11		116.42		82.66	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	223.50					
Intersection LOS	F					
Intersection V/C	1.412					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	33.58
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.247
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	820	820	820
d_b, Bicycle Delay [s]	15.35	15.32	15.30
I_b,int, Bicycle LOS Score for Intersection	2.715	2.492	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	224.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.281

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	9	1052	4	29	541	18	143	33	39	21	10	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	2.10	0.00	0.00	2.60	27.60	4.30	0.00	17.90	0.00	0.00	6.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	0
Total Hourly Volume [veh/h]	9	1052	4	29	541	18	143	33	21	21	10	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	292	1	8	150	5	40	9	6	6	3	13
Total Analysis Volume [veh/h]	10	1169	4	32	601	20	159	37	23	23	11	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing in	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	154	154	154	154	154	154	154	154	154	154
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	1	100	100	4	102	13	13	13	19	19
g / C, Green / Cycle	0.01	0.65	0.65	0.02	0.66	0.08	0.08	0.08	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.01	0.92	0.92	0.02	1.05	0.05	0.05	0.05	0.01	0.11
s, saturation flow rate [veh/h]	1095	688	589	1810	593	1748	1842	444	1810	558
c, Capacity [veh/h]	10	447	383	43	394	145	153	37	230	71
d1, Uniform Delay [s]	76.23	26.99	26.99	74.72	25.90	68.47	68.44	67.96	59.44	66.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.14
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	119.99	198.97	201.23	22.85	271.58	5.00	4.68	15.87	0.19	33.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	1.41	1.41	0.75	1.58	0.66	0.66	0.62	0.10	0.89
d, Delay for Lane Group [s/veh]	196.22	225.96	228.21	97.57	297.48	73.46	73.13	83.83	59.63	99.35
Lane Group LOS	F	F	F	F	F	E	E	F	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.75	40.39	34.80	1.54	43.39	3.97	4.15	1.06	0.82	3.11
50th-Percentile Queue Length [ft/ln]	18.65	1009.74	870.07	38.58	1084.82	99.20	103.64	26.54	20.49	77.87
95th-Percentile Queue Length [veh/ln]	1.34	64.13	55.97	2.78	71.73	7.14	7.46	1.91	1.47	5.61
95th-Percentile Queue Length [ft/ln]	33.56	1603.34	1399.15	69.45	1793.29	178.55	186.55	47.76	36.87	140.16

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	196.22	226.99	228.21	97.57	297.48	297.48	73.33	73.13	83.83	59.63	99.35	99.35
Movement LOS	F	F	F	F	F	F	E	E	F	E	F	F
d_A, Approach Delay [s/veh]	226.74			287.68			74.40			88.73		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	224.20											
Intersection LOS	F											
Intersection V/C	1.281											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.31	66.31	66.31	66.31
I_p,int, Pedestrian LOS Score for Intersection	2.532	2.754	2.205	2.009
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	260	260	390	390
d_b, Bicycle Delay [s]	58.30	58.48	49.86	49.86
I_b,int, Bicycle LOS Score for Intersection	2.536	2.637	1.951	1.702
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			↑			↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue					
Base Volume Input [veh/h]	21	693	5	2	695	109	147	2	49	15	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.10	0.00	0.00	3.70	2.40	3.90	0.00	3.20	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	693	5	2	695	109	147	2	49	15	4	6
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	190	1	1	191	30	40	1	13	4	1	2
Total Analysis Volume [veh/h]	23	762	5	2	764	120	162	2	54	16	4	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		19			15			19			15	
v_di, Inbound Pedestrian Volume crossing in		19			15			19			15	
v_co, Outbound Pedestrian Volume crossing		10			8			8			11	
v_ci, Inbound Pedestrian Volume crossing mi		11			8			8			10	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		8			4			4			4	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	73	73	73	73	19	19
g / C, Green / Cycle	0.73	0.73	0.73	0.73	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.04	0.41	0.00	0.49	0.15	0.02
s, saturation flow rate [veh/h]	638	1851	712	1792	1413	1536
c, Capacity [veh/h]	354	1352	438	1309	327	345
d1, Uniform Delay [s]	16.13	6.19	11.83	7.16	38.60	33.49
k, delay calibration	0.50	0.50	0.50	0.50	0.18	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.35	1.73	0.02	2.81	3.82	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.06	0.57	0.00	0.68	0.67	0.08
d, Delay for Lane Group [s/veh]	16.48	7.92	11.85	9.96	42.42	33.59
Lane Group LOS	B	A	B	A	D	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.34	6.95	0.02	9.02	5.40	0.56
50th-Percentile Queue Length [ft/ln]	8.51	173.80	0.59	225.53	135.06	13.88
95th-Percentile Queue Length [veh/ln]	0.61	11.28	0.04	13.95	9.21	1.00
95th-Percentile Queue Length [ft/ln]	15.32	281.90	1.06	348.67	230.36	24.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.48	7.92	7.92	11.85	9.96	9.96	42.42	42.42	42.42	33.59	33.59	33.59
Movement LOS	B	A	A	B	A	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	8.17			9.97			42.42			33.59		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	13.24											
Intersection LOS	B											
Intersection V/C	0.696											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.57			39.57			39.57			39.57		
I_p,int, Pedestrian LOS Score for Intersection	2.408			2.766			1.930			1.737		
Crosswalk LOS	B			C			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1379			1379			458			458		
d_b, Bicycle Delay [s]	4.84			4.83			29.75			29.75		
I_b,int, Bicycle LOS Score for Intersection	2.863			3.022			1.919			1.604		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	14.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.560

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	656	119	54	703	10	44	123	5	84	53	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	2.70	0.00	3.30	2.00	10.10	0.00	2.30	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	656	119	54	703	10	44	123	5	84	53	58
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	171	31	14	183	3	11	32	1	22	14	15
Total Analysis Volume [veh/h]	3	683	124	56	732	10	46	128	5	88	55	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing in	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	74	74	74	74	18	18	18	18
g / C, Green / Cycle	0.74	0.74	0.74	0.74	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.08	0.40	0.04	0.07	0.07	0.07
s, saturation flow rate [veh/h]	729	1796	686	1854	1258	1855	1272	1682
c, Capacity [veh/h]	470	1324	421	1367	195	335	193	304
d1, Uniform Delay [s]	10.32	6.26	13.17	5.75	42.21	36.16	43.99	36.03
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	2.10	0.66	1.55	0.61	0.76	1.68	0.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.61	0.13	0.54	0.24	0.40	0.46	0.38
d, Delay for Lane Group [s/veh]	10.34	8.36	13.83	7.30	42.82	36.93	45.68	36.81
Lane Group LOS	B	A	B	A	D	D	D	D
Critical Lane Group	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.03	7.58	0.75	6.34	1.10	2.95	2.21	2.55
50th-Percentile Queue Length [ft/ln]	0.83	189.54	18.71	158.41	27.54	73.74	55.36	63.64
95th-Percentile Queue Length [veh/ln]	0.06	12.10	1.35	10.46	1.98	5.31	3.99	4.58
95th-Percentile Queue Length [ft/ln]	1.49	302.44	33.68	261.61	49.58	132.73	99.64	114.56

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	10.34	8.36	8.36	13.83	7.30	7.30	42.82	36.93	36.93	45.68	36.81	36.81
Movement LOS	B	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	8.36			7.75			38.44			40.65		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	14.12											
Intersection LOS	B											
Intersection V/C	0.560											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.60			39.60			39.60			39.60		
I_p,int, Pedestrian LOS Score for Intersection	2.513			2.524			2.016			2.163		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.87			4.86			29.79			29.82		
I_b,int, Bicycle LOS Score for Intersection	2.896			2.876			1.855			1.895		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-







**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	42.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	30	281	271	372	129	301	136	478	184	277	684	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	1.10	0.00	1.70	0.00	2.40	1.10	0.50	2.30	6.40	0.00	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	120	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	30	281	151	372	129	0	136	478	184	277	684	22
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	74	40	98	34	0	36	126	48	73	180	6
Total Analysis Volume [veh/h]	32	296	159	392	136	0	143	503	194	292	720	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			6			12			6	
v_di, Inbound Pedestrian Volume crossing in		12			6			12			6	
v_co, Outbound Pedestrian Volume crossing		5			5			4			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			4			5			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		50			19			4			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	20	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	20	20	20	20	20	20	18	18	18	18	25	25	25
g / C, Green / Cycle	0.20	0.20	0.20	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.11	0.15	0.15	0.00	0.08	0.13	0.14	0.13	0.17	0.22	0.20
s, saturation flow rate [veh/h]	1778	1883	1452	1785	1854	1584	1794	1892	1892	1541	1718	1900	1699
c, Capacity [veh/h]	349	370	285	345	359	306	322	340	340	277	430	475	425
d1, Uniform Delay [s]	33.50	39.03	36.49	38.76	38.76	0.00	37.25	39.39	39.68	39.06	34.52	36.56	35.61
k, delay calibration	0.11	0.28	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.13	0.24	0.19
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	9.82	1.71	3.29	3.16	0.00	0.96	2.90	3.47	3.22	2.30	10.20	5.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.09	0.80	0.56	0.75	0.75	0.00	0.44	0.72	0.76	0.70	0.68	0.87	0.78
d, Delay for Lane Group [s/veh]	33.61	48.85	38.20	42.05	41.92	0.00	38.21	42.29	43.15	42.27	36.82	46.76	41.14
Lane Group LOS	C	D	D	D	D	A	D	D	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.66	7.96	3.63	6.41	6.65	0.00	3.24	5.99	6.38	4.73	6.71	10.95	8.20
50th-Percentile Queue Length [ft/ln]	16.40	199.03	90.67	160.32	166.18	0.00	80.96	149.8	159.4	118.3	167.80	273.64	205.04
95th-Percentile Queue Length [veh/ln]	1.18	12.59	6.53	10.57	10.88	0.00	5.83	10.01	10.52	8.30	10.96	16.37	12.90
95th-Percentile Queue Length [ft/ln]	29.52	314.71	163.21	264.14	271.88	0.00	145.7	250.2	262.9	207.4	274.02	409.29	322.45

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.61	48.85	38.20	42.00	41.92	0.00	38.21	42.73	42.27	36.82	44.35	41.14
Movement LOS	C	D	D	D	D	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	44.37			41.98			41.86			42.15		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.41											
Intersection LOS	D											
Intersection V/C	0.711											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.54	39.54	39.54	39.54
I_p,int, Pedestrian LOS Score for Intersection	2.528	4.265	4.405	2.806
Crosswalk LOS	B	E	E	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	565	813	537	675
d_b, Bicycle Delay [s]	26.85	18.09	27.25	22.47
I_b,int, Bicycle LOS Score for Intersection	2.561	4.081	3.078	2.413
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road/101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.988

**Intersection Setup**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	1912	0	0	1595	570	891
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1912	0	0	1595	570	891
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	483	0	0	403	144	225
Total Analysis Volume [veh/h]	1931	0	0	1611	576	900
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	0	5	0
Pedestrian Clearance [s]	12	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.55	0.46	0.17	0.35
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2071	2095	1182	906
d1, Uniform Delay [s]	14.79	12.16	20.33	25.85
k, delay calibration	0.50	0.50	0.04	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.19	2.78	0.12	9.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.77	0.49	0.99
d, Delay for Lane Group [s/veh]	23.98	14.94	20.44	35.76
Lane Group LOS	C	B	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.91	9.91	4.03	9.22
50th-Percentile Queue Length [ft/ln]	397.83	247.74	100.73	230.42
95th-Percentile Queue Length [veh/ln]	22.46	15.07	7.25	14.20
95th-Percentile Queue Length [ft/ln]	561.38	376.81	181.31	354.89

**Movement, Approach, & Intersection Results**

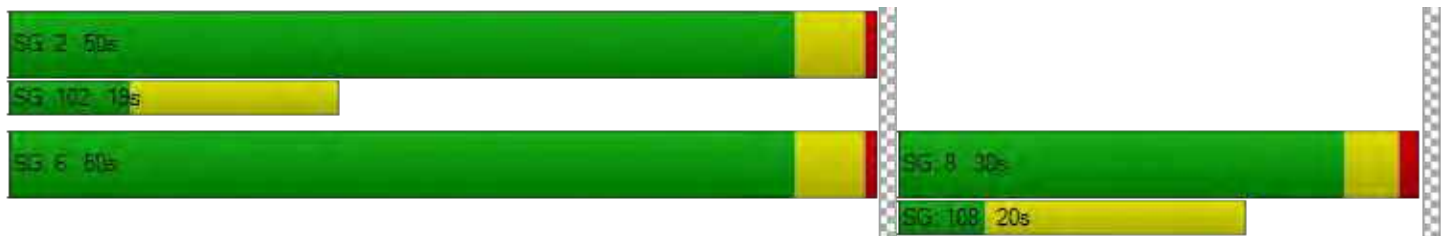
d_M, Delay for Movement [s/veh]	23.98	0.00	0.00	14.94	20.44	35.76
Movement LOS	C			B	C	D
d_A, Approach Delay [s/veh]	23.98		14.94		29.78	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	22.78					
Intersection LOS	C					
Intersection V/C	0.988					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.209	2.484
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.46	7.49	18.34
I_b,int, Bicycle LOS Score for Intersection	3.153	2.889	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	175.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.599

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	22	402	18	76	797	36	21	124	23	7	16	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	402	18	76	797	36	21	124	23	7	16	59
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	109	5	21	216	10	6	35	7	2	4	16
Total Analysis Volume [veh/h]	24	434	19	82	863	39	24	140	26	8	17	64
Pedestrian Volume [ped/h]	3			4			2			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	600	984	506	500
Degree of Utilization, x	0.79	1.60	0.38	0.18

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	7.74	53.05	1.73	0.64
95th-Percentile Queue Length [ft]	193.42	1326.26	43.19	16.07
Approach Delay [s/veh]	28.24	293.37	14.33	11.77
Approach LOS	D	F	B	B
Intersection Delay [s/veh]	175.81			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	77.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.094

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	196	40	1730	12	31	5	9	763	232	2687	845	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	196	40	1730	12	31	5	9	763	232	2687	845	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	10	451	3	8	1	2	199	60	700	220	4
Total Analysis Volume [veh/h]	204	42	1802	13	32	5	9	795	242	2799	880	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			4			4			0	
v_di, Inbound Pedestrian Volume crossing in		0			4			4			0	
v_co, Outbound Pedestrian Volume crossing		0			13			0			13	
v_ci, Inbound Pedestrian Volume crossing mi		0			13			0			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			13			8			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	6	4	6	4	1	4	1	2	8
Auxiliary Signal Groups			2,3									
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	10	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	10	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	58	11	11	25	32	25	32	59	32	59	58	0
Vehicle Extension [s]	4.5	2.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0	4.5	0.0
Walk [s]	5	0	0	10	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	10	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.1	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	26	116	10	10	38	38	38	76	76
g / C, Green / Cycle	0.16	0.73	0.06	0.06	0.24	0.24	0.24	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.13	0.43	0.02	0.01	0.22	0.22	0.16	0.54	0.53
s, saturation flow rate [veh/h]	1824	4190	1707	1588	1892	1724	1556	5150	1679
c, Capacity [veh/h]	299	2942	137	97	453	413	373	2449	798
d1, Uniform Delay [s]	64.63	12.45	71.59	71.56	59.48	59.48	54.58	41.96	41.96
k, delay calibration	0.43	0.50	0.04	0.04	0.15	0.15	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.15	0.96	0.27	0.45	11.63	12.51	0.71	69.72	70.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	0.61	0.20	0.23	0.93	0.93	0.65	1.14	1.12
d, Delay for Lane Group [s/veh]	83.79	13.41	71.86	72.01	71.11	71.99	55.29	111.68	112.60
Lane Group LOS	F	B	E	E	E	E	E	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.34	11.17	1.10	0.89	18.19	16.67	8.90	47.57	46.72
50th-Percentile Queue Length [ft/ln]	283.59	279.28	27.52	22.30	454.68	416.74	222.49	1189.18	1167.92
95th-Percentile Queue Length [veh/ln]	16.87	16.65	1.98	1.61	25.18	23.37	13.79	65.13	63.24
95th-Percentile Queue Length [ft/ln]	421.67	416.31	49.54	40.15	629.53	584.13	344.81	1628.27	1581.09



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	83.79	83.79	13.41	71.86	71.94	72.01	71.11	71.53	55.29	111.68	112.60	112.60
Movement LOS	F	F	B	E	E	E	E	E	E	F	F	F
d_A, Approach Delay [s/veh]	21.86			71.93			67.77			111.90		
Approach LOS	C			E			E			F		
d_I, Intersection Delay [s/veh]	77.89											
Intersection LOS	E											
Intersection V/C	1.094											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.680			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			693			654		
d_b, Bicycle Delay [s]	73.73			54.89			34.33			36.27		
I_b,int, Bicycle LOS Score for Intersection	4.939			1.601			2.423			7.655		
Bicycle LOS	E			A			B			F		

**Sequence**

Ring 1	-	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	155.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.058

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1036	199	0	1150	863	0	0	0	0	824	352
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	4.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1036	199	0	1150	863	0	0	0	0	824	352
Peak Hour Factor	1.0000	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	278	50	0	309	232	0	0	0	0	206	98
Total Analysis Volume [veh/h]	0	1114	199	0	1237	928	0	0	0	0	824	391
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			10			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	0	30	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	21	0	0	0	0	0	59	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		Yes			Yes						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	43	43	43		29	29
g / C, Green / Cycle	0.54	0.54	0.54		0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.22	0.25	1.34		0.23	0.31
s, saturation flow rate [veh/h]	5094	5012	693		3514	1271
c, Capacity [veh/h]	2744	2700	374		1269	459
d1, Uniform Delay [s]	10.87	11.27	17.85		21.28	23.52
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.45	0.56	676.00		0.57	4.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.41	0.46	2.48		0.65	0.85
d, Delay for Lane Group [s/veh]	11.32	11.84	693.84		21.84	28.08
Lane Group LOS	B	B	F		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	3.62	4.17	75.92		6.17	3.47
50th-Percentile Queue Length [ft/ln]	90.41	104.37	1898.06		154.24	86.87
95th-Percentile Queue Length [veh/ln]	6.51	7.51	129.87		10.24	6.25
95th-Percentile Queue Length [ft/ln]	162.73	187.87	3246.80		256.08	156.36

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	11.32	0.00	0.00	11.84	693.84	0.00	0.00	0.00	0.00	21.84	28.08
Movement LOS		B			B	F					C	C
d_A, Approach Delay [s/veh]	11.32		304.17				0.00		23.85			
Approach LOS	B		F				A		C			
d_I, Intersection Delay [s/veh]	155.79											
Intersection LOS	F											
Intersection V/C	2.058											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.971	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	426	426	0	1377
d_b, Bicycle Delay [s]	24.77	24.88	39.95	3.88
I_b,int, Bicycle LOS Score for Intersection	2.172	2.750	4.132	1.560
Bicycle LOS	B	C	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	231.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.237

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)			Eastbound			Northwestbound		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1382	470	0	1637	849	0	0	0	377	0	859
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1382	470	0	1637	849	0	0	0	377	0	859
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	353	120	0	418	212	0	0	0	94	0	239
Total Analysis Volume [veh/h]	0	1410	480	0	1670	849	0	0	0	377	0	954
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	20	0	0	20	0	0	0	0	60	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	24	24	24		48	48
g / C, Green / Cycle	0.30	0.30	0.30		0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.46	0.30	0.55		0.11	0.57
s, saturation flow rate [veh/h]	3051	1579	3051		3514	1685
c, Capacity [veh/h]	911	472	911		2113	1013
d1, Uniform Delay [s]	28.02	27.75	28.02		7.12	14.64
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	251.79	46.06	379.02		0.04	5.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	1.55	1.02	1.83		0.18	0.94
d, Delay for Lane Group [s/veh]	279.81	73.82	407.04		7.16	19.82
Lane Group LOS	F	F	F		A	B
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	26.74	14.49	37.48		1.27	7.29
50th-Percentile Queue Length [ft/ln]	668.55	362.19	936.92		31.79	182.23
95th-Percentile Queue Length [veh/ln]	43.29	20.96	61.29		2.29	11.72
95th-Percentile Queue Length [ft/ln]	1082.24	524.05	1532.35		57.22	292.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	279.81	73.82	0.00	407.04	0.00	0.00	0.00	0.00	7.16	0.00	19.82
Movement LOS		F	F		F					A		B
d_A, Approach Delay [s/veh]	227.49		407.04		0.00		16.24					
Approach LOS	F		F		A		B					
d_I, Intersection Delay [s/veh]	231.31											
Intersection LOS	F											
Intersection V/C	1.237											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	31.48	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.151	1.419	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400	0	1401
d_b, Bicycle Delay [s]	25.60	25.63	39.97	3.59
I_b,int, Bicycle LOS Score for Intersection	2.599	2.478	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	66.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.102

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←↔→		↑↑↑↔		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	782	555	2535	280	219	1966
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	782	555	2535	280	219	1966
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	210	149	681	75	59	528
Total Analysis Volume [veh/h]	841	597	2726	301	235	2114
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	10	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	64	64
g / C, Green / Cycle	0.21	0.21	0.53	0.53	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.25	0.39	0.54	0.19	0.68	0.42
s, saturation flow rate [veh/h]	3361	1543	5049	1579	347	4979
c, Capacity [veh/h]	719	330	2700	844	298	3387
d1, Uniform Delay [s]	36.75	36.55	21.75	12.47	28.34	8.31
k, delay calibration	0.08	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	78.88	375.54	7.55	0.09	18.75	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.17	1.81	1.01	0.36	0.79	0.62
d, Delay for Lane Group [s/veh]	115.63	412.08	29.30	12.56	47.10	8.38
Lane Group LOS	F	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	15.90	41.76	19.68	3.43	3.06	6.66
50th-Percentile Queue Length [ft/ln]	397.38	1044.07	492.09	85.84	76.56	166.52
95th-Percentile Queue Length [veh/ln]	24.29	65.95	27.17	6.18	5.51	10.89
95th-Percentile Queue Length [ft/ln]	607.28	1648.86	679.17	154.51	137.82	272.34

**Movement, Approach, & Intersection Results**

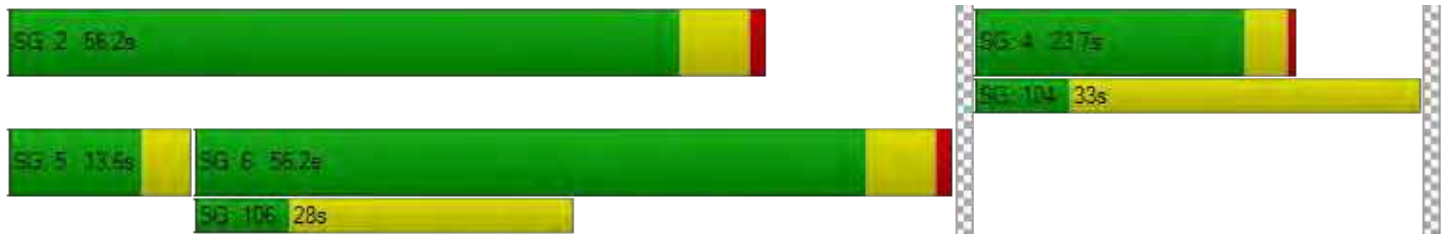
d_M, Delay for Movement [s/veh]	115.63	412.08	29.30	12.56	47.10	8.38
Movement LOS	F	F	F	B	D	A
d_A, Approach Delay [s/veh]	238.70		27.64		12.25	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	66.88					
Intersection LOS	E					
Intersection V/C	1.102					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.40	36.40	36.40
I_p,int, Pedestrian LOS Score for Intersection	2.961	3.429	3.385
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	428	1070	1070
d_b, Bicycle Delay [s]	29.01	10.12	10.12
I_b,int, Bicycle LOS Score for Intersection	1.560	3.224	2.852
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.970

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	1029	89	2657	93	69	2437
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1029	89	2657	93	69	2437
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	263	23	678	24	18	622
Total Analysis Volume [veh/h]	1050	91	2711	95	70	2487
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	25	25	50	50	5	59
g / C, Green / Cycle	0.26	0.26	0.53	0.53	0.05	0.62
(v / s)_i Volume / Saturation Flow Rate	0.30	0.06	0.54	0.06	0.04	0.50
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	914	426	2670	846	93	3096
d1, Uniform Delay [s]	34.88	27.21	22.38	11.24	44.36	13.52
k, delay calibration	0.06	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	68.75	0.09	9.44	0.02	4.57	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.15	0.21	1.02	0.11	0.75	0.80
d, Delay for Lane Group [s/veh]	103.63	27.30	31.82	11.26	48.93	13.71
Lane Group LOS	F	C	F	B	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.09	1.62	19.01	0.90	1.68	10.63
50th-Percentile Queue Length [ft/ln]	477.33	40.54	475.30	22.47	41.92	265.72
95th-Percentile Queue Length [veh/ln]	28.40	2.92	26.47	1.62	3.02	15.98
95th-Percentile Queue Length [ft/ln]	710.00	72.96	661.85	40.44	75.45	399.38

**Movement, Approach, & Intersection Results**

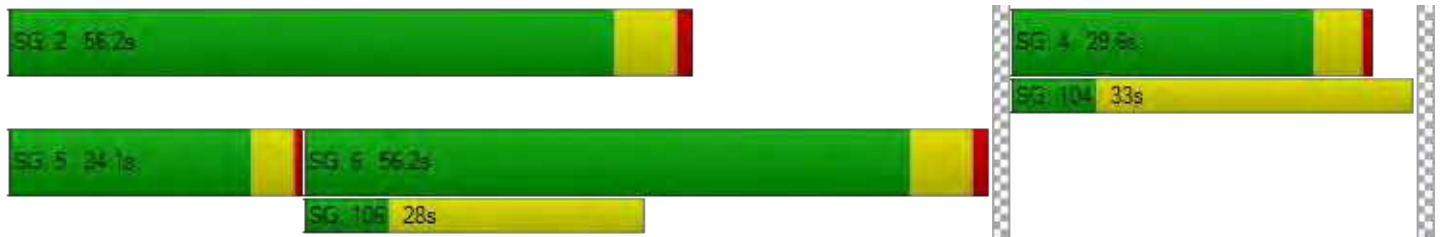
d_M, Delay for Movement [s/veh]	103.63	27.30	31.82	11.26	48.93	13.71
Movement LOS	F	C	F	B	D	B
d_A, Approach Delay [s/veh]	97.54		31.12		14.68	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	36.31					
Intersection LOS	D					
Intersection V/C	0.970					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.99	36.99	36.99
I_p,int, Pedestrian LOS Score for Intersection	2.398	3.887	3.716
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	1056	1056
d_b, Bicycle Delay [s]	25.65	10.55	10.55
I_b,int, Bicycle LOS Score for Intersection	1.560	3.103	2.966
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bafront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.941

**Intersection Setup**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑↑		⇐⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	581	164	2490	60	48	1306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.80	14.80	4.10	4.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	581	164	2490	60	48	1306
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	42	635	15	12	333
Total Analysis Volume [veh/h]	593	167	2541	61	49	1333
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	10	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	57	57
g / C, Green / Cycle	0.23	0.23	0.57	0.57	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.56	0.04	0.10	0.30
s, saturation flow rate [veh/h]	1438	1365	4507	1406	471	4470
c, Capacity [veh/h]	330	313	2588	807	342	2936
d1, Uniform Delay [s]	33.54	33.54	18.10	8.26	20.44	7.31
k, delay calibration	0.50	0.50	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	104.70	112.89	2.35	0.01	0.07	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.17	1.19	0.98	0.08	0.14	0.45
d, Delay for Lane Group [s/veh]	138.25	146.43	20.45	8.27	20.51	7.35
Lane Group LOS	F	F	C	A	C	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.35	16.23	14.93	0.48	0.14	3.44
50th-Percentile Queue Length [ft/ln]	408.81	405.70	373.36	11.88	3.46	86.09
95th-Percentile Queue Length [veh/ln]	24.96	24.97	21.27	0.86	0.25	6.20
95th-Percentile Queue Length [ft/ln]	624.01	624.28	531.80	21.39	6.23	154.96

**Movement, Approach, & Intersection Results**

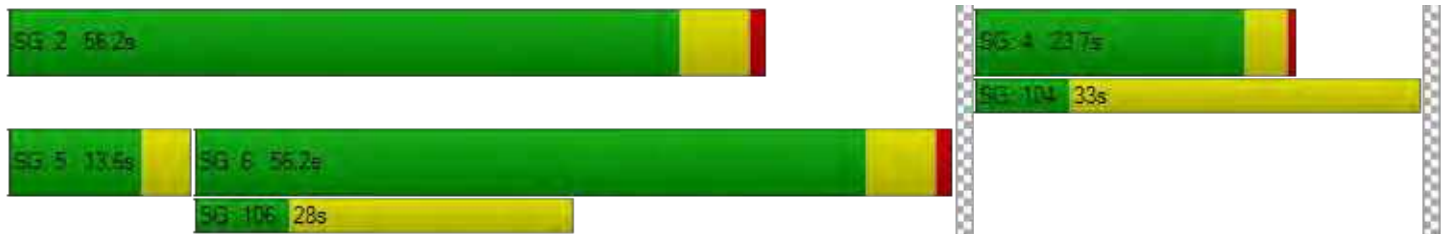
d_M, Delay for Movement [s/veh]	141.12	146.43	20.45	8.27	20.51	7.35
Movement LOS	F	F	C	A	C	A
d_A, Approach Delay [s/veh]	142.26		20.17		7.82	
Approach LOS	F		C		A	
d_I, Intersection Delay [s/veh]	36.13					
Intersection LOS	D					
Intersection V/C	0.941					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.21	33.21	33.21
I_p,int, Pedestrian LOS Score for Intersection	2.383	3.222	3.222
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	460	1149	1149
d_b, Bicycle Delay [s]	25.81	7.88	7.88
I_b,int, Bicycle LOS Score for Intersection	2.814	2.991	2.320
Bicycle LOS	C	C	B

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	181.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.656

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	397	386	167	285	101	336
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	397	386	167	285	101	336
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	111	48	82	29	97
Total Analysis Volume [veh/h]	456	444	192	328	116	386
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	900	520	542
Degree of Utilization, x	1.66	1.01	0.93

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	51.15	14.30	11.49
95th-Percentile Queue Length [ft]	1278.69	357.41	287.16
Approach Delay [s/veh]	320.51	68.72	48.50
Approach LOS	F	F	E
Intersection Delay [s/veh]	181.35		
Intersection LOS	F		

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**Intersection Level Of Service Report  
Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

**Intersection Setup**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	0	179	2541	24	49	1374
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	19.20	3.80	3.80	8.60	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	179	2541	24	49	1374
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	49	698	7	13	377
Total Analysis Volume [veh/h]	0	197	2792	26	54	1510
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	10	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	0.5	0.5	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	82	82	82	82	82
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	15	50	50	57	57
g / C, Green / Cycle	0.18	0.61	0.61	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.16	0.62	0.02	0.25	0.35
s, saturation flow rate [veh/h]	1233	4518	1410	214	4342
c, Capacity [veh/h]	222	2761	862	224	3035
d1, Uniform Delay [s]	32.75	15.91	6.31	20.33	5.68
k, delay calibration	0.13	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.61	8.03	0.01	0.20	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.89	1.01	0.03	0.24	0.50
d, Delay for Lane Group [s/veh]	46.36	23.94	6.31	20.53	5.73
Lane Group LOS	D	F	A	C	A
Critical Lane Group	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.53	16.08	0.16	0.23	3.05
50th-Percentile Queue Length [ft/ln]	113.26	402.00	3.96	5.83	76.29
95th-Percentile Queue Length [veh/ln]	8.02	22.86	0.28	0.42	5.49
95th-Percentile Queue Length [ft/ln]	200.53	571.56	7.12	10.49	137.32



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	46.36	23.94	6.31	20.53	5.73
Movement LOS		D	F	A	C	A
d_A, Approach Delay [s/veh]	46.36		23.78		6.24	
Approach LOS	D		C		A	
d_I, Intersection Delay [s/veh]	18.76					
Intersection LOS	B					
Intersection V/C	0.888					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	-6.2	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.30	30.60	30.60
I_p,int, Pedestrian LOS Score for Intersection	1.911	3.191	3.223
Crosswalk LOS	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	1224	1224
d_b, Bicycle Delay [s]	23.31	6.16	6.16
I_b,int, Bicycle LOS Score for Intersection	1.560	3.110	2.420
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	101.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.191

**Intersection Setup**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Base Volume Input [veh/h]	95	484	27	131	346	51	325	21	605	270	18	678
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	484	27	131	346	51	325	21	605	270	18	678
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	138	8	37	98	14	92	6	172	77	5	193
Total Analysis Volume [veh/h]	108	550	31	149	393	58	369	24	688	307	20	770
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing in	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing mi	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Overlap	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	3	0	4	0
Auxiliary Signal Groups									1,3			
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	5	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	30	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0	0.0	1.0	0.0
Split [s]	24	47	0	10	33	0	0	31	31	0	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	20	20	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No	No		No	
Maximum Recall	No	No		No	No			No	No		No	
Pedestrian Recall	No	No		No	No			No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	11	34	7	30	28	77	30	30
g / C, Green / Cycle	0.10	0.29	0.06	0.26	0.24	0.67	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.06	0.32	0.04	0.26	0.22	0.45	0.36	0.35
s, saturation flow rate [veh/h]	1767	1838	3431	1766	1772	1540	1505	1577
c, Capacity [veh/h]	171	540	216	459	434	1032	440	410
d1, Uniform Delay [s]	50.14	40.75	52.97	42.44	42.30	11.10	44.19	42.70
k, delay calibration	0.11	0.50	0.11	0.44	0.34	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.82	60.80	3.91	35.17	19.01	3.41	128.86	167.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.63	1.08	0.69	0.98	0.91	0.67	1.25	1.34
d, Delay for Lane Group [s/veh]	53.96	101.55	56.89	77.61	61.31	14.51	173.05	210.65
Lane Group LOS	D	F	E	E	E	B	F	F
Critical Lane Group	No	No	No	Yes	Yes	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.18	24.20	2.23	17.09	13.05	10.34	28.57	30.65
50th-Percentile Queue Length [ft/ln]	79.46	605.11	55.76	427.20	326.32	258.54	714.19	766.14
95th-Percentile Queue Length [veh/ln]	5.72	33.81	4.01	23.87	18.98	15.62	42.15	46.25
95th-Percentile Queue Length [ft/ln]	143.03	845.35	100.36	596.68	474.45	390.39	1053.87	1156.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	53.96	101.55	101.55	56.89	77.61	77.61	61.31	61.31	14.51	173.05	173.05	199.83
Movement LOS	D	F	F	E	E	E	E	E	B	F	F	F
d_A, Approach Delay [s/veh]	94.09			72.46			31.53			191.85		
Approach LOS	F			E			C			F		
d_I, Intersection Delay [s/veh]	101.77											
Intersection LOS	F											
Intersection V/C	1.191											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.17	47.17	47.17	47.17
I_p,int, Pedestrian LOS Score for Intersection	3.064	2.758	2.364	2.460
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	746	503	468	659
d_b, Bicycle Delay [s]	22.66	32.29	33.81	25.91
I_b,int, Bicycle LOS Score for Intersection	2.696	2.550	3.343	3.370
Bicycle LOS	B	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	141.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.368

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
Base Volume Input [veh/h]	349	49	39	344	150	3	60	9	238	0	490	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	349	49	39	344	150	3	60	9	238	0	490	79
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	12	10	86	38	1	15	2	60	0	123	20
Total Analysis Volume [veh/h]	349	49	39	344	150	3	60	9	238	0	490	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			8			7		
v_di, Inbound Pedestrian Volume crossing in	0			0			7			8		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	41	0	0	27	0	0	22	0	0	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	38	22	22	18	38	38
g / C, Green / Cycle	0.42	0.24	0.24	0.20	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.81	0.21	0.09	0.34	0.18	0.18
s, saturation flow rate [veh/h]	537	1609	1680	902	1628	1472
c, Capacity [veh/h]	299	391	408	182	728	622
d1, Uniform Delay [s]	36.05	32.89	28.45	36.00	18.20	18.45
k, delay calibration	0.50	0.11	0.11	0.47	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	226.22	6.54	0.57	330.50	1.69	2.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.46	0.88	0.38	1.69	0.41	0.44
d, Delay for Lane Group [s/veh]	262.27	39.43	29.02	366.50	19.89	20.68
Lane Group LOS	F	D	C	F	B	C
Critical Lane Group	Yes	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	25.37	7.75	2.77	20.61	4.48	4.24
50th-Percentile Queue Length [ft/ln]	634.29	193.68	69.30	515.15	112.12	105.91
95th-Percentile Queue Length [veh/ln]	41.44	12.31	4.99	34.17	7.96	7.61
95th-Percentile Queue Length [ft/ln]	1035.95	307.80	124.75	854.33	198.95	190.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	262.27	262.27	262.27	39.43	29.02	29.02	366.50	366.50	366.50	19.89	20.20	20.68
Movement LOS	F	F	F	D	C	C	F	F	F	B	C	C
d_A, Approach Delay [s/veh]	262.27			36.23			366.50			20.27		
Approach LOS	F			D			F			C		
d_I, Intersection Delay [s/veh]	141.80											
Intersection LOS	F											
Intersection V/C	1.368											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	34.72
I_p,int, Pedestrian LOS Score for Intersection	2.430	2.117	2.642	2.161
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	821	511	400	821
d_b, Bicycle Delay [s]	15.64	24.98	28.85	15.64
I_b,int, Bicycle LOS Score for Intersection	2.281	2.380	2.066	2.029
Bicycle LOS	B	B	B	B

**Sequence**




Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	966.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.707

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	118	76	232	669	299	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	76	232	669	299	22
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	23	70	202	90	7
Total Analysis Volume [veh/h]	142	92	280	806	360	27
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	2.71	0.14	0.24	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	966.63	903.42	9.13	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	22.82	22.82	0.95	0.95	0.00	0.00
95th-Percentile Queue Length [ft/ln]	570.38	570.38	23.87	23.87	0.00	0.00
d_A, Approach Delay [s/veh]	941.78		2.35		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	130.60					
Intersection LOS	F					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/ Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.076

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	43	209	35	15	34	106
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.90	7.90	14.00	14.00	12.70	17.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	209	35	15	34	106
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	65	11	5	10	33
Total Analysis Volume [veh/h]	53	258	43	19	42	131
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.00	0.08	0.13
d_M, Delay for Movement [s/veh]	7.48	0.00	0.00	0.00	12.73	9.88
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.11	0.11	0.00	0.00	0.80	0.80
95th-Percentile Queue Length [ft/ln]	2.74	2.74	0.00	0.00	19.88	19.88
d_A, Approach Delay [s/veh]	1.27		0.00		10.57	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.07					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 267: Willow Road(SR114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		←↑↑		←↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	



**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	1188	338	150	1063	521	199
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1188	338	150	1063	521	199
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	297	85	38	266	130	50
Total Analysis Volume [veh/h]	1188	338	150	1063	521	199
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	8	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	57	0	16	73	67	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	74	0	13	87	53	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	11	0	0	11	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C
C, Cycle Length [s]	68	68	68	68	68	68
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	5	43	18	18
g / C, Green / Cycle	0.50	0.50	0.07	0.63	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.41	0.44	0.04	0.30	0.21	0.21
s, saturation flow rate [veh/h]	1870	1734	3459	3560	1781	1667
c, Capacity [veh/h]	929	862	246	2231	457	428
d1, Uniform Delay [s]	14.63	15.46	30.86	6.80	23.86	23.95
k, delay calibration	0.11	0.12	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.88	3.51	2.43	0.16	3.45	3.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	0.89	0.61	0.48	0.81	0.82
d, Delay for Lane Group [s/veh]	16.51	18.97	33.29	6.96	27.31	27.90
Lane Group LOS	B	B	C	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.49	9.30	1.20	2.89	5.67	5.45
50th-Percentile Queue Length [ft/ln]	212.19	232.44	30.07	72.24	141.66	136.31
95th-Percentile Queue Length [veh/ln]	13.27	14.30	2.17	5.20	9.57	9.28
95th-Percentile Queue Length [ft/ln]	331.64	357.46	54.13	130.03	239.26	232.04

**Movement, Approach, & Intersection Results**

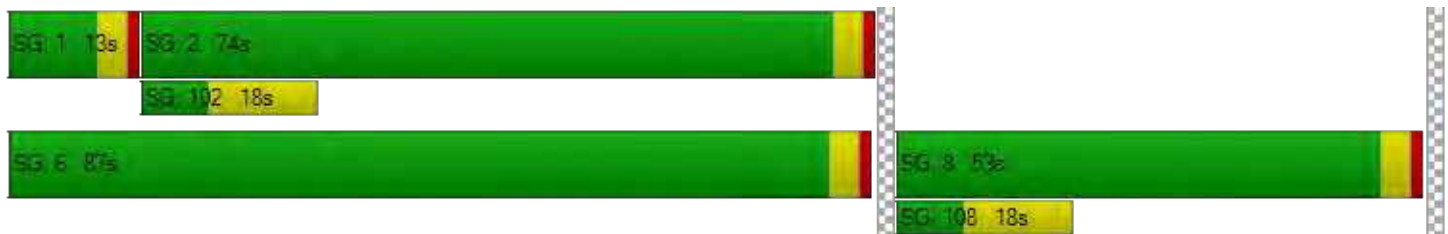
d_M, Delay for Movement [s/veh]	17.39	18.97	33.29	6.96	27.48	27.90
Movement LOS	B	B	C	A	C	C
d_A, Approach Delay [s/veh]	17.74		10.22		27.60	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	17.15					
Intersection LOS	B					
Intersection V/C	0.694					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.03	24.03	24.03
I_p,int, Pedestrian LOS Score for Intersection	3.127	3.001	2.410
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2050	2431	1435
d_b, Bicycle Delay [s]	0.02	1.58	2.72
I_b,int, Bicycle LOS Score for Intersection	2.819	2.560	2.748
Bicycle LOS	C	B	B

**Sequence**

Ring 1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 269: O'Brien Drive/Loop Road**

Control Type:	Roundabout	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	50	91	57	267	306	119	39	57	103	162	88	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	91	57	267	306	119	39	57	103	162	88	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	23	14	67	77	30	10	14	26	41	22	20
Total Analysis Volume [veh/h]	50	91	57	267	306	119	39	57	103	162	88	80
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	370			306			750			184		
Exiting Flow Rate [veh/h]	582			214			262			389		
Demand Flow Rate [veh/h]	50	91	57	267	306	119	39	57	103	162	88	80
Adjusted Demand Flow Rate [veh/h]	50	91	57	267	306	119	39	57	103	162	88	80

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.98			0.98		
Entry Flow Rate [veh/h]	202			706			203			337		
Capacity of Entry and Bypass Lanes [veh/h]	946			1011			643			1145		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	928			991			630			1122		
X, volume / capacity	0.21			0.70			0.32			0.29		

**Movement, Approach, & Intersection Results**

Lane LOS	A			C			A			A		
95th-Percentile Queue Length [veh]	0.81			6.00			1.35			1.23		
95th-Percentile Queue Length [ft]	20.18			149.92			33.80			30.87		
Approach Delay [s/veh]	6.00			15.10			9.91			6.01		
Approach LOS	A			C			A			A		
Intersection Delay [s/veh]	10.99											
Intersection LOS	B											

Vistro File: P:\...\Vistro\_AllScenarios\_PM\_2021-12-29\_ChilconConstitution\_OZ.vistro

Scenario 20 Cumulative PM (2040 vols)+Project

Report File: P:\...\Cumulative + P PM.pdf

12/30/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	969		1201		1311	427	3908

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	50	1326	7	76	1048	268	15	6	414	307	6	4	3527

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	296	675	54	13	1013	354	474	34	235	126	87	40	3401

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	2	745	61	441	723	56	100	26	2	65	114	310	2645

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	137	541	468	640	469	104	2359

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	34	32	32	224	0	271	2	775	138	323	713	2	2546

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	3775	20	359	970	68	1893	7085

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	204	95	1142	159	332	146	76	2280	407	559	862	34	6296

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	44	1292	23	284	1103	54	123	9	35	75	16	334	3392

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	269	933	1447	52	163	114	2978

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1000	524	57	1184	274	237	3276

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	268	1389	355	78	1354	26	27	201	637	369	285	56	5045

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	40	1319	809	294	350	40	2852

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	9	1052	4	29	541	18	143	33	39	21	10	47	1946

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	21	693	5	2	695	109	147	2	49	15	4	6	1748



ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	3	656	119	54	703	10	44	123	5	84	53	58	1912

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	30	281	271	372	129	301	136	478	184	277	684	22	3165

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road/101 NB Ramps	1912		1595		570	891	4968

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	22	402	18	76	797	36	21	124	23	7	16	59	1601

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	196	40	1730	12	31	5	9	763	232	2687	845	14	6564

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	1036	199	1150	863	824	352	4424

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1382	470	1637	849	377	859	5574

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	782	555	2535	280	219	1966	6337

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	1029	89	2657	93	69	2437	6374

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	581	164	2490	60	48	1306	4649

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	397	386	167	285	101	336	1672

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	179		2541	24	49	1374	4167

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	95	484	27	131	346	51	325	21	605	270	18	678	3051

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	349	49	39	344	150	3	60	9	238	0	490	79	1810

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	118	76	232	669	299	22	1416

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	43	209	35	15	34	106	442

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
267	Willow Road(SR114)/Park Street	1188	338	150	1063	521	199	3459

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	O'Brien Drive/Loop Road	50	91	57	267	306	119	39	57	103	162	88	80	1419

Vistro File: P:\...\Vistro\_AllScenarios\_PM\_2021-12-29\_ChilconConstitution\_OZ.vistro

Scenario 20 Cumulative PM (2040 vols)+Project

Report File: P:\...\Cumulative + P PM.pdf

12/30/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Southeastbound		Total Volume
			Thru			Thru			Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	969			1201			1311	427	3908
		Growth Factor	1.00			1.00			1.00	1.00	-
		In Process	0			0			0	0	0
		Net New Trips	0			0			0	0	0
		Other	0			0			0	0	0
		<b>Future Total</b>	<b>969</b>			<b>1201</b>			<b>1311</b>	<b>427</b>	<b>3908</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	50	1326	7	76	1048	268	15	6	414	307	6	4	3527	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>50</b>	<b>1326</b>	<b>7</b>	<b>76</b>	<b>1048</b>	<b>268</b>	<b>15</b>	<b>6</b>	<b>414</b>	<b>307</b>	<b>6</b>	<b>4</b>	<b>3527</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	296	675	54	13	1013	354	474	34	235	126	87	40	3401	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>296</b>	<b>675</b>	<b>54</b>	<b>13</b>	<b>1013</b>	<b>354</b>	<b>474</b>	<b>34</b>	<b>235</b>	<b>126</b>	<b>87</b>	<b>40</b>	<b>3401</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	2	745	61	441	723	56	100	26	2	65	114	310	2645	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>2</b>	<b>745</b>	<b>61</b>	<b>441</b>	<b>723</b>	<b>56</b>	<b>100</b>	<b>26</b>	<b>2</b>	<b>65</b>	<b>114</b>	<b>310</b>	<b>2645</b>	

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	137	541	468	640	469	104	2359
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>137</b>	<b>541</b>	<b>468</b>	<b>640</b>	<b>469</b>	<b>104</b>	<b>2359</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	Final Base	34	32	32	224	0	271	2	775	138	323	713	2	2546
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>34</b>	<b>32</b>	<b>32</b>	<b>224</b>	<b>0</b>	<b>271</b>	<b>2</b>	<b>775</b>	<b>138</b>	<b>323</b>	<b>713</b>	<b>2</b>	<b>2546</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	3775	20	359	970	68	1893	7085
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3775</b>	<b>20</b>	<b>359</b>	<b>970</b>	<b>68</b>	<b>1893</b>	<b>7085</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	204	95	1142	159	332	146	76	2280	407	559	862	34	6296
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>204</b>	<b>95</b>	<b>1142</b>	<b>159</b>	<b>332</b>	<b>146</b>	<b>76</b>	<b>2280</b>	<b>407</b>	<b>559</b>	<b>862</b>	<b>34</b>	<b>6296</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	44	1292	23	284	1103	54	123	9	35	75	16	334	3392
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>44</b>	<b>1292</b>	<b>23</b>	<b>284</b>	<b>1103</b>	<b>54</b>	<b>123</b>	<b>9</b>	<b>35</b>	<b>75</b>	<b>16</b>	<b>334</b>	<b>3392</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	269	933	1447	52	163	114	2978
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>269</b>	<b>933</b>	<b>1447</b>	<b>52</b>	<b>163</b>	<b>114</b>	<b>2978</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1000	524	57	1184	274	237	3276
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1000</b>	<b>524</b>	<b>57</b>	<b>1184</b>	<b>274</b>	<b>237</b>	<b>3276</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	268	1389	355	78	1354	26	27	201	637	369	285	56	5045
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>268</b>	<b>1389</b>	<b>355</b>	<b>78</b>	<b>1354</b>	<b>26</b>	<b>27</b>	<b>201</b>	<b>637</b>	<b>369</b>	<b>285</b>	<b>56</b>	<b>5045</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	40	1319	809	294	350	40	2852
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>40</b>	<b>1319</b>	<b>809</b>	<b>294</b>	<b>350</b>	<b>40</b>	<b>2852</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	9	1052	4	29	541	18	143	33	39	21	10	47	1946
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>1052</b>	<b>4</b>	<b>29</b>	<b>541</b>	<b>18</b>	<b>143</b>	<b>33</b>	<b>39</b>	<b>21</b>	<b>10</b>	<b>47</b>	<b>1946</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	21	693	5	2	695	109	147	2	49	15	4	6	1748
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>21</b>	<b>693</b>	<b>5</b>	<b>2</b>	<b>695</b>	<b>109</b>	<b>147</b>	<b>2</b>	<b>49</b>	<b>15</b>	<b>4</b>	<b>6</b>	<b>1748</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	3	656	119	54	703	10	44	123	5	84	53	58	1912
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3</b>	<b>656</b>	<b>119</b>	<b>54</b>	<b>703</b>	<b>10</b>	<b>44</b>	<b>123</b>	<b>5</b>	<b>84</b>	<b>53</b>	<b>58</b>	<b>1912</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
25	Middlefield Rd- Willow Rd	Final Base	30	281	271	372	129	301	136	478	184	277	684	22	3165	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>30</b>	<b>281</b>	<b>271</b>	<b>372</b>	<b>129</b>	<b>301</b>	<b>136</b>	<b>478</b>	<b>184</b>	<b>277</b>	<b>684</b>	<b>22</b>	<b>3165</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road/101 NB Ramps	Final Base	1912		1595		570	891	4968
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1912</b>		<b>1595</b>		<b>570</b>	<b>891</b>	<b>4968</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
131	Chilco Street/Hamilton Avenue	Final Base	22	402	18	76	797	36	21	124	23	7	16	59	1601	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>402</b>	<b>18</b>	<b>76</b>	<b>797</b>	<b>36</b>	<b>21</b>	<b>124</b>	<b>23</b>	<b>7</b>	<b>16</b>	<b>59</b>	<b>1601</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
163	Bayfront Expy/Marsh Rd	Final Base	196	40	1730	12	31	5	9	763	232	2687	845	14	6564	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>196</b>	<b>40</b>	<b>1730</b>	<b>12</b>	<b>31</b>	<b>5</b>	<b>9</b>	<b>763</b>	<b>232</b>	<b>2687</b>	<b>845</b>	<b>14</b>	<b>6564</b>	



ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1036	199	1150	863	824	352	4424
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1036</b>	<b>199</b>	<b>1150</b>	<b>863</b>	<b>824</b>	<b>352</b>	<b>4424</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1382	470	1637	849	377	859	5574
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1382</b>	<b>470</b>	<b>1637</b>	<b>849</b>	<b>377</b>	<b>859</b>	<b>5574</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	782	555	2535	280	219	1966	6337
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>782</b>	<b>555</b>	<b>2535</b>	<b>280</b>	<b>219</b>	<b>1966</b>	<b>6337</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	1029	89	2657	93	69	2437	6374
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1029</b>	<b>89</b>	<b>2657</b>	<b>93</b>	<b>69</b>	<b>2437</b>	<b>6374</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	Final Base	581	164	2490	60	48	1306	4649
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>581</b>	<b>164</b>	<b>2490</b>	<b>60</b>	<b>48</b>	<b>1306</b>	<b>4649</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	397	386	167	285	101	336	1672
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>397</b>	<b>386</b>	<b>167</b>	<b>285</b>	<b>101</b>	<b>336</b>	<b>1672</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	179	2541	24	49	1374	4167	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>179</b>	<b>2541</b>	<b>24</b>	<b>49</b>	<b>1374</b>	<b>4167</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	95	484	27	131	346	51	325	21	605	270	18	678	3051
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>95</b>	<b>484</b>	<b>27</b>	<b>131</b>	<b>346</b>	<b>51</b>	<b>325</b>	<b>21</b>	<b>605</b>	<b>270</b>	<b>18</b>	<b>678</b>	<b>3051</b>

ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	349	49	39	344	150	3	60	9	238	0	490	79	1810
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>349</b>	<b>49</b>	<b>39</b>	<b>344</b>	<b>150</b>	<b>3</b>	<b>60</b>	<b>9</b>	<b>238</b>	<b>0</b>	<b>490</b>	<b>79</b>	<b>1810</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	118	76	232	669	299	22	1416
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>118</b>	<b>76</b>	<b>232</b>	<b>669</b>	<b>299</b>	<b>22</b>	<b>1416</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	Final Base	43	209	35	15	34	106	442
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>43</b>	<b>209</b>	<b>35</b>	<b>15</b>	<b>34</b>	<b>106</b>	<b>442</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
267	Willow Road (SR114)/Park Street	Final Base	1188	338	150	1063	521	199	3459
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1188</b>	<b>338</b>	<b>150</b>	<b>1063</b>	<b>521</b>	<b>199</b>	<b>3459</b>

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ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
269	O'Brien Drive/Loop Road	Final Base	50	91	57	267	306	119	39	57	103	162	88	80	1419	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>50</b>	<b>91</b>	<b>57</b>	<b>267</b>	<b>306</b>	<b>119</b>	<b>39</b>	<b>57</b>	<b>103</b>	<b>162</b>	<b>88</b>	<b>80</b>	<b>1419</b>	

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## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	442	909	82	168
2	429	882	80	163
3	420	864	78	160
4	393	809	73	150
5	349	718	65	133
6	345	709	64	131
7	340	700	63	129
8	309	636	57	118
9	305	627	57	116
10	301	618	56	114
11	261	536	48	99
12	243	500	45	92
13	239	491	44	91
14	177	364	33	67
15	177	364	33	67
16	124	255	23	47
17	71	145	13	27
18	71	145	13	27
19	40	82	7	15
20	22	45	4	8
21	13	27	2	5
22	4	9	1	2
23	4	9	1	2
24	4	9	1	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1351	1	168	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1311	1	163	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1284	1	160	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	1202	1	150	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	1067	1	133	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	1054	1	131	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	1040	1	129	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	945	1	118	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	932	1	116	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	919	1	114	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
11	1	797	1	99	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
12	1	743	1	92	No	No	No	Yes	No	Yes	Yes	Yes	No	No
13	1	730	1	91	No	No	No	Yes	No	Yes	Yes	Yes	No	No
14	1	541	1	67	No	No	No	No	No	No	Yes	Yes	No	No
15	1	541	1	67	No	No	No	No	No	No	Yes	Yes	No	No
16	1	379	1	47	No	No	No	No	No	No	No	No	No	No
17	1	216	1	27	No	No	No	No	No	No	No	No	No	No
18	1	216	1	27	No	No	No	No	No	No	No	No	No	No
19	1	122	1	15	No	No	No	No	No	No	No	No	No	No
20	1	67	1	8	No	No	No	No	No	No	No	No	No	No
21	1	40	1	5	No	No	No	No	No	No	No	No	No	No
22	1	13	1	2	No	No	No	No	No	No	No	No	No	No
23	1	13	1	2	No	No	No	No	No	No	No	No	No	No
24	1	13	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	7	10	13	11	13	15	15	9	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.8	14.3
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:16	0:40
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	82	168
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1601	1601
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	452	783	437
2	438	760	424
3	429	744	415
4	402	697	389
5	357	619	345
6	353	611	341
7	348	603	336
8	316	548	306
9	312	540	302
10	307	532	297
11	267	462	258
12	249	431	240
13	244	423	236
14	181	313	175
15	181	313	175
16	127	219	122
17	72	125	70
18	72	125	70
19	41	70	39
20	23	39	22
21	14	23	13
22	5	8	4
23	5	8	4
24	5	8	4

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1235	1	437	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1198	1	424	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1173	1	415	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1099	1	389	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	976	1	345	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	964	1	341	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	951	1	336	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	864	1	306	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	852	1	302	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	839	1	297	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	729	1	258	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	680	1	240	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	667	1	236	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	494	1	175	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	494	1	175	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	346	1	122	No	No	No	Yes	No	No	No	No	No	No
17	1	197	1	70	No	No	No	No	No	No	No	No	No	No
18	1	197	1	70	No	No	No	No	No	No	No	No	No	No
19	1	111	1	39	No	No	No	No	No	No	No	No	No	No
20	1	62	1	22	No	No	No	No	No	No	No	No	No	No
21	1	37	1	13	No	No	No	No	No	No	No	No	No	No
22	1	13	1	4	No	No	No	No	No	No	No	No	No	No
23	1	13	1	4	No	No	No	No	No	No	No	No	No	No
24	1	13	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	13	7

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	48.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	5:53
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	437
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1672
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>



## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	321	901	194
2	311	874	188
3	305	856	184
4	286	802	173
5	254	712	153
6	250	703	151
7	247	694	149
8	225	631	136
9	221	622	134
10	218	613	132
11	189	532	114
12	177	496	107
13	173	487	105
14	128	360	78
15	128	360	78
16	90	252	54
17	51	144	31
18	51	144	31
19	29	81	17
20	16	45	10
21	10	27	6
22	3	9	2
23	3	9	2
24	3	9	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1222	1	194	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1185	1	188	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1161	1	184	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	1088	1	173	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	966	1	153	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	953	1	151	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	941	1	149	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	856	1	136	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	843	1	134	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
10	1	831	1	132	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
11	1	721	1	114	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
12	1	673	1	107	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
13	1	660	1	105	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
14	1	488	1	78	No	No	No	No	No	No	No	Yes	No	No
15	1	488	1	78	No	No	No	No	No	No	No	Yes	No	No
16	1	342	1	54	No	No	No	No	No	No	No	No	No	No
17	1	195	1	31	No	No	No	No	No	No	No	No	No	No
18	1	195	1	31	No	No	No	No	No	No	No	No	No	No
19	1	110	1	17	No	No	No	No	No	No	No	No	No	No
20	1	61	1	10	No	No	No	No	No	No	No	No	No	No
21	1	37	1	6	No	No	No	No	No	No	No	No	No	No
22	1	12	1	2	No	No	No	No	No	No	No	No	No	No
23	1	12	1	2	No	No	No	No	No	No	No	No	No	No
24	1	12	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					6	10	13	13	10	13	13	15	8	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	941.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	50:45
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	194
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1416
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>

## Signal Warrants Report For Intersection 265: Adam Court/ Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	252	50	140
2	244	49	136
3	239	48	133
4	224	45	125
5	199	40	111
6	197	39	109
7	194	39	108
8	176	35	98
9	174	35	97
10	171	34	95
11	149	30	83
12	139	28	77
13	136	27	76
14	101	20	56
15	101	20	56
16	71	14	39
17	40	8	22
18	40	8	22
19	23	5	13
20	13	3	7
21	8	2	4
22	3	1	1
23	3	1	1
24	3	1	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	302	1	140	No	No	No	Yes	No	No	No	No	No	No
2	1	293	1	136	No	No	No	Yes	No	No	No	No	No	No
3	1	287	1	133	No	No	No	Yes	No	No	No	No	No	No
4	1	269	1	125	No	No	No	No	No	No	No	No	No	No
5	1	239	1	111	No	No	No	No	No	No	No	No	No	No
6	1	236	1	109	No	No	No	No	No	No	No	No	No	No
7	1	233	1	108	No	No	No	No	No	No	No	No	No	No
8	1	211	1	98	No	No	No	No	No	No	No	No	No	No
9	1	209	1	97	No	No	No	No	No	No	No	No	No	No
10	1	205	1	95	No	No	No	No	No	No	No	No	No	No
11	1	179	1	83	No	No	No	No	No	No	No	No	No	No
12	1	167	1	77	No	No	No	No	No	No	No	No	No	No
13	1	163	1	76	No	No	No	No	No	No	No	No	No	No
14	1	121	1	56	No	No	No	No	No	No	No	No	No	No
15	1	121	1	56	No	No	No	No	No	No	No	No	No	No
16	1	85	1	39	No	No	No	No	No	No	No	No	No	No
17	1	48	1	22	No	No	No	No	No	No	No	No	No	No
18	1	48	1	22	No	No	No	No	No	No	No	No	No	No
19	1	28	1	13	No	No	No	No	No	No	No	No	No	No
20	1	16	1	7	No	No	No	No	No	No	No	No	No	No
21	1	10	1	4	No	No	No	No	No	No	No	No	No	No
22	1	4	1	1	No	No	No	No	No	No	No	No	No	No
23	1	4	1	1	No	No	No	No	No	No	No	No	No	No
24	1	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:24
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	140
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	442
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections

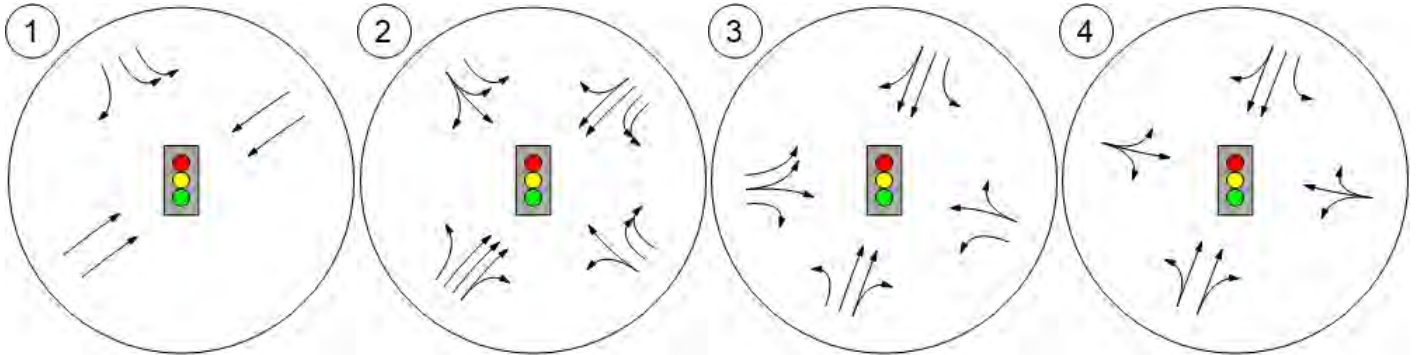


Lane Configuration and Traffic Control

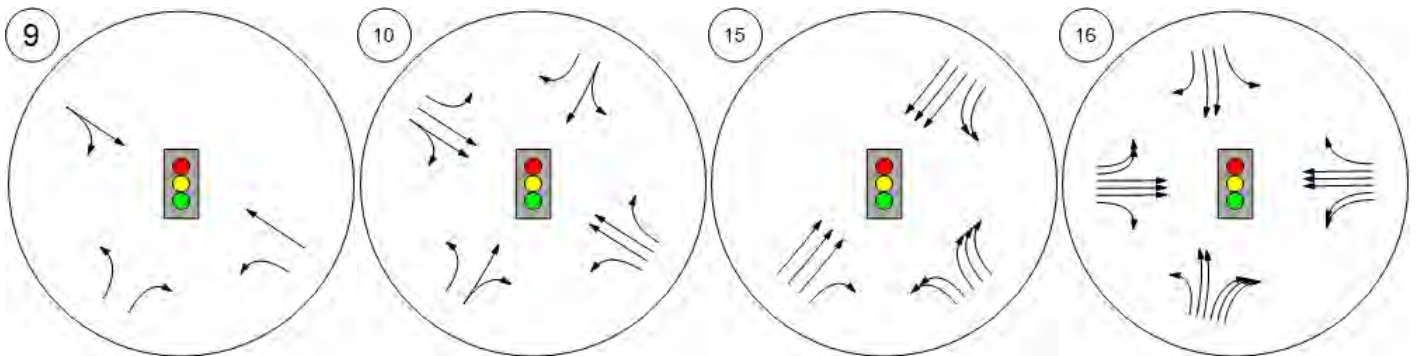


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



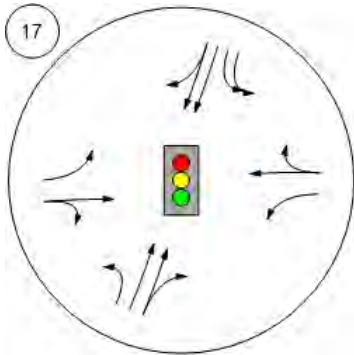
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



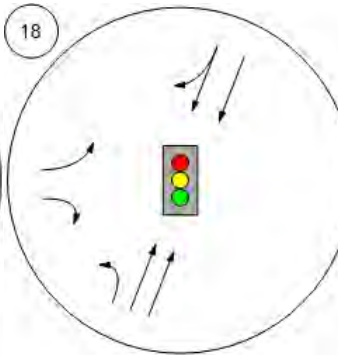
Lane Configuration and Traffic Control



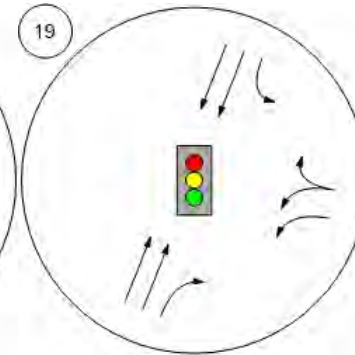
Willow Rd (SR 114)/Hamilton



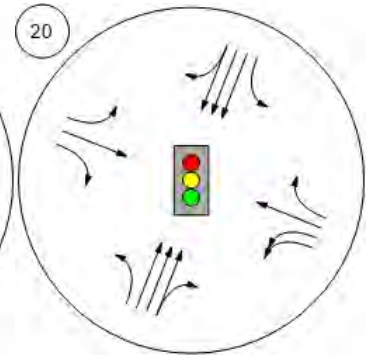
Willow Rd (SR 114)/Ivy Dr



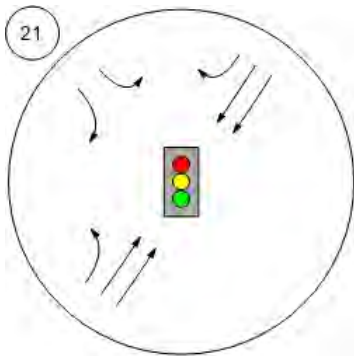
Willow Rd (SR 114)/O'Brien



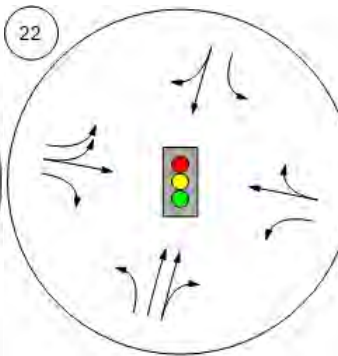
Willow Rd (SR 114)/Newbrid



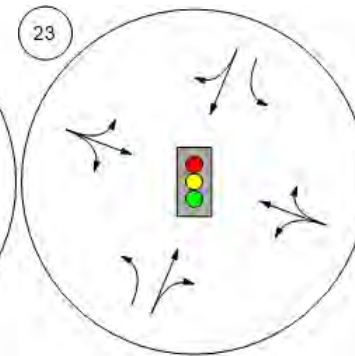
Willow Rd/Bay Rd



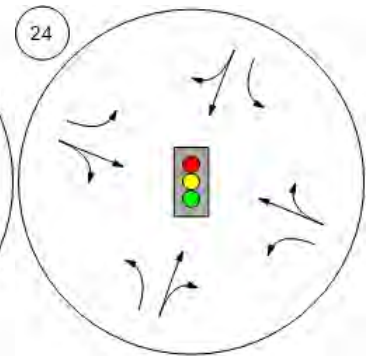
Willow Rd/Durham St-VA Me



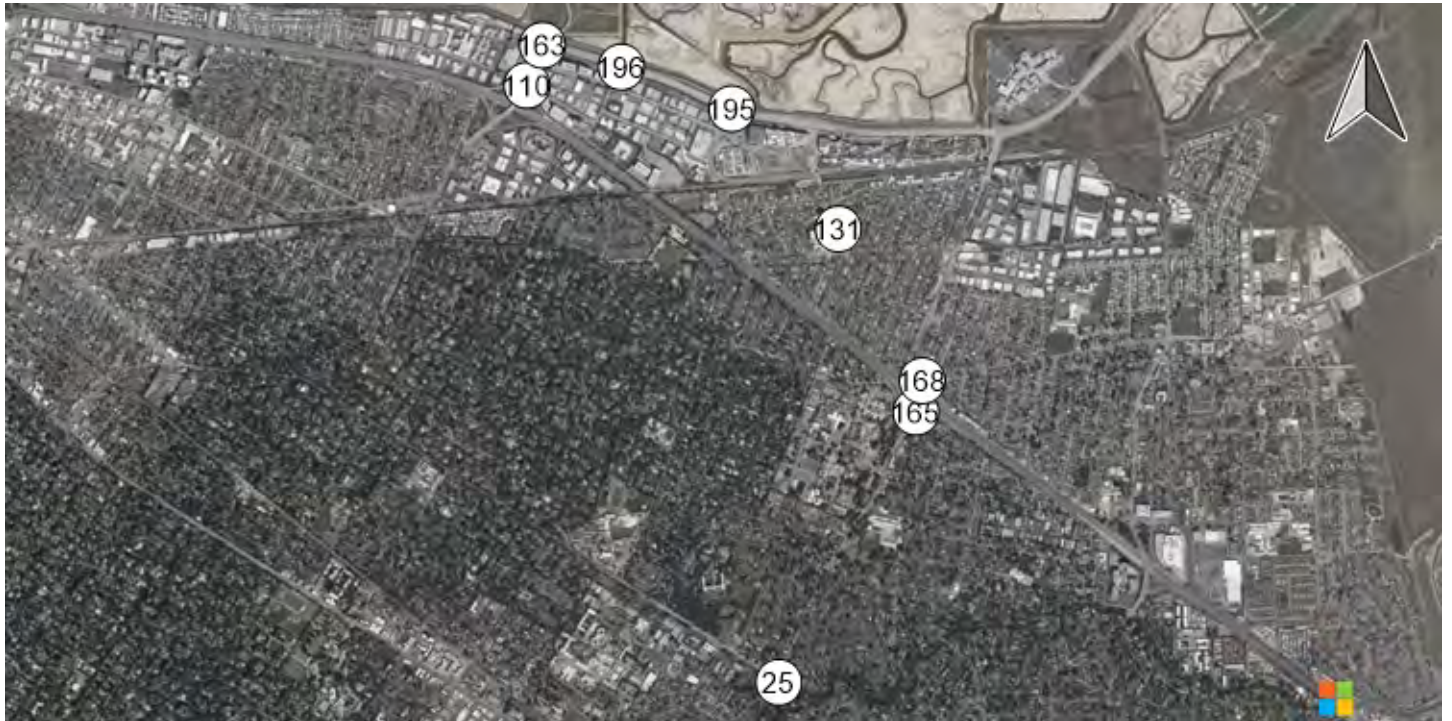
Willow Rd/Coleman Ave



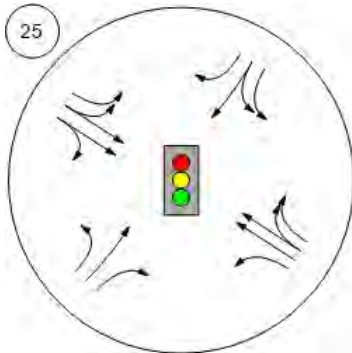
Willow Rd/Gilbert Ave



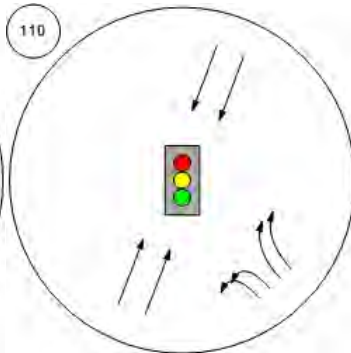
Lane Configuration and Traffic Control



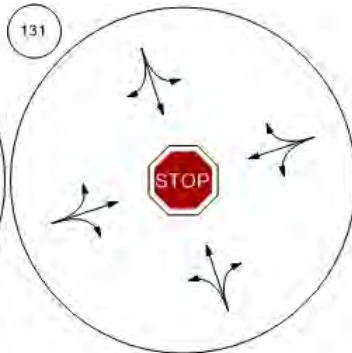
Middlefield Rd-Willow Rd



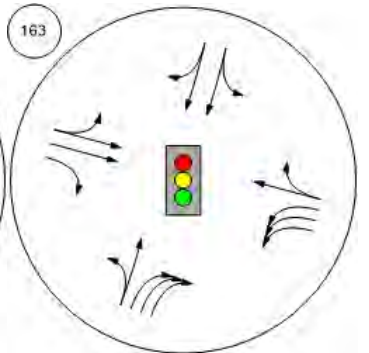
Marsh Road/101 NB Ramps



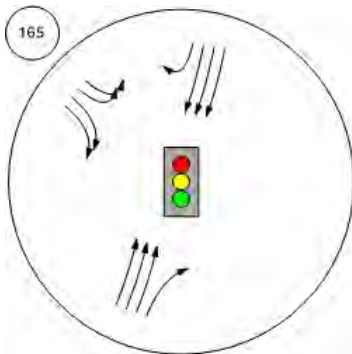
Chilco Street/Hamilton Avenue



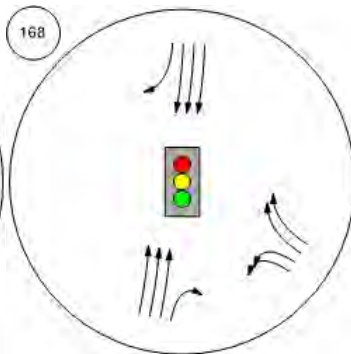
Bayfront Expy/Marsh Rd



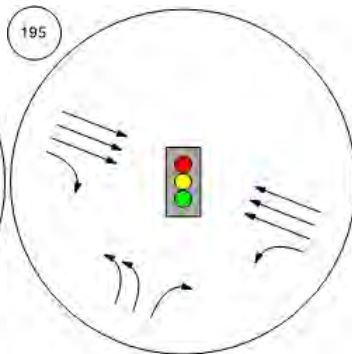
Willow Rd/US-101 SB Ramps



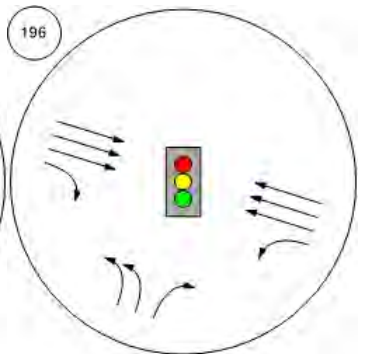
Willow Rd/US-101 NB Ramp



Bayfront Expy/Chilco St

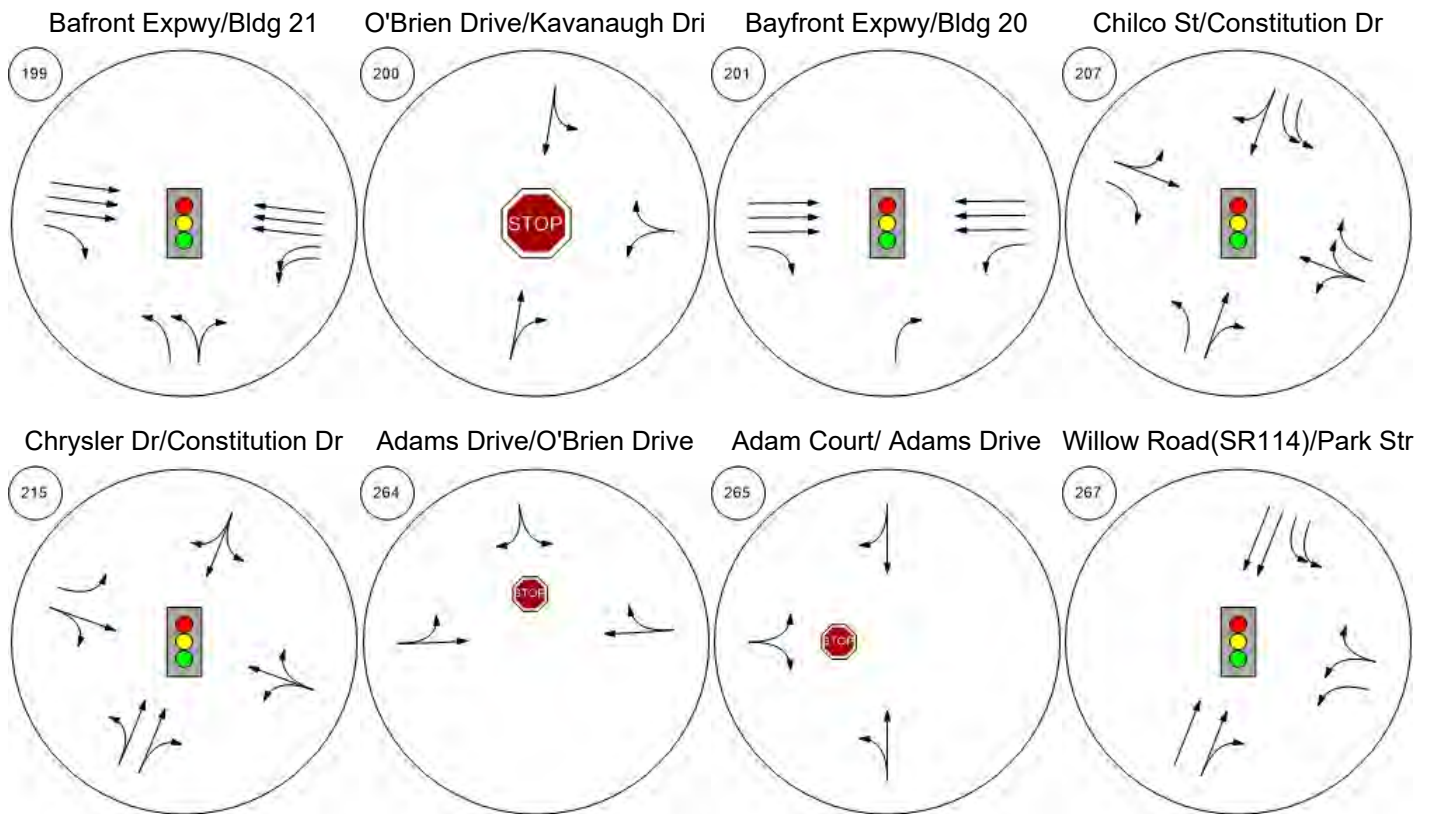


Bayfront Expy/Chrysler Drive

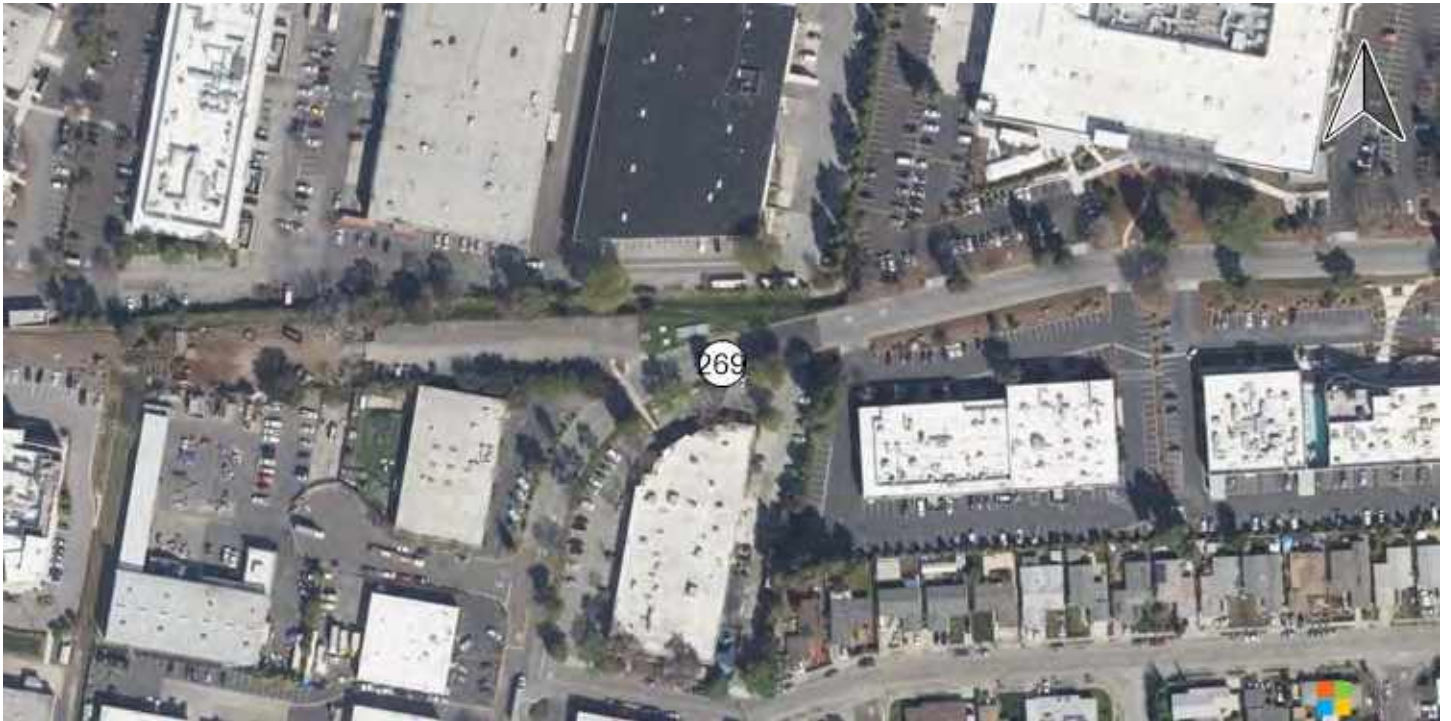




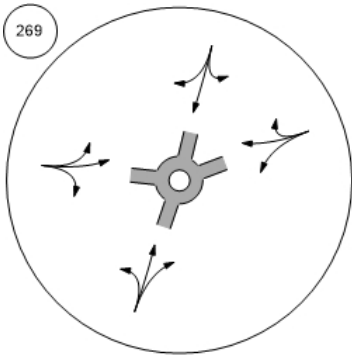
Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



O'Brien Drive/Loop Road

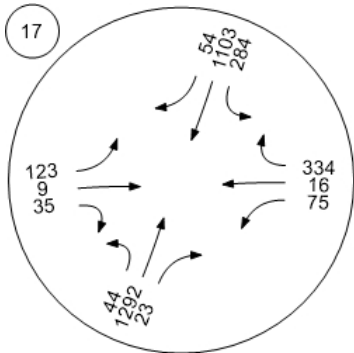




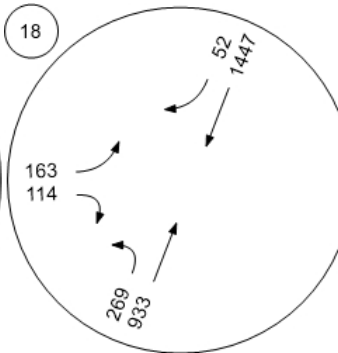
Traffic Volume - Base Volume



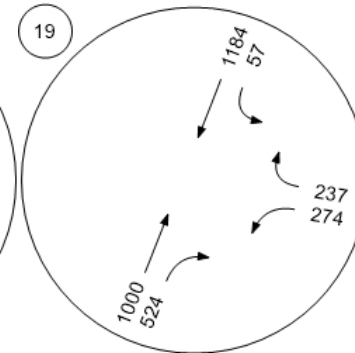
Willow Rd (SR 114)/Hamilton



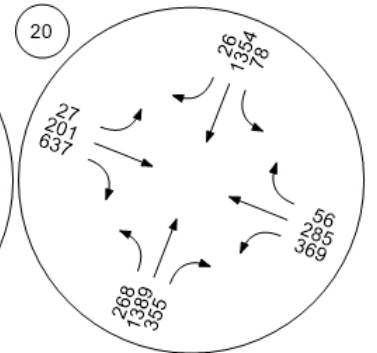
Willow Rd (SR 114)/Ivy Dr



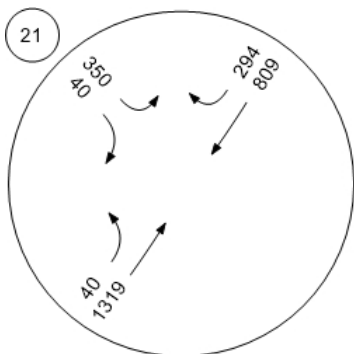
Willow Rd (SR 114)/O'Brien



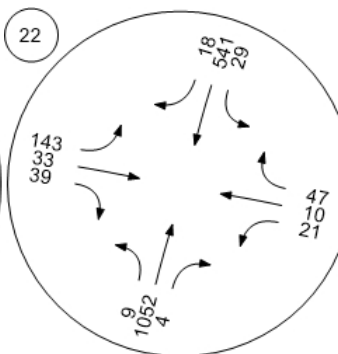
Willow Rd (SR 114)/Newbrid



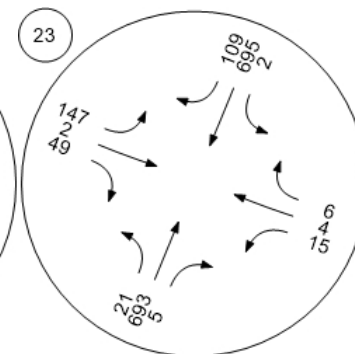
Willow Rd/Bay Rd



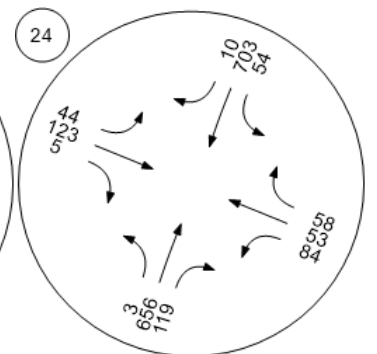
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



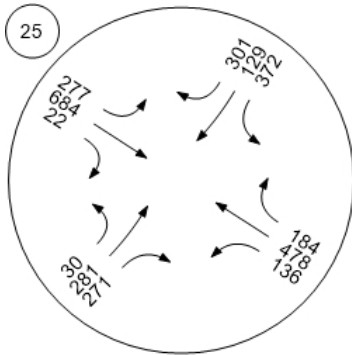
Willow Rd/Gilbert Ave



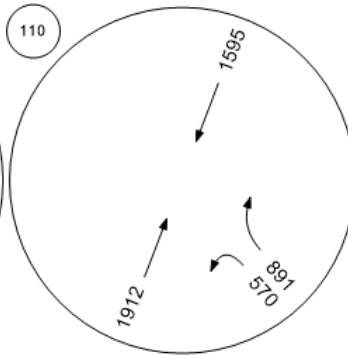
Traffic Volume - Base Volume



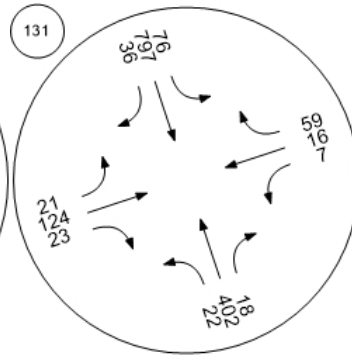
Middlefield Rd-Willow Rd



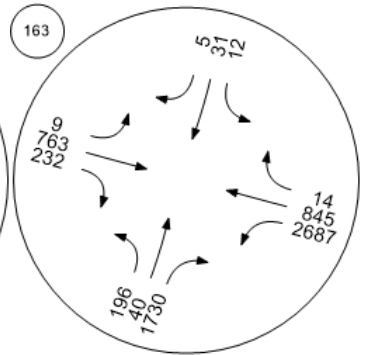
Marsh Road/101 NB Ramps



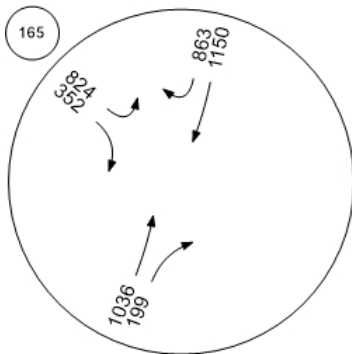
Chilco Street/Hamilton Avenue



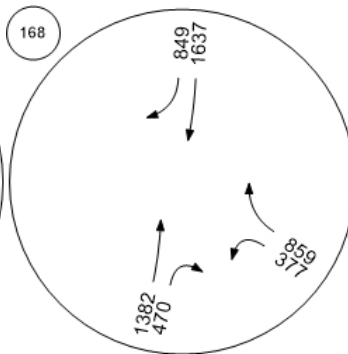
Bayfront Expy/Marsh Rd



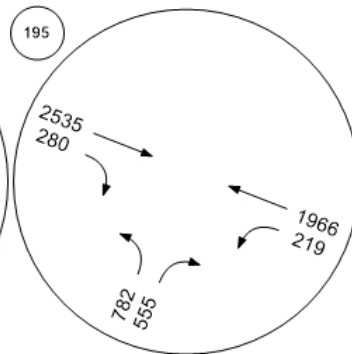
Willow Rd/US-101 SB Ramps



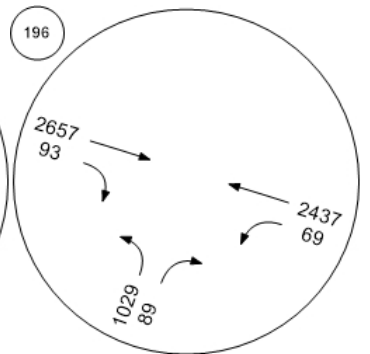
Willow Rd/US-101 NB Ramp



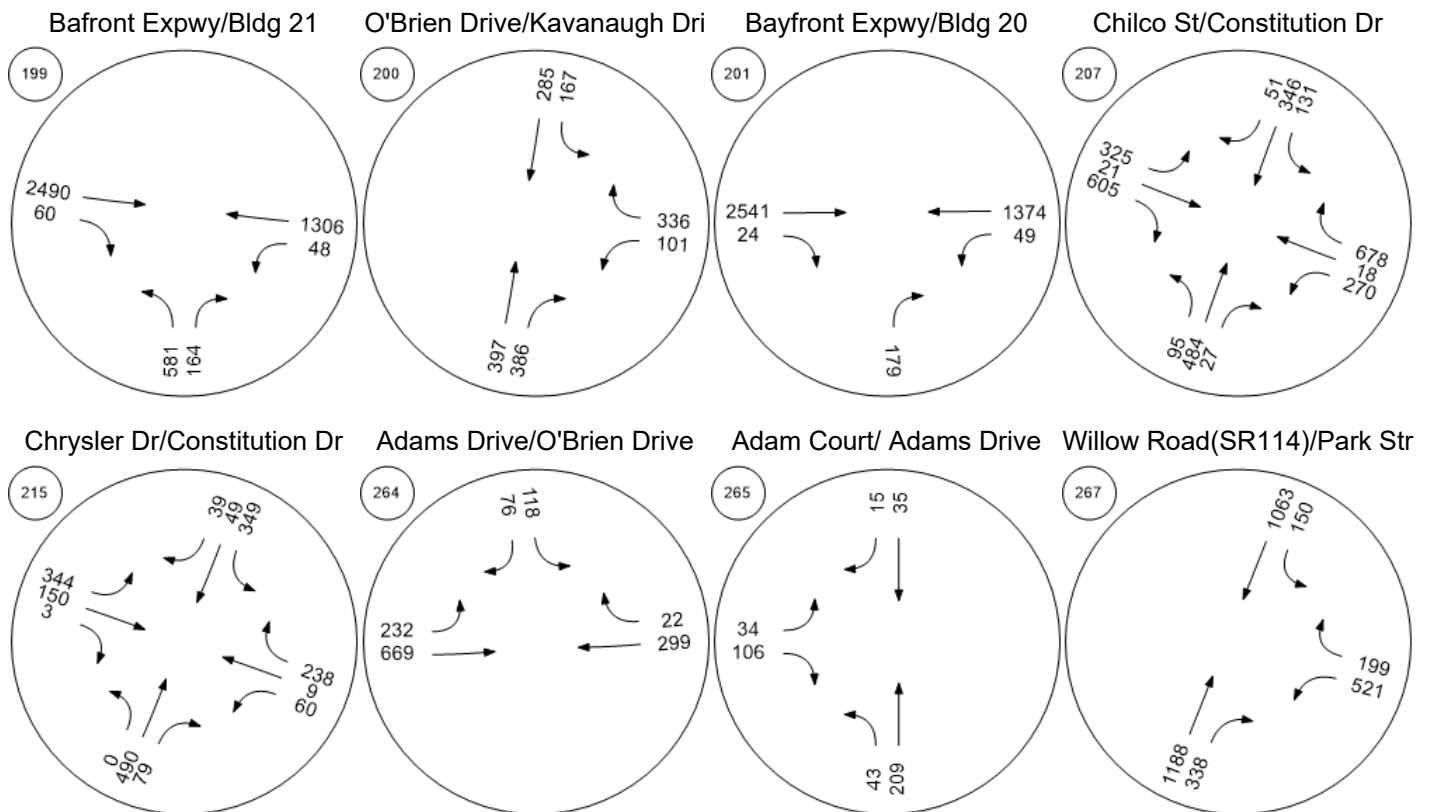
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



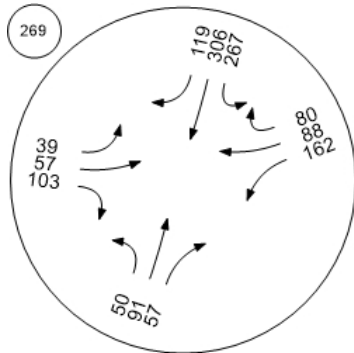
Traffic Volume - Base Volume



Traffic Volume - Base Volume



O'Brien Drive/Loop Road

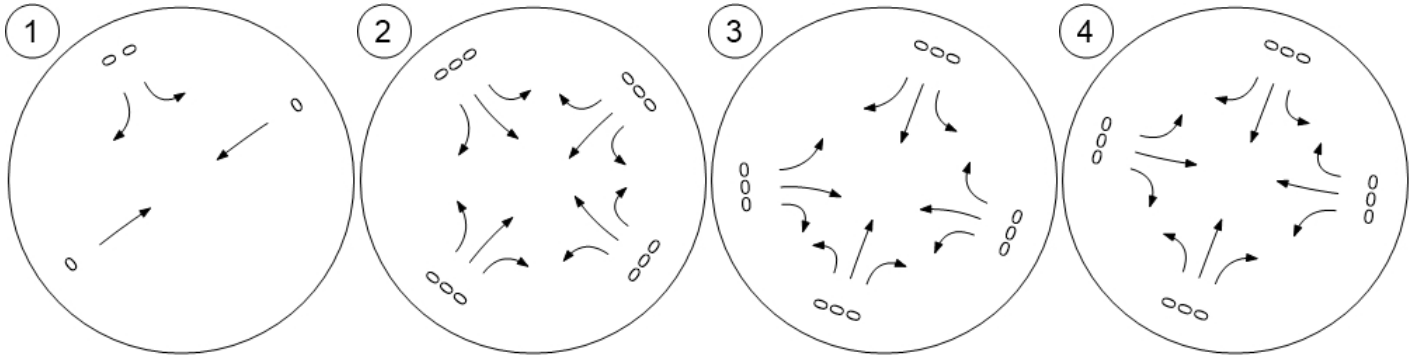


Traffic Volume - In-Process Volume

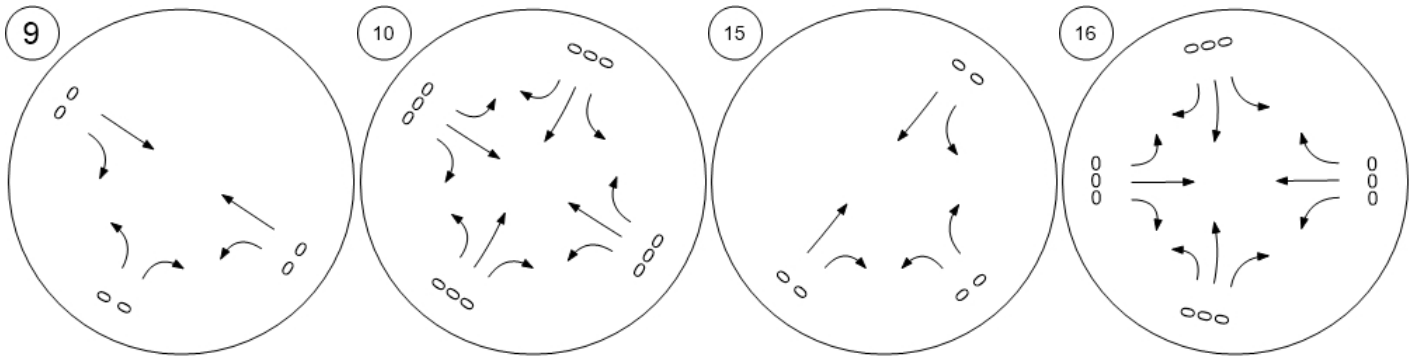


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow

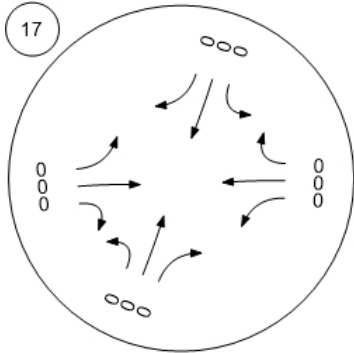




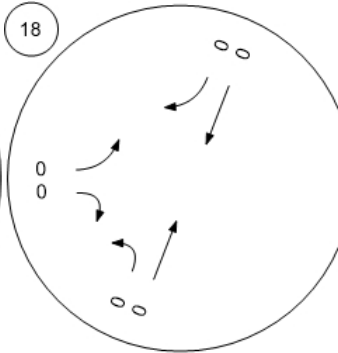
Traffic Volume - In-Process Volume



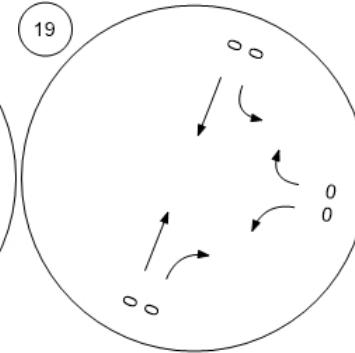
Willow Rd (SR 114)/Hamilton



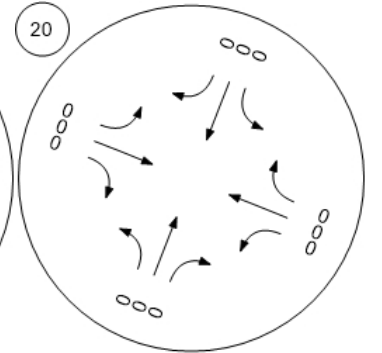
Willow Rd (SR 114)/Ivy Dr



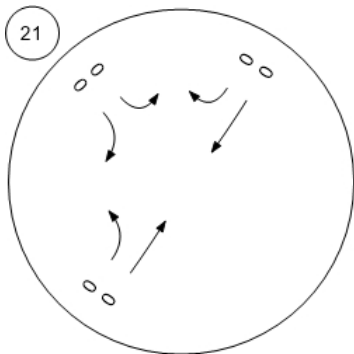
Willow Rd (SR 114)/O'Brien



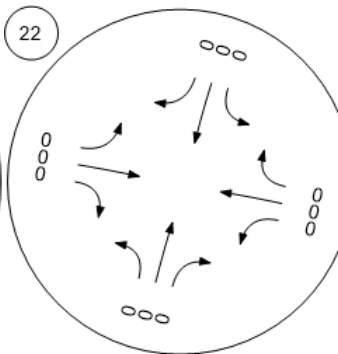
Willow Rd (SR 114)/Newbrid



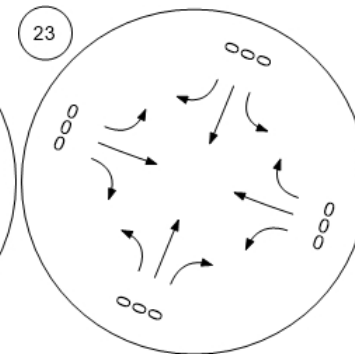
Willow Rd/Bay Rd



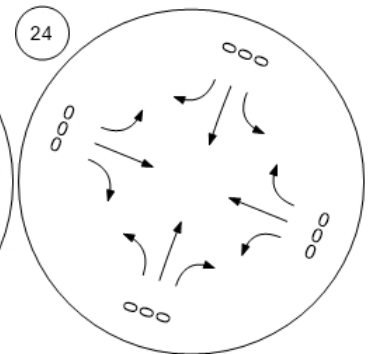
Willow Rd/Durham St-VA Me



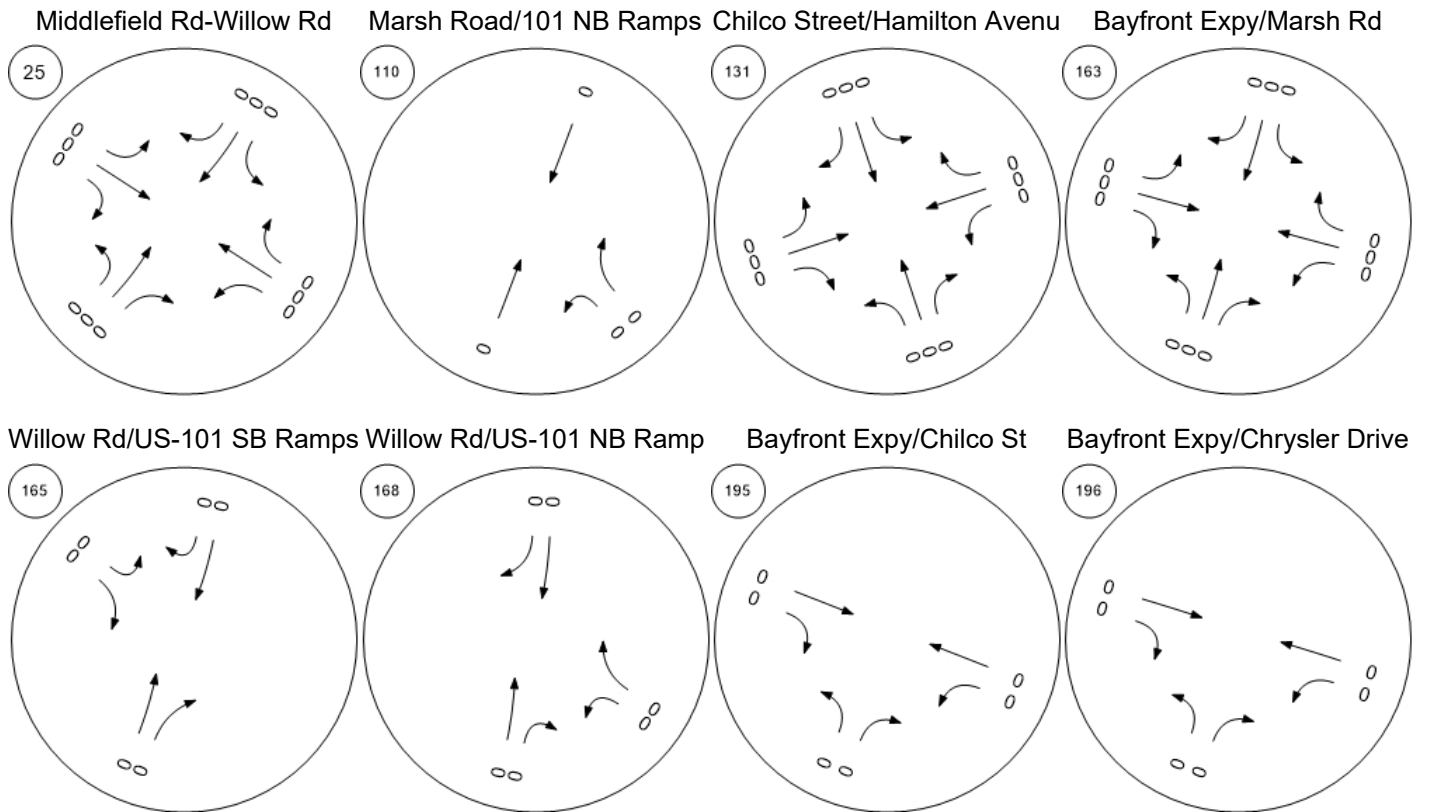
Willow Rd/Coleman Ave



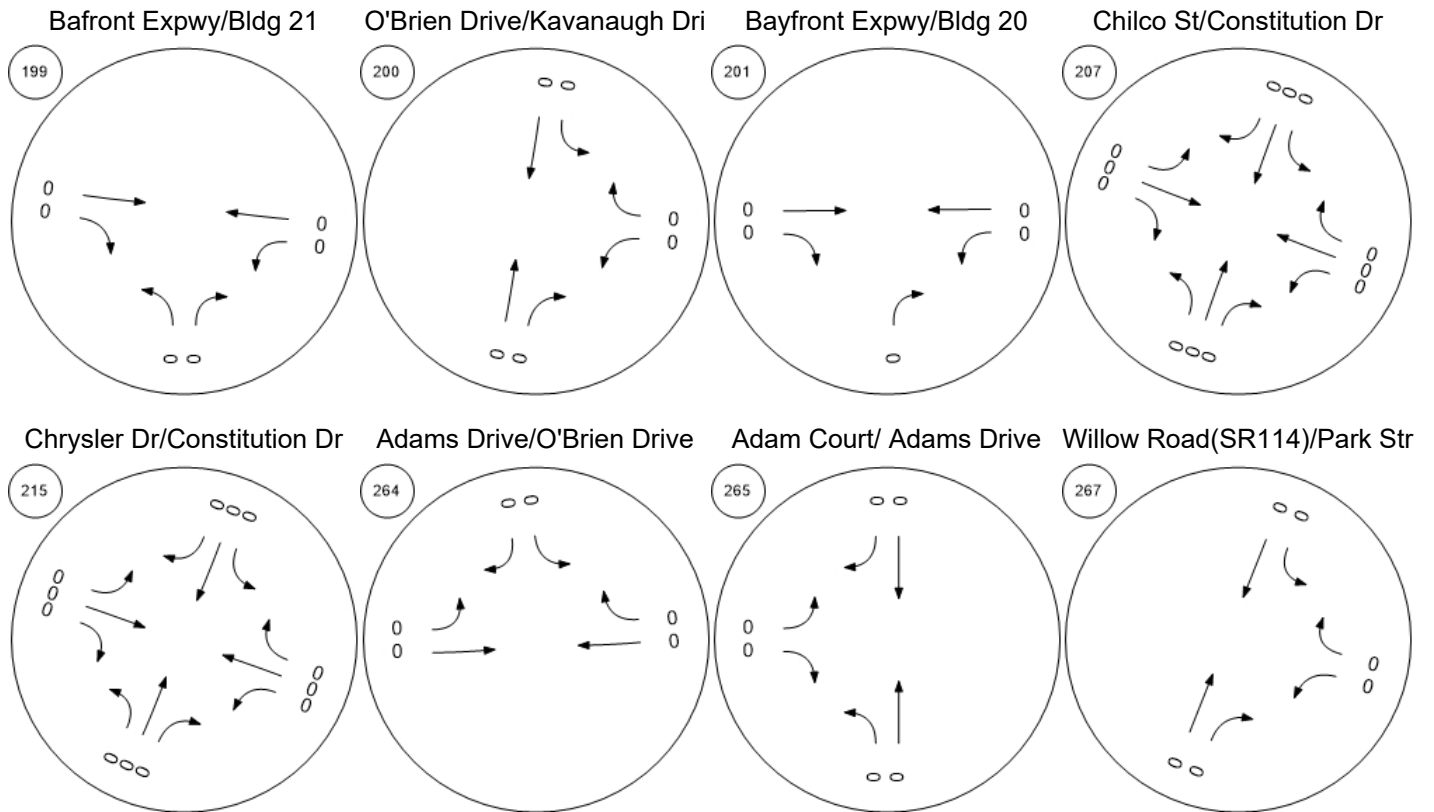
Willow Rd/Gilbert Ave



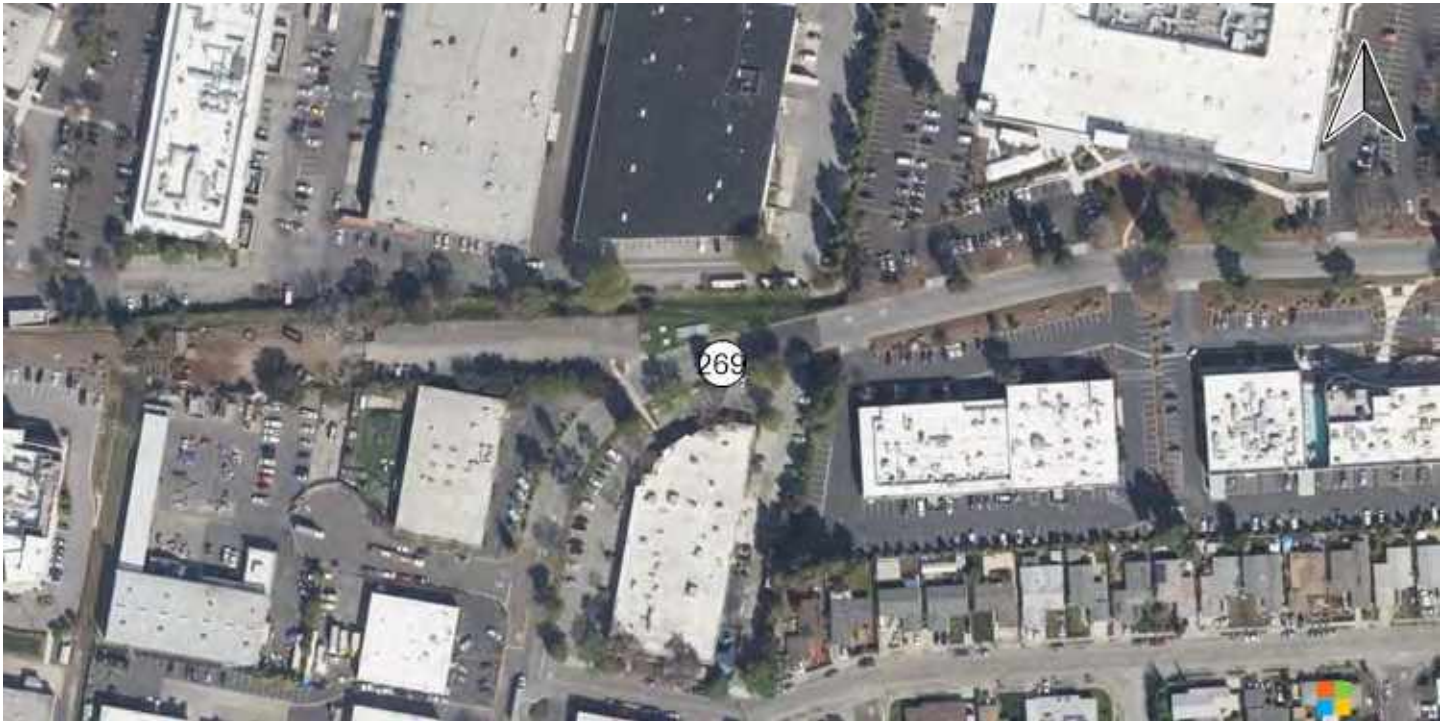
Traffic Volume - In-Process Volume



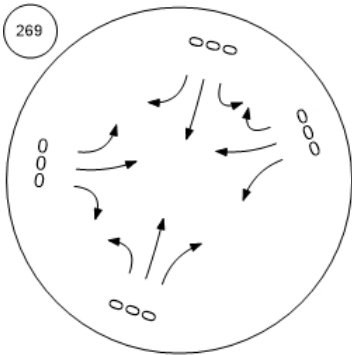
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

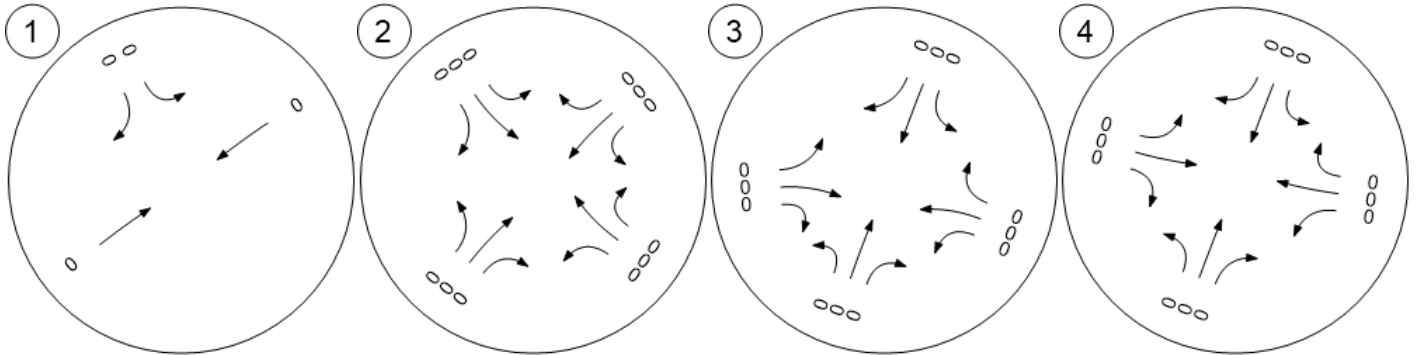


Traffic Volume - Net New Site Trips

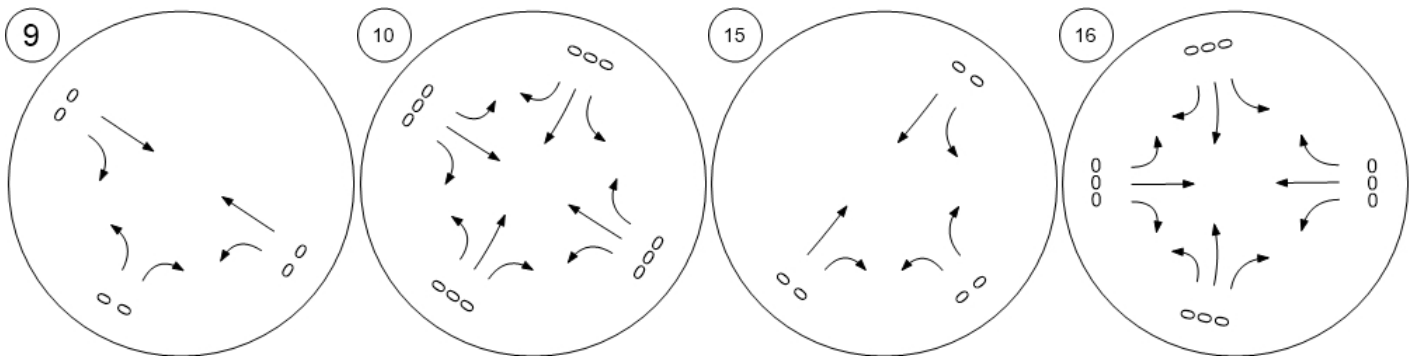


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



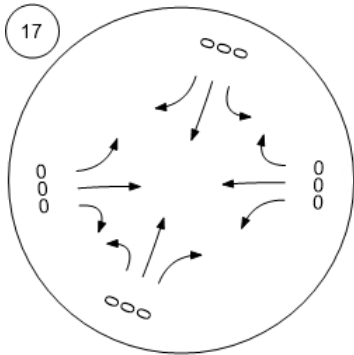
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



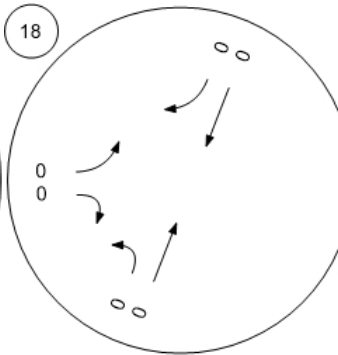
Traffic Volume - Net New Site Trips



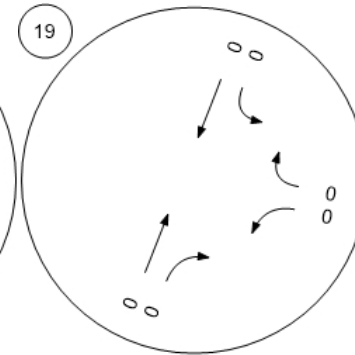
Willow Rd (SR 114)/Hamilton



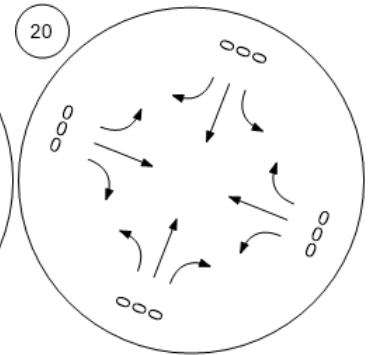
Willow Rd (SR 114)/Ivy Dr



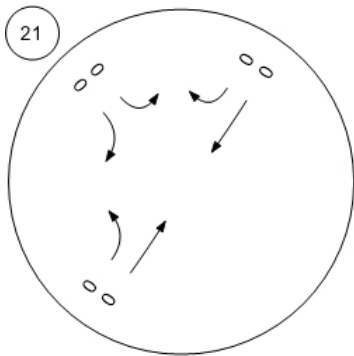
Willow Rd (SR 114)/O'Brien



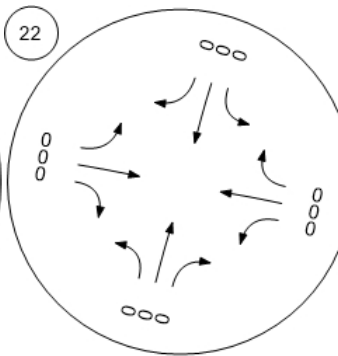
Willow Rd (SR 114)/Newbrid



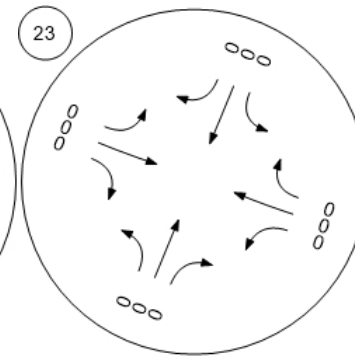
Willow Rd/Bay Rd



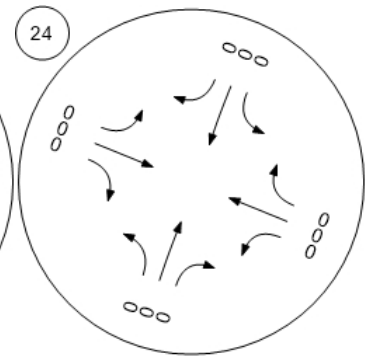
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



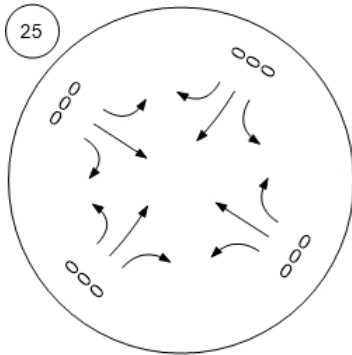
Willow Rd/Gilbert Ave



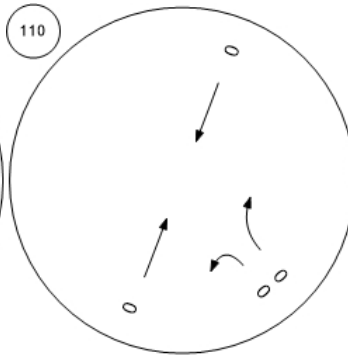
Traffic Volume - Net New Site Trips



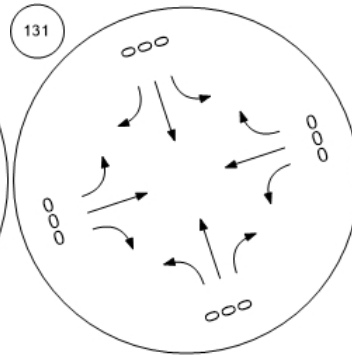
Middlefield Rd-Willow Rd



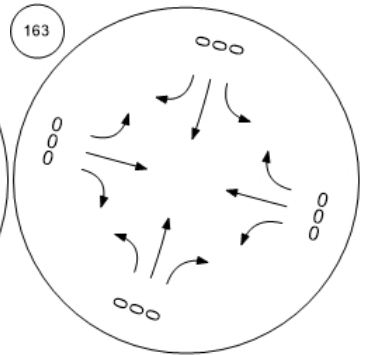
Marsh Road/101 NB Ramps



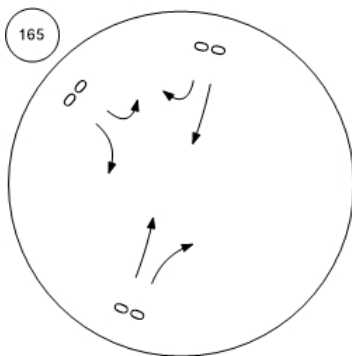
Chilco Street/Hamilton Avenue



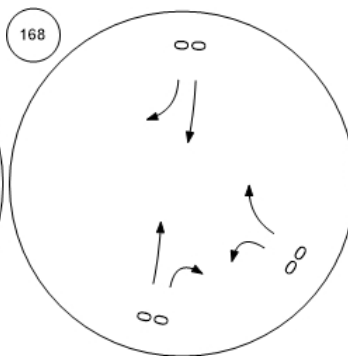
Bayfront Expy/Marsh Rd



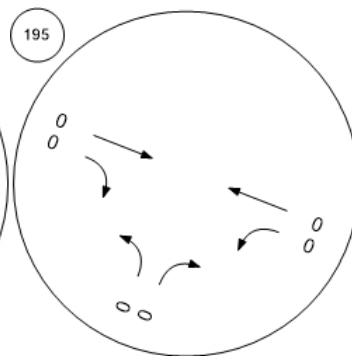
Willow Rd/US-101 SB Ramps



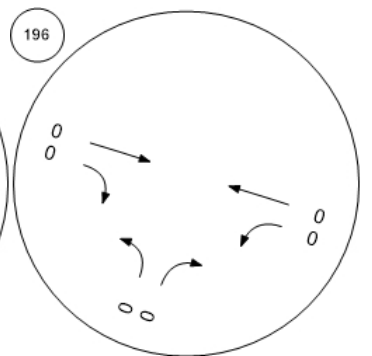
Willow Rd/US-101 NB Ramp



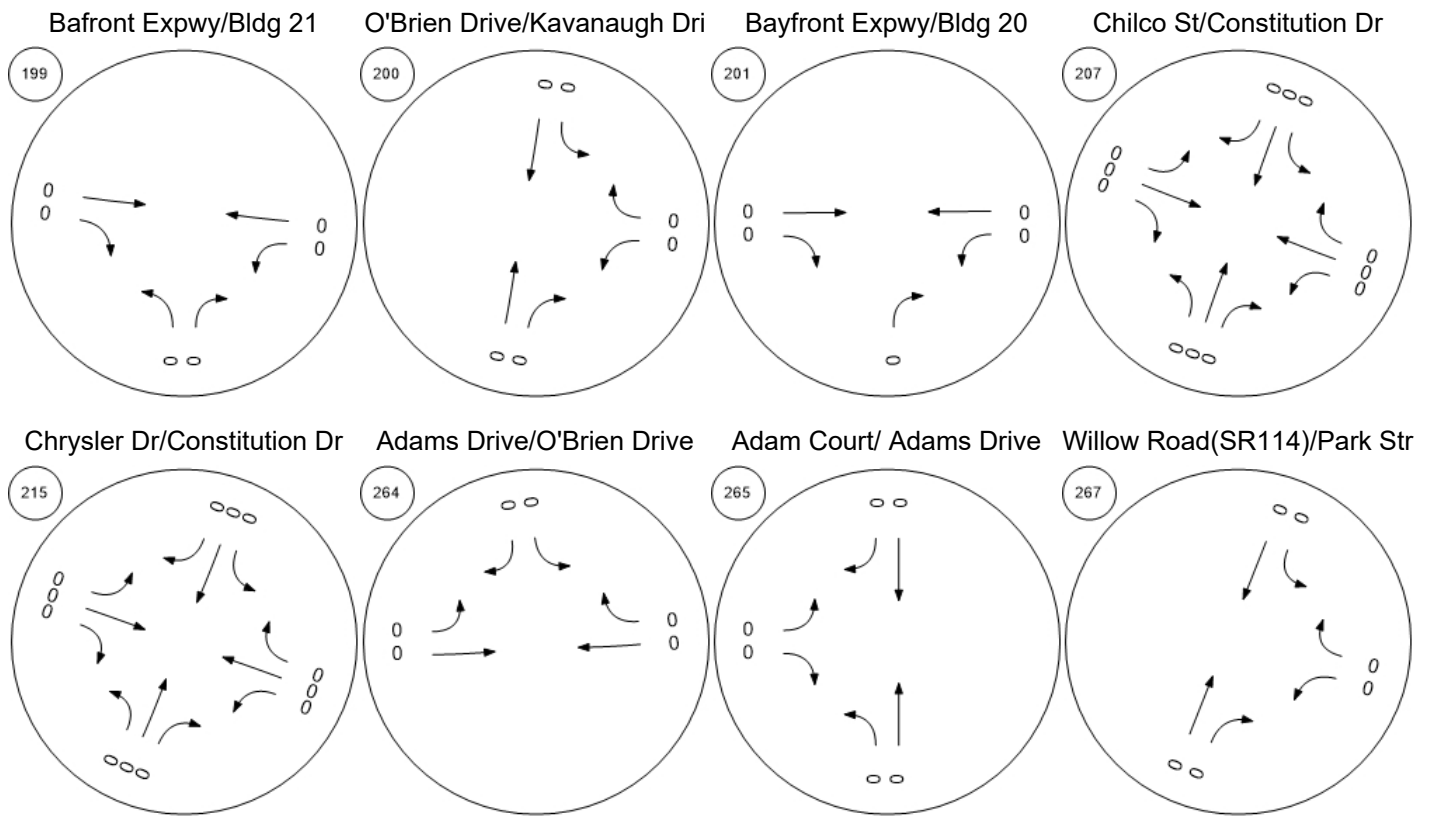
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive

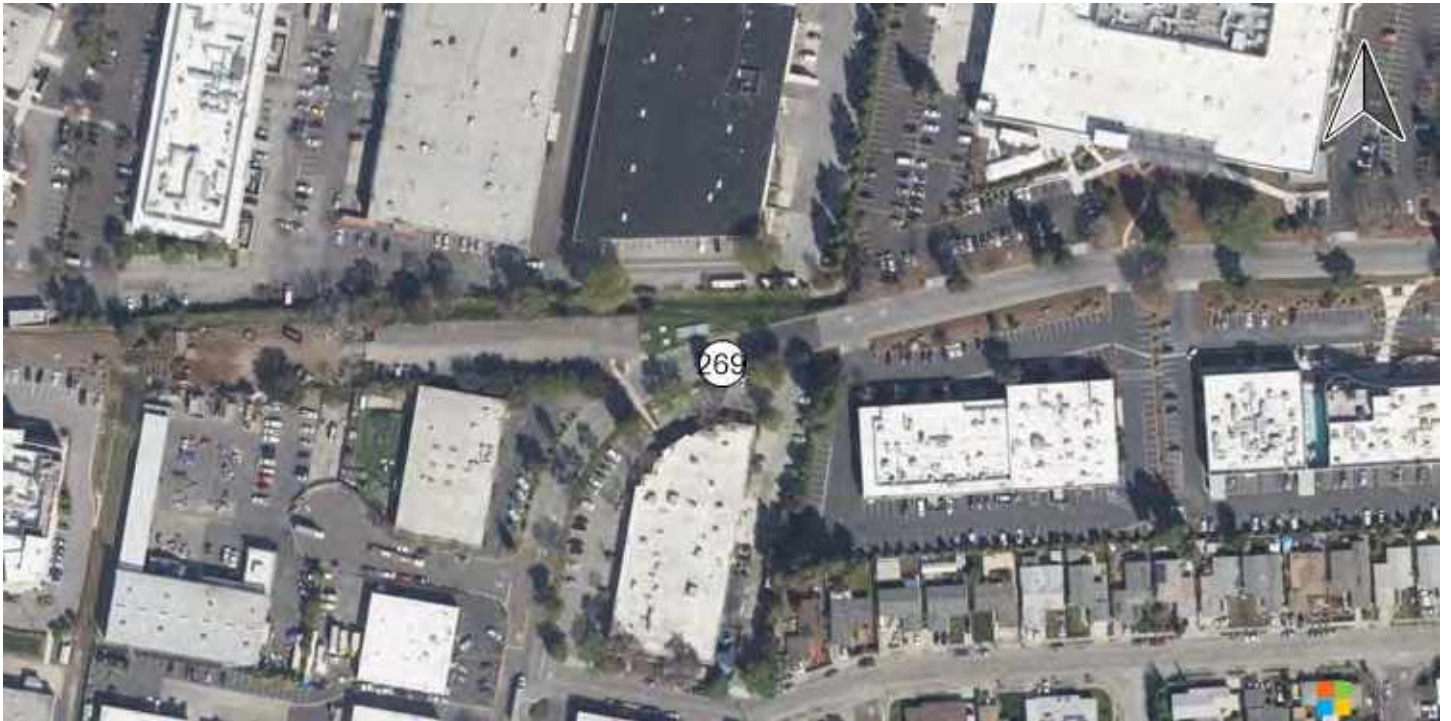


Traffic Volume - Net New Site Trips

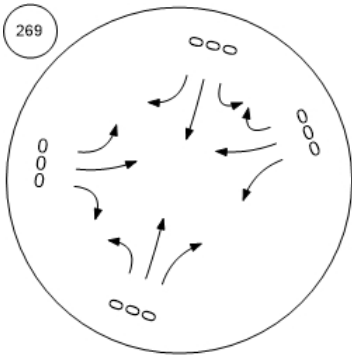




Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road

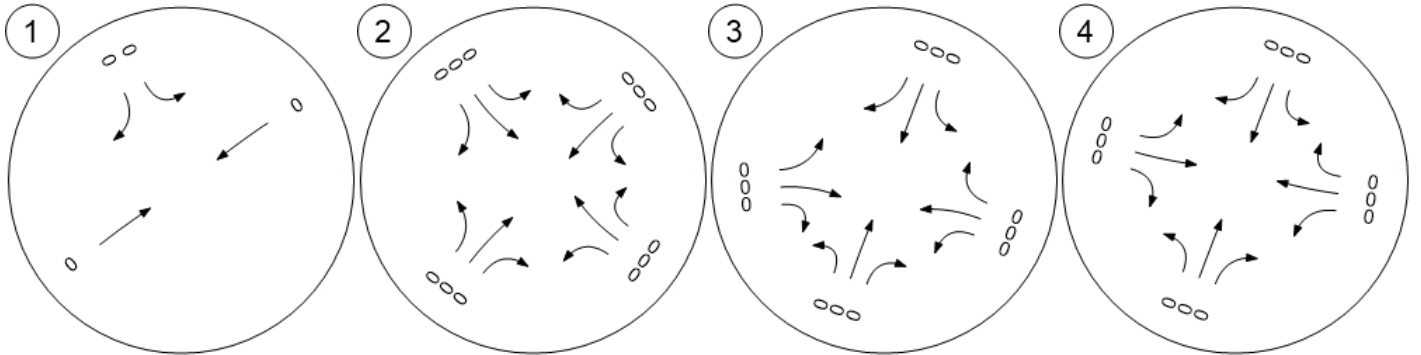


Traffic Volume - Other Volume

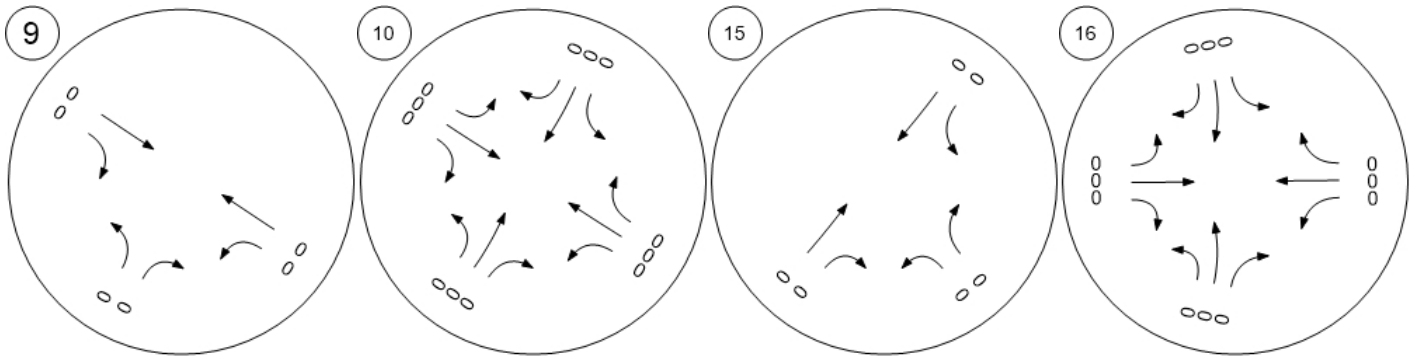


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



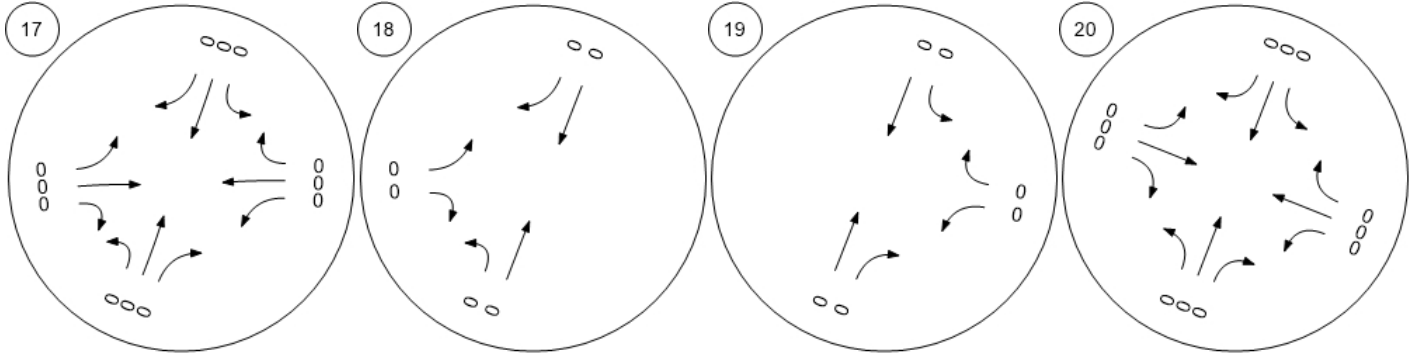
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



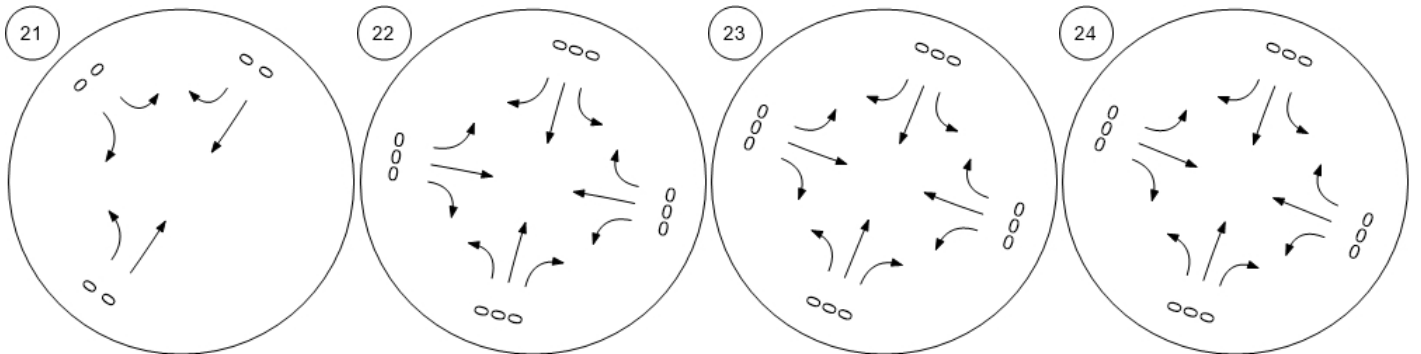
Traffic Volume - Other Volume



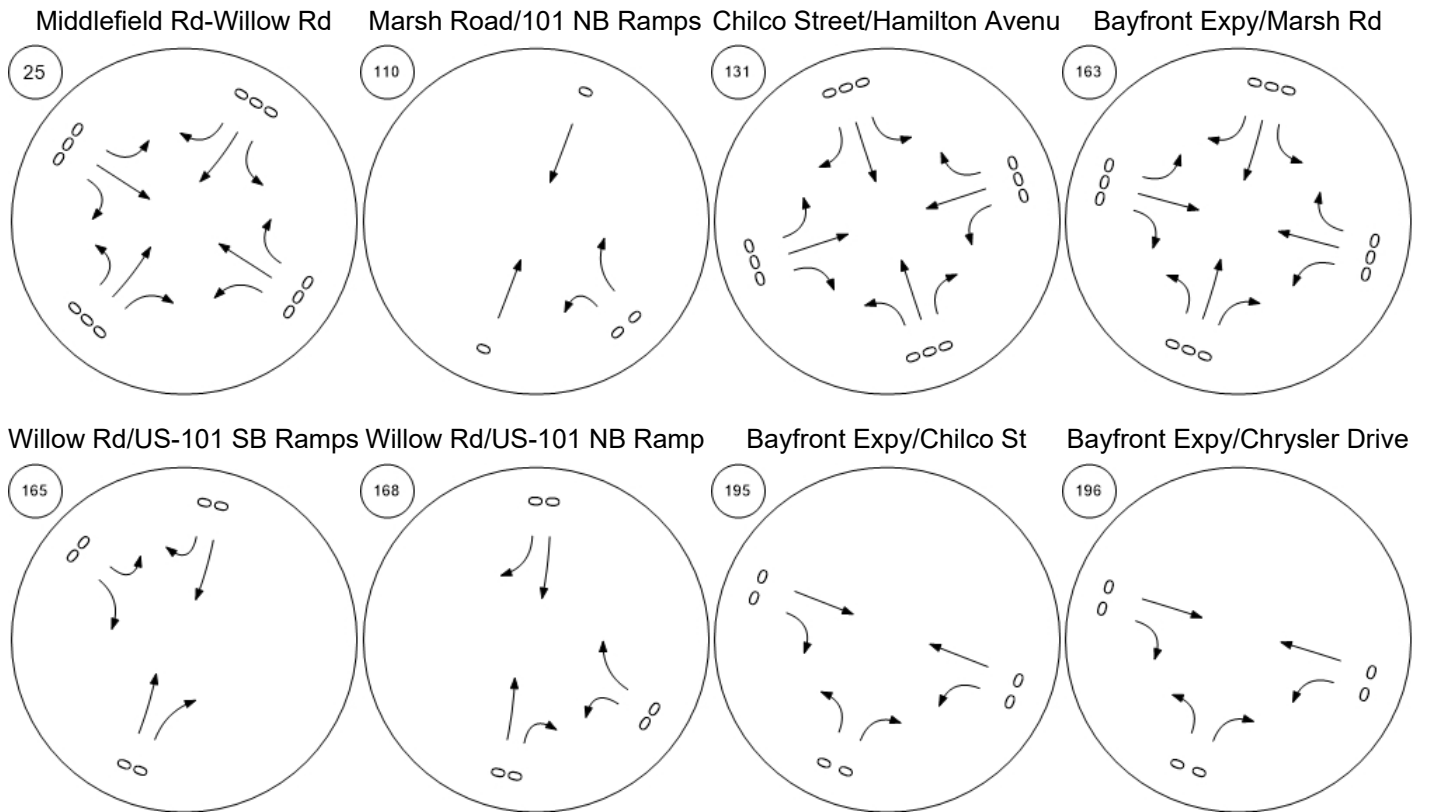
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



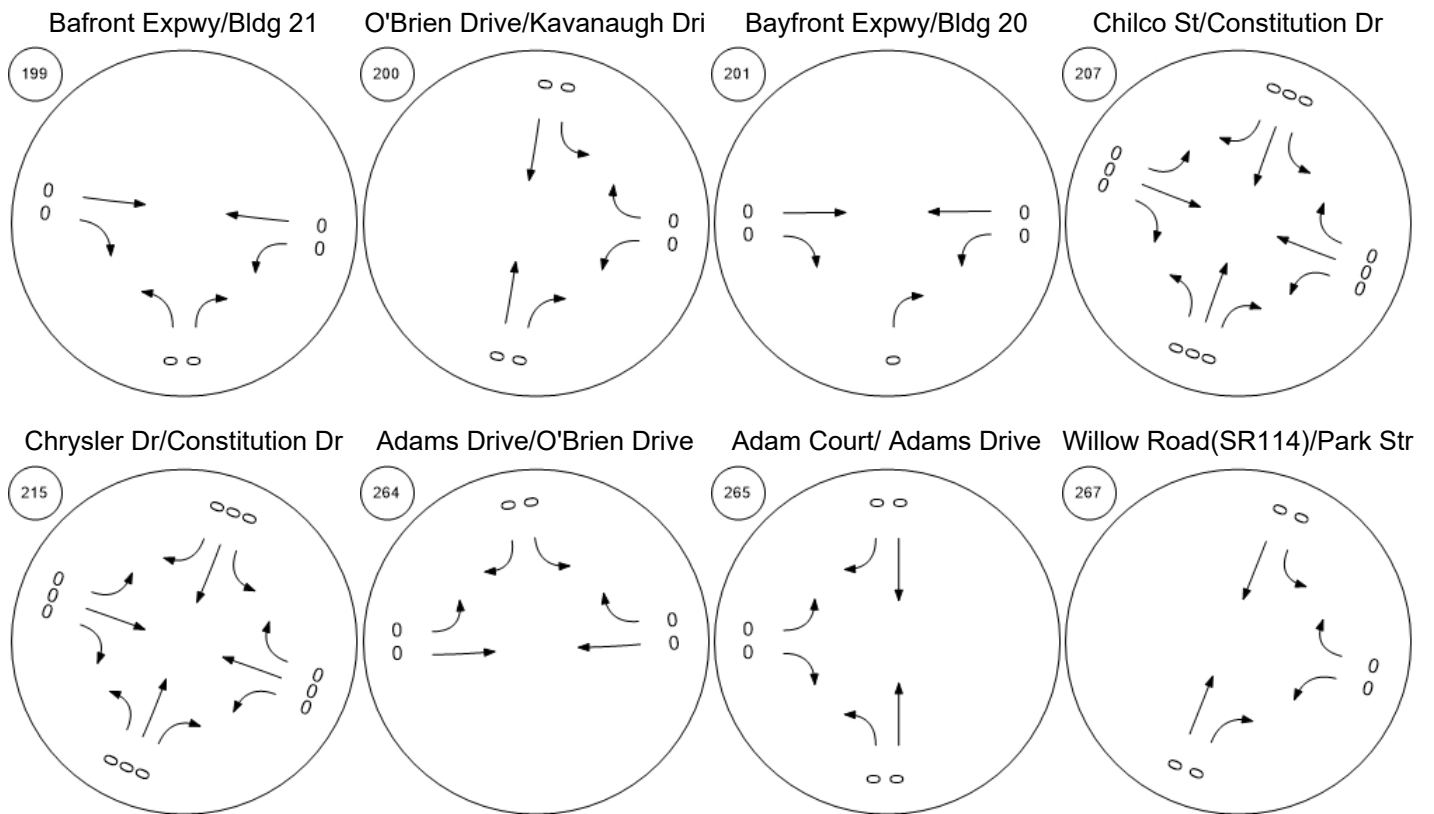
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



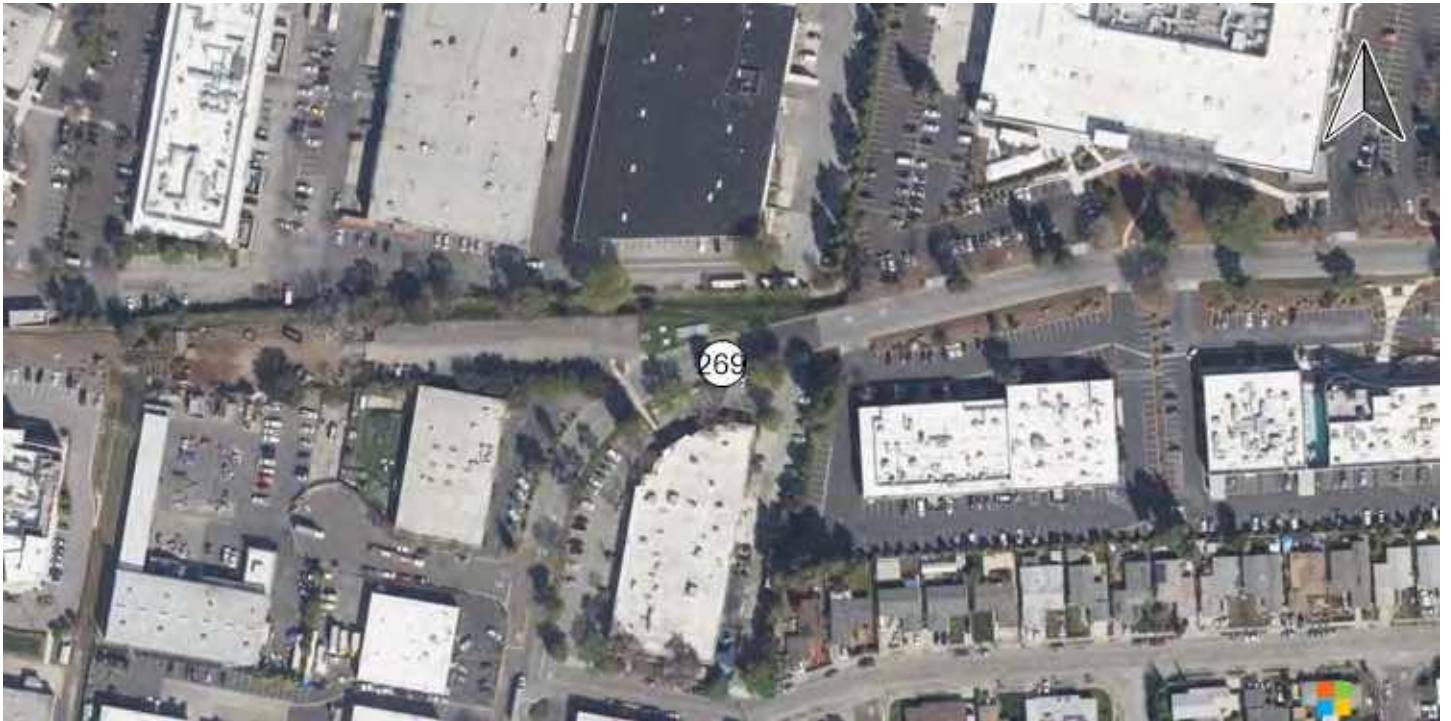
Traffic Volume - Other Volume



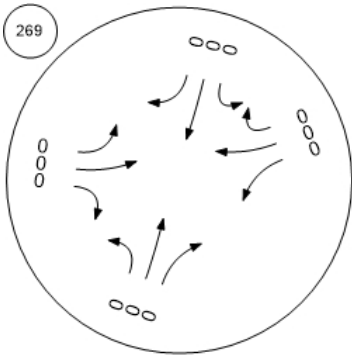
Traffic Volume - Other Volume



Traffic Volume - Other Volume



O'Brien Drive/Loop Road

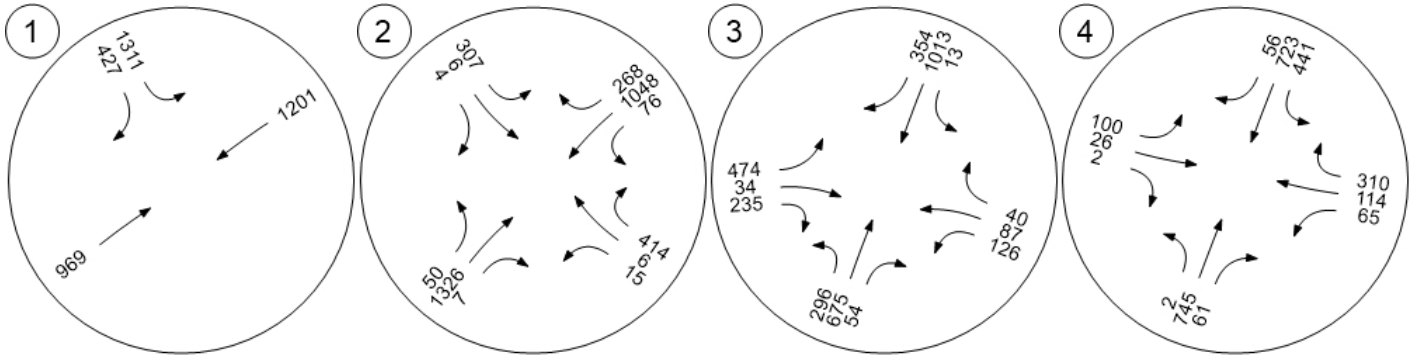


Traffic Volume - Future Total Volume

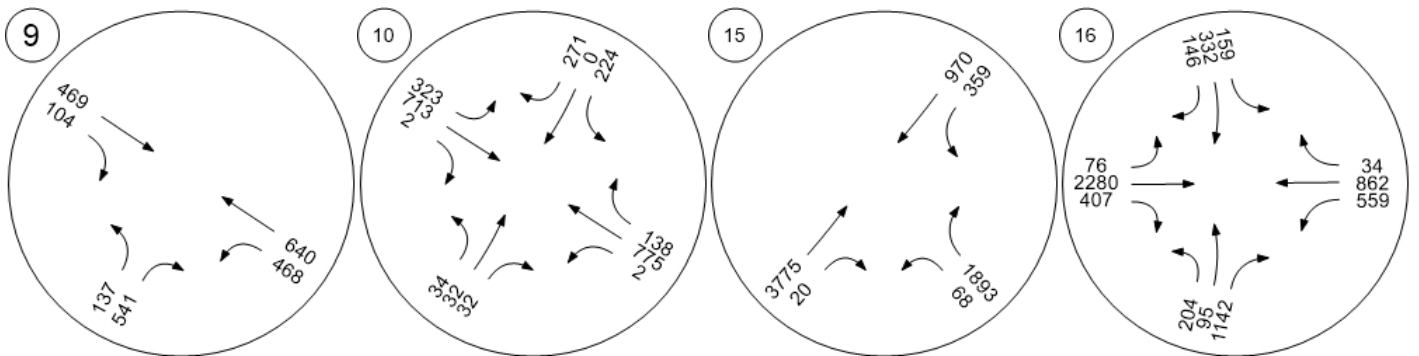


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



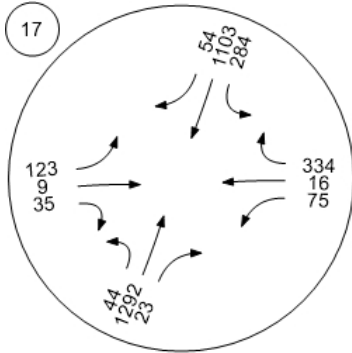
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



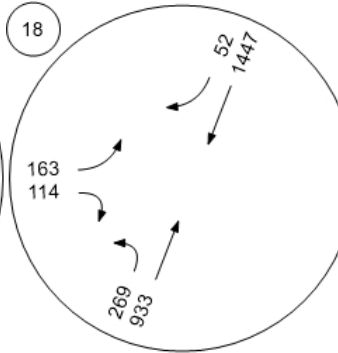
Traffic Volume - Future Total Volume



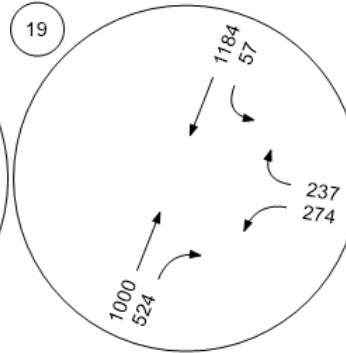
Willow Rd (SR 114)/Hamilton



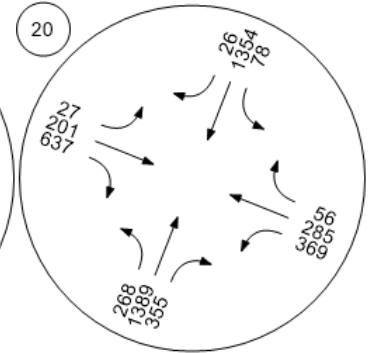
Willow Rd (SR 114)/Ivy Dr



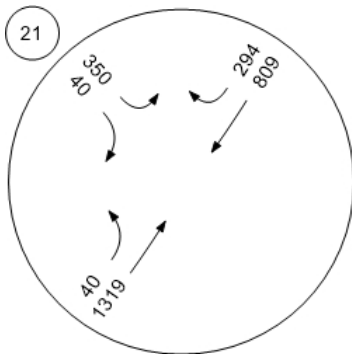
Willow Rd (SR 114)/O'Brien



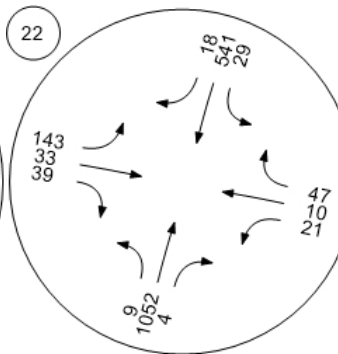
Willow Rd (SR 114)/Newbrid



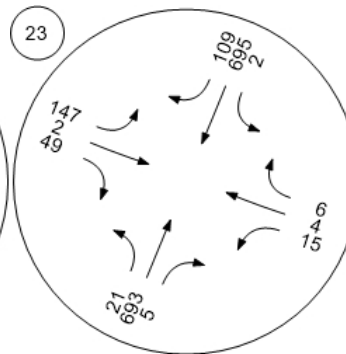
Willow Rd/Bay Rd



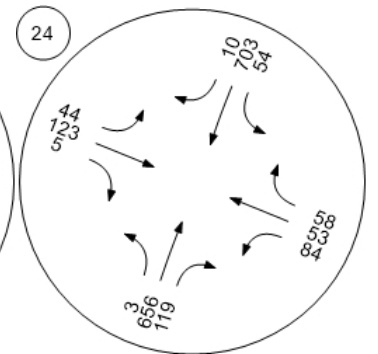
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



Willow Rd/Gilbert Ave

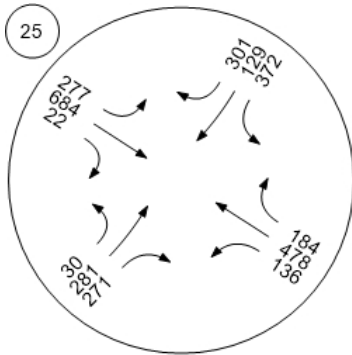




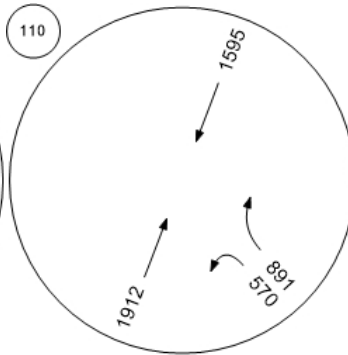
Traffic Volume - Future Total Volume



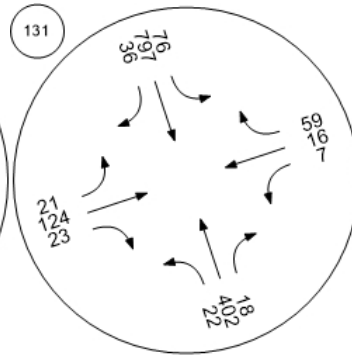
Middlefield Rd-Willow Rd



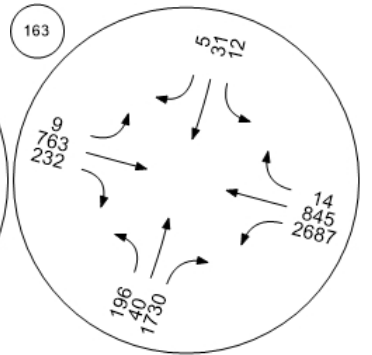
Marsh Road/101 NB Ramps



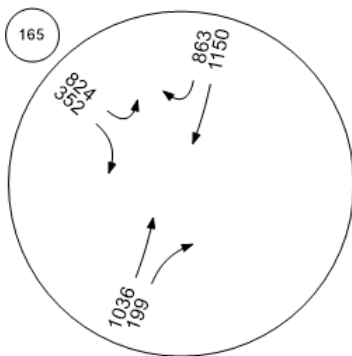
Chilco Street/Hamilton Avenue



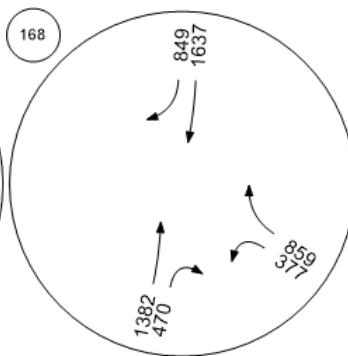
Bayfront Expy/Marsh Rd



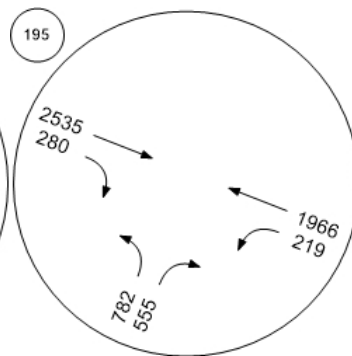
Willow Rd/US-101 SB Ramps



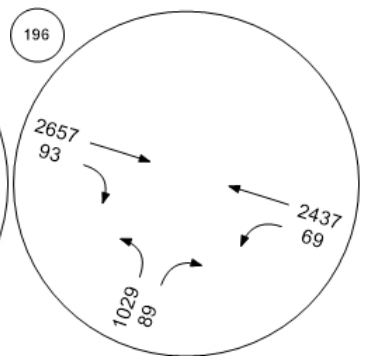
Willow Rd/US-101 NB Ramp



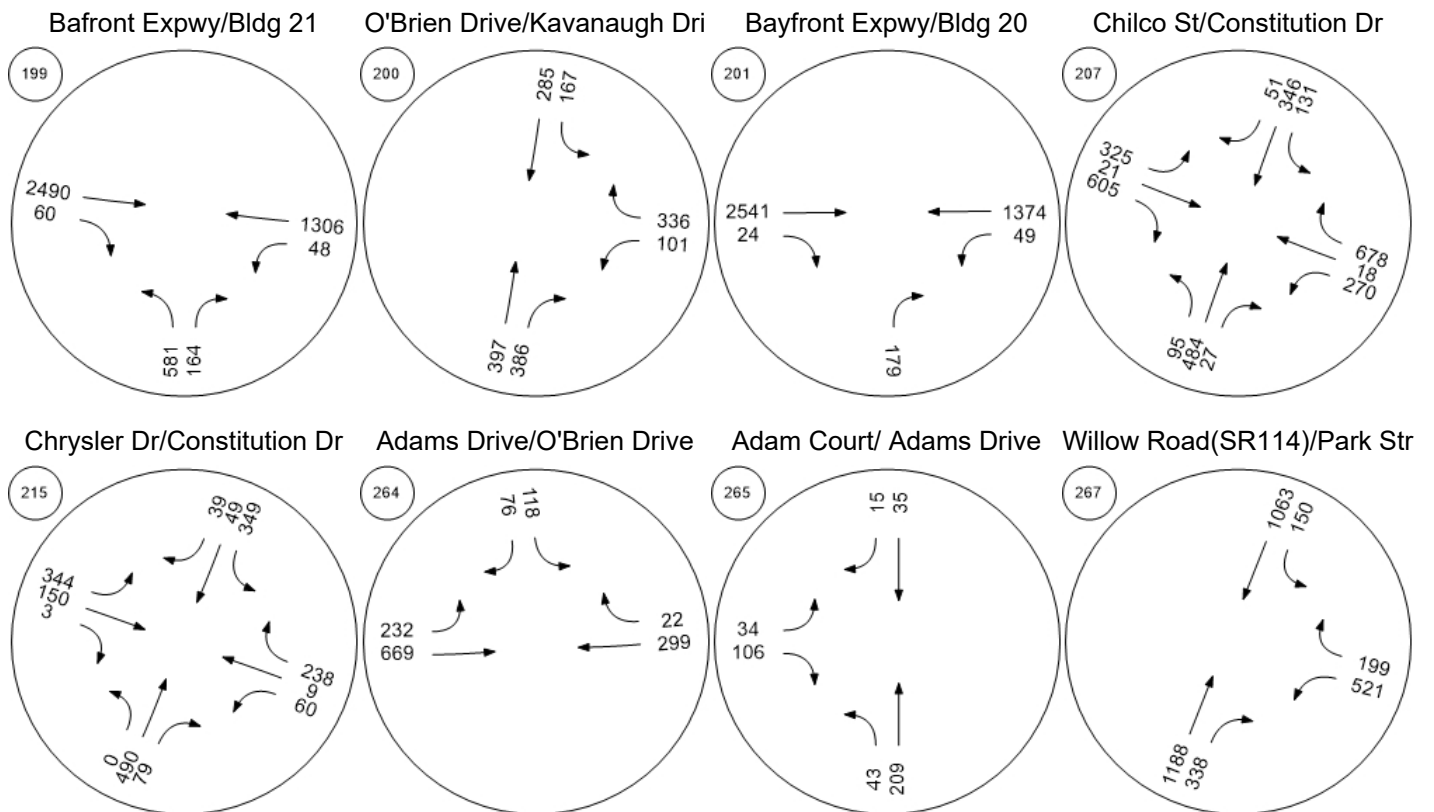
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



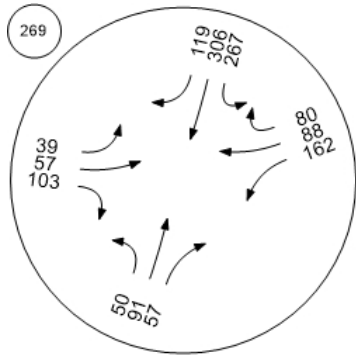
Traffic Volume - Future Total Volume



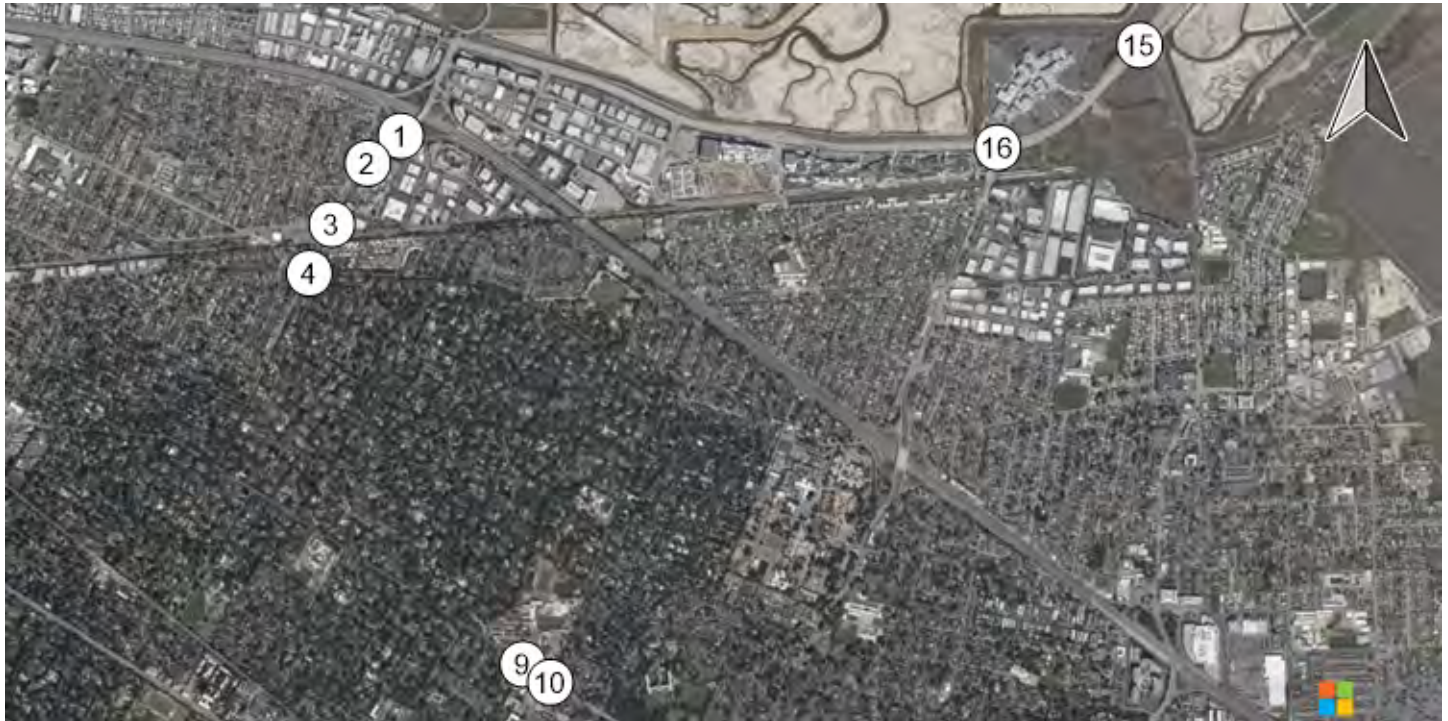
Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road

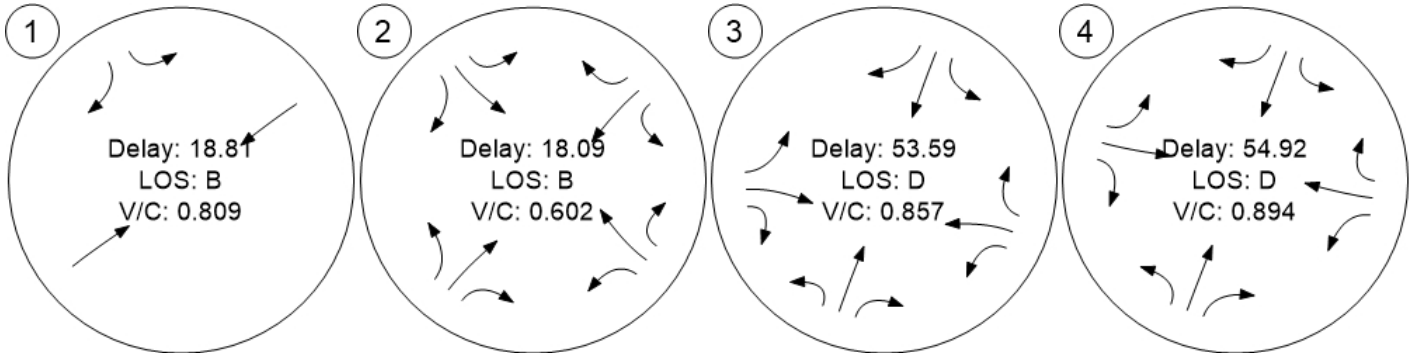


Traffic Conditions

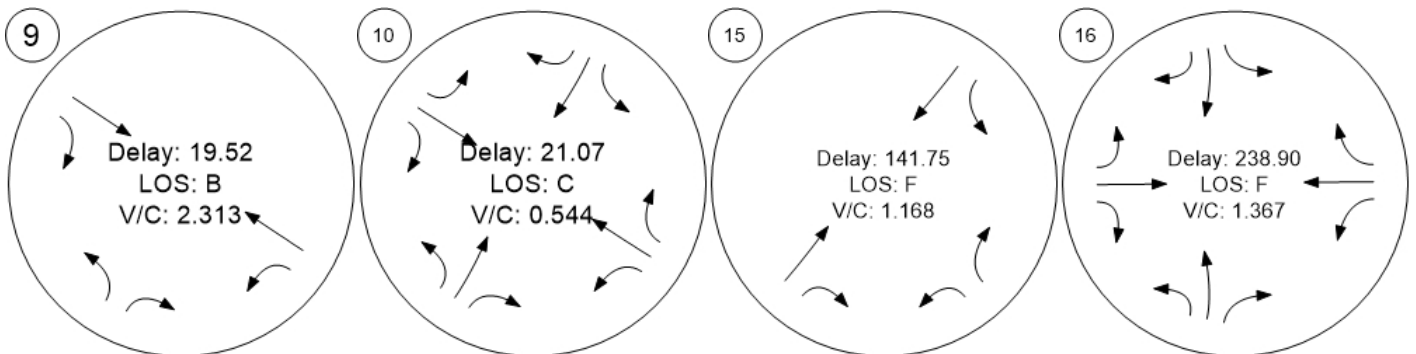


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



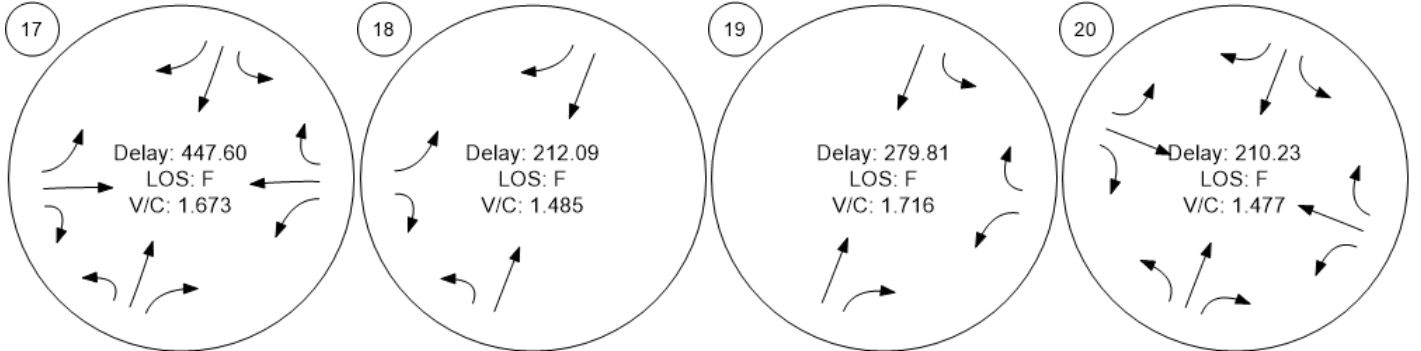
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



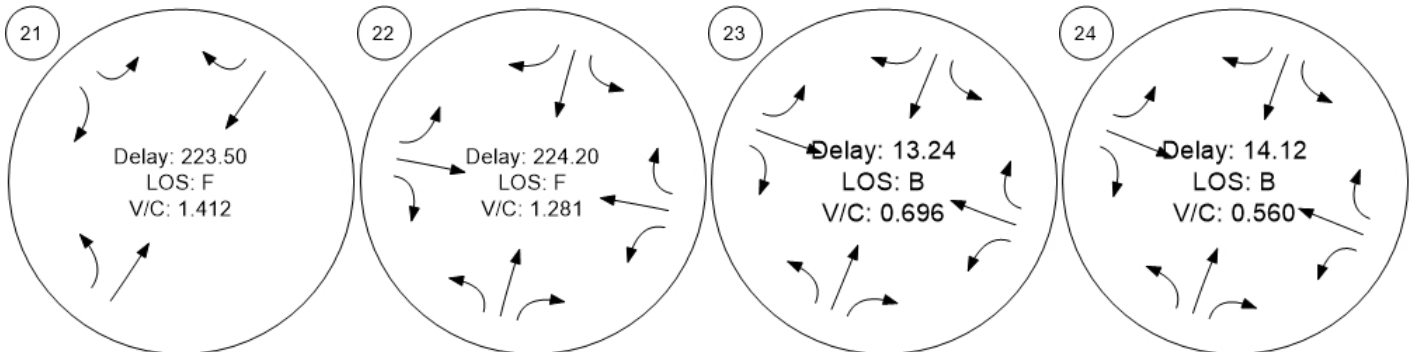
Traffic Conditions



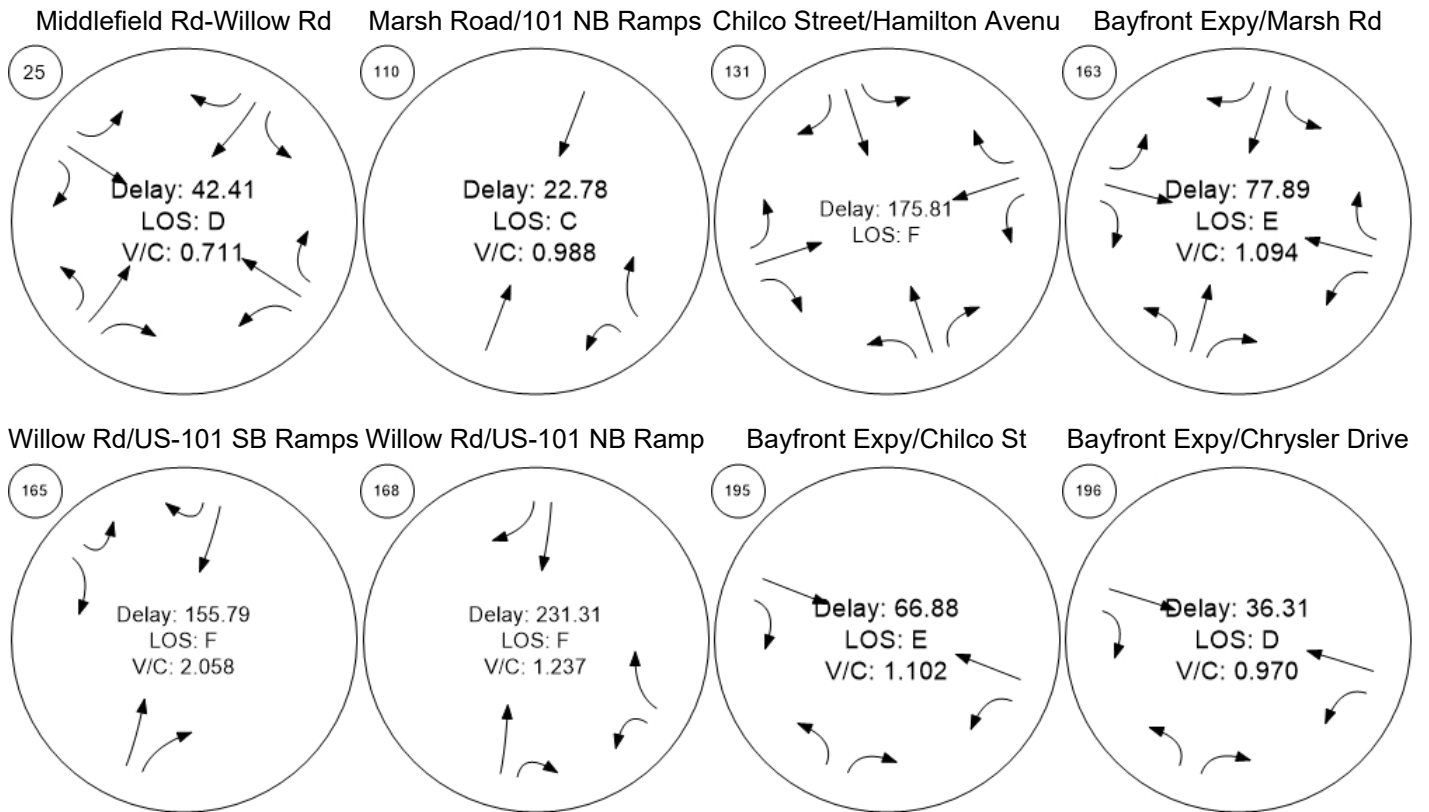
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



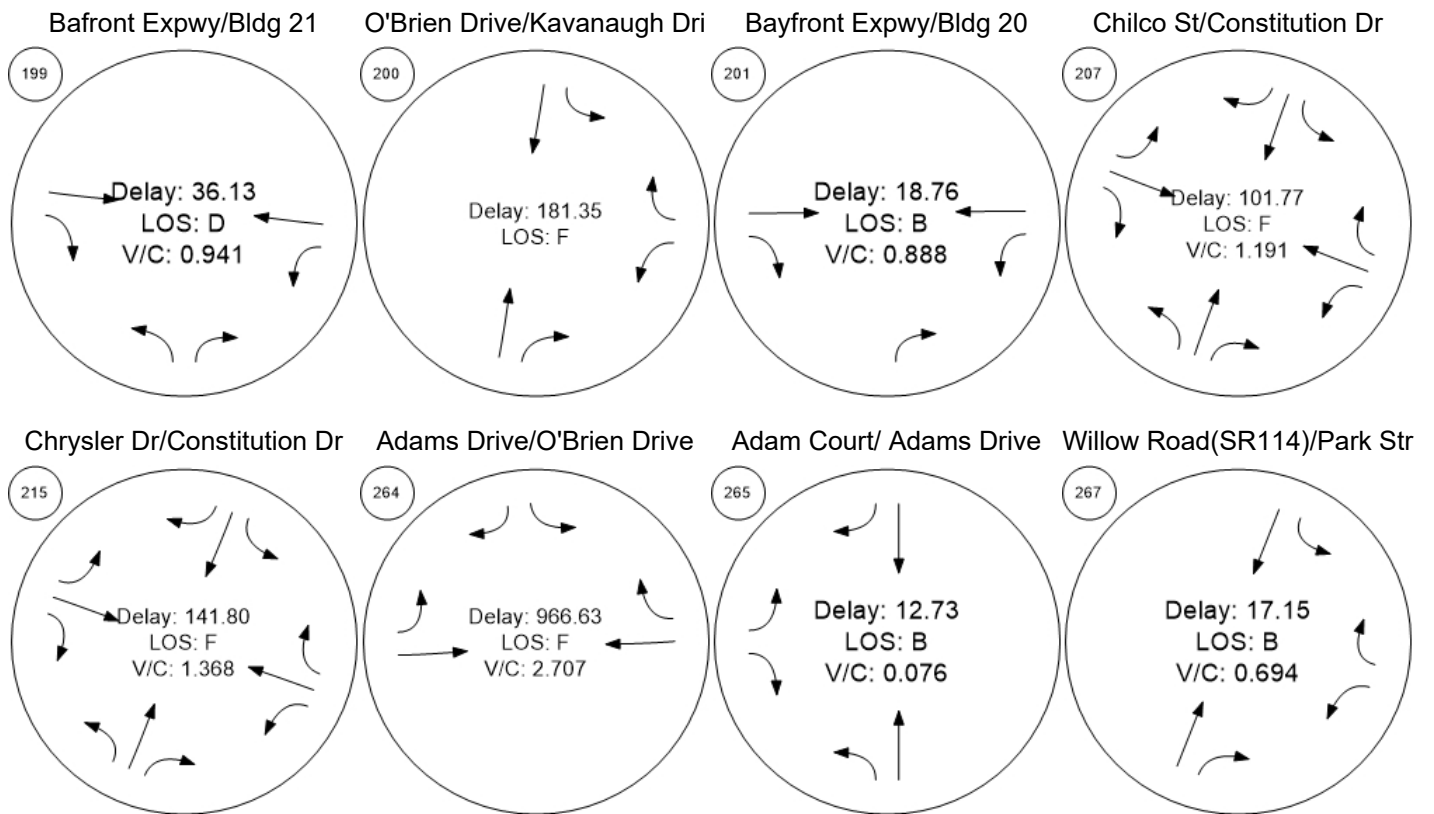
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



Traffic Conditions



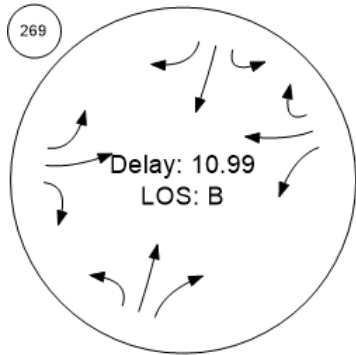
Traffic Conditions



Traffic Conditions



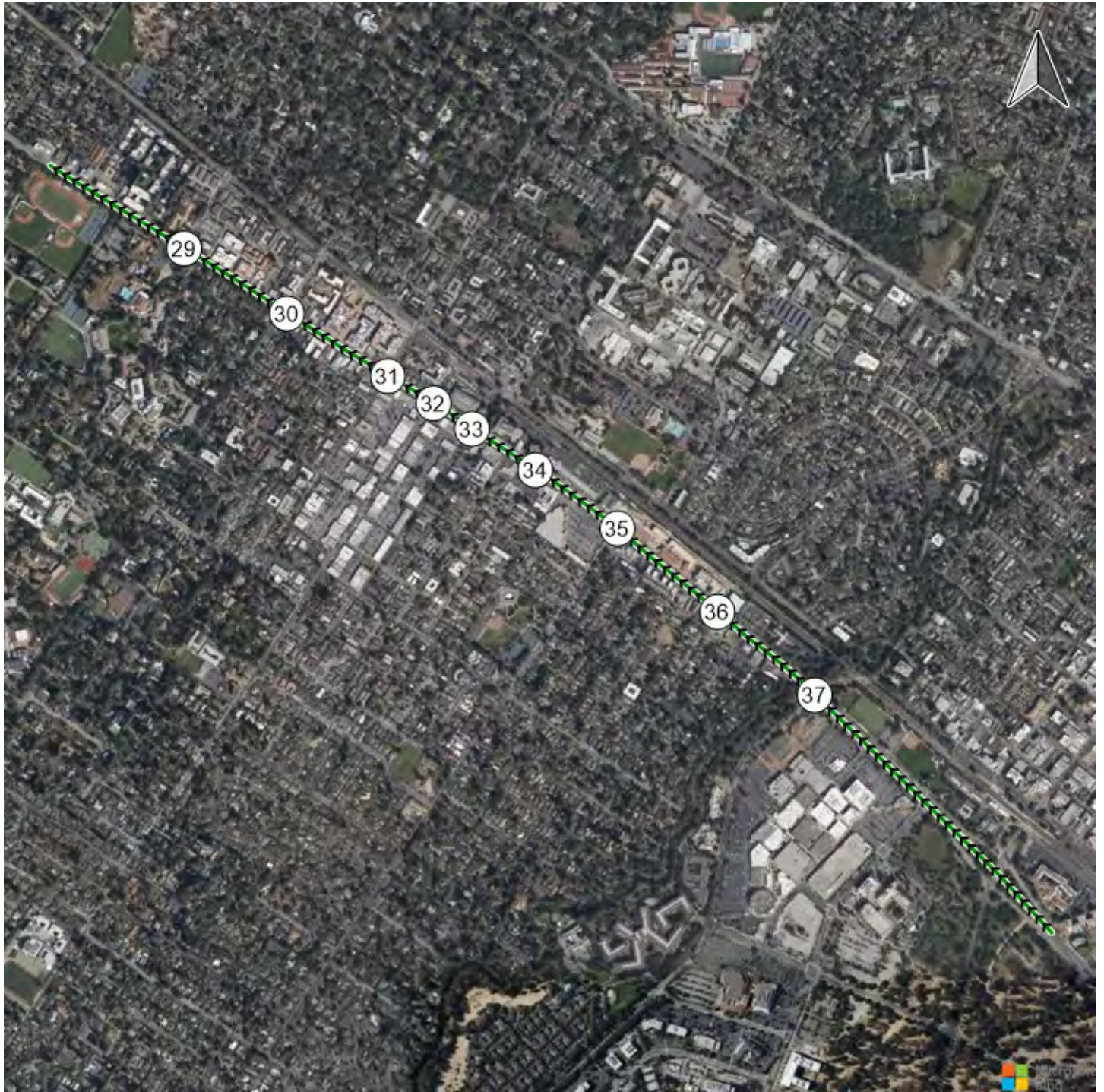
O'Brien Drive/Loop Road





Time Space Diagram - Flowing Off

Route 1: ECR NB

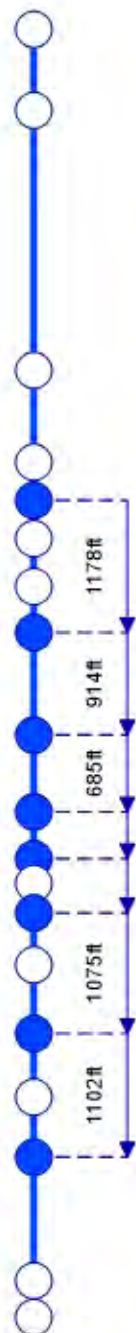


Route 1: ECR NB

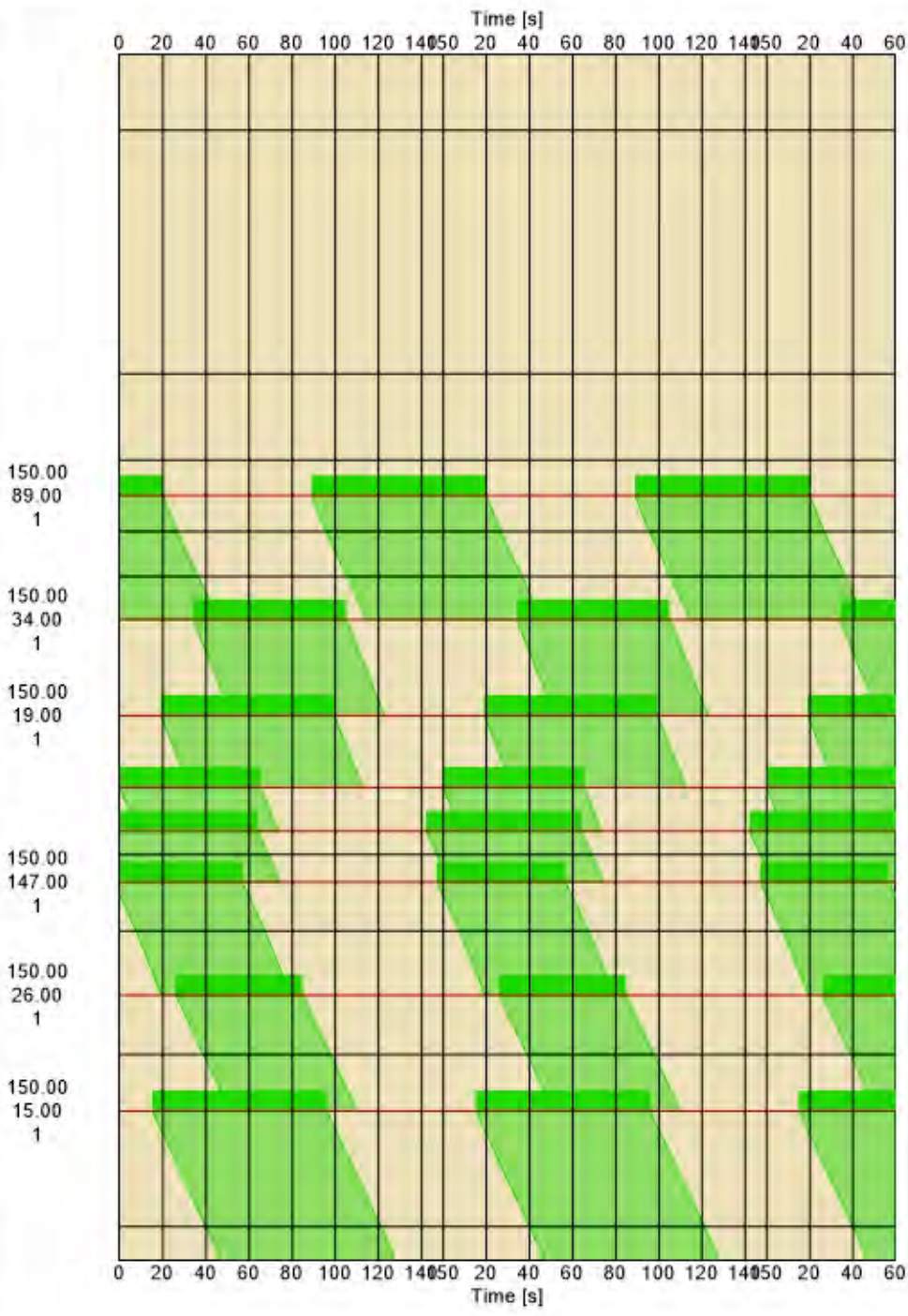
Path

Label  
Nodes

Cycle time /  
Offset /  
Coord. Grp.

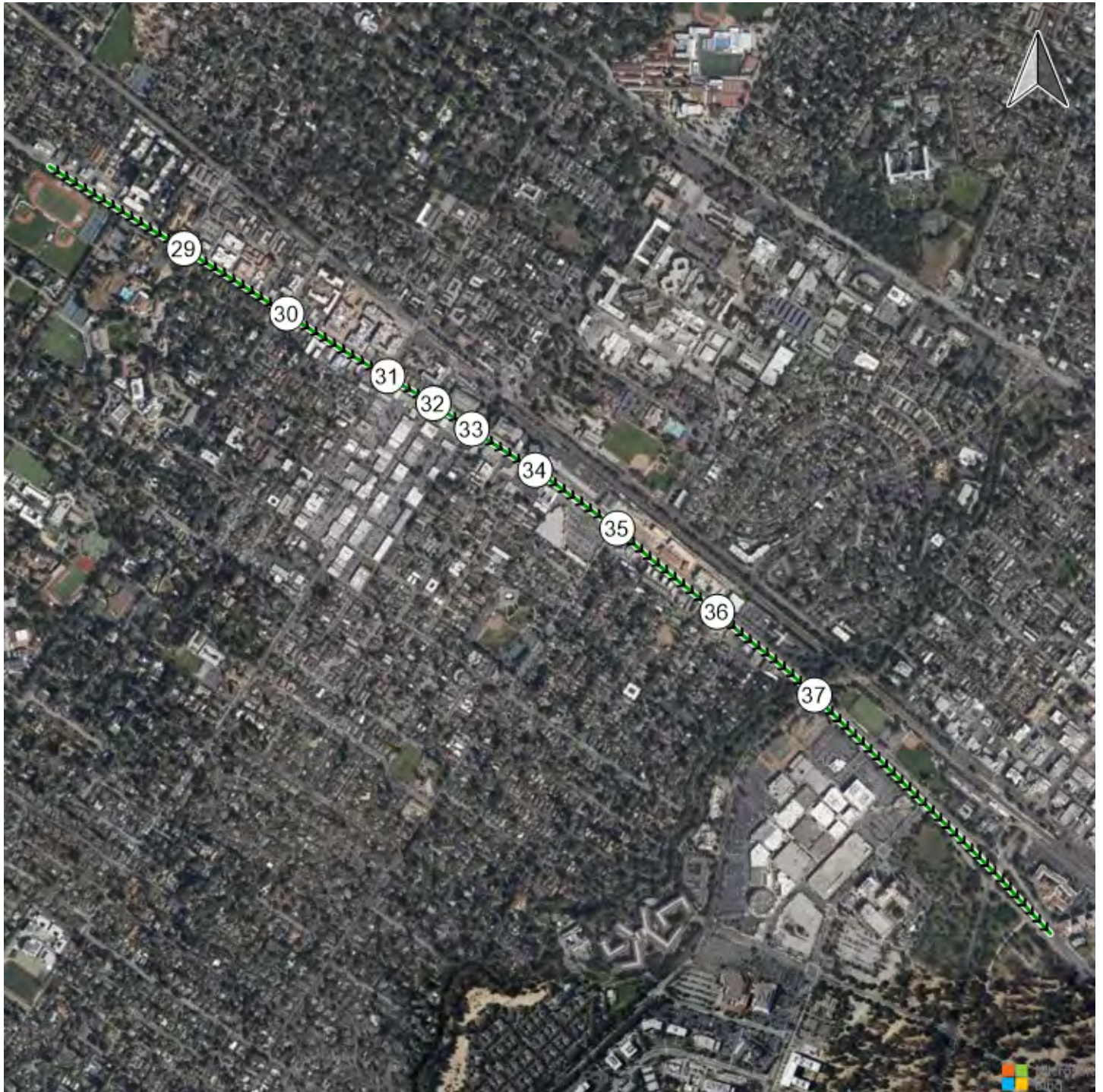


1108
164
43
37
El Camin ...
Sand Hill ...
200
152
36
154
El Camin ...
35
El Camin ...
Middle A ...
34
El Camin ...
33
El Camin ...
Ravensw ...
98
El Camin ...
171
El Camin ...
30
El Camin ...
117
El Camin ...
29
El Camin ...
Encinal ...
29
1554

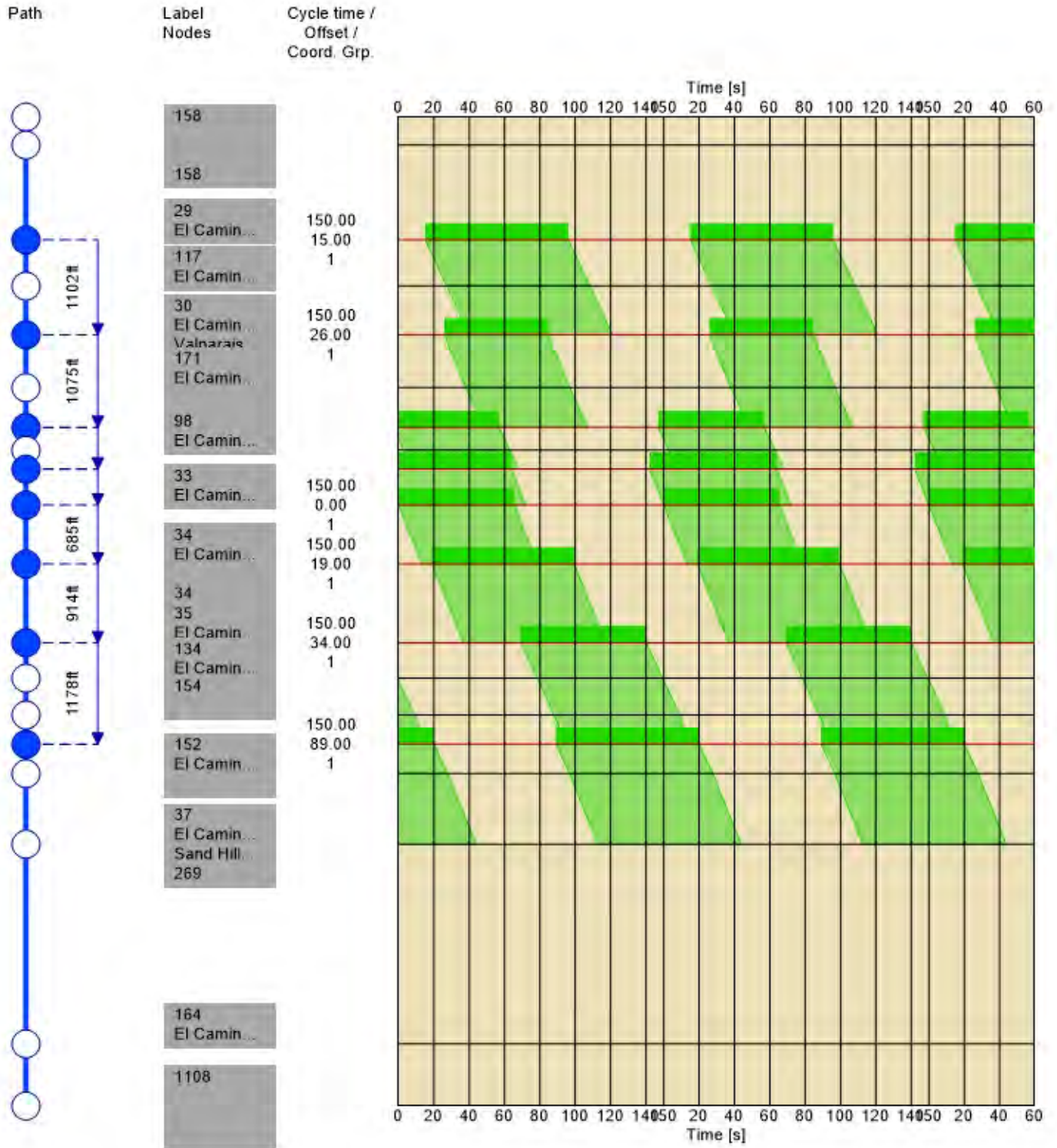


Time Space Diagram - Flowing Off

Route 2: ECR SB

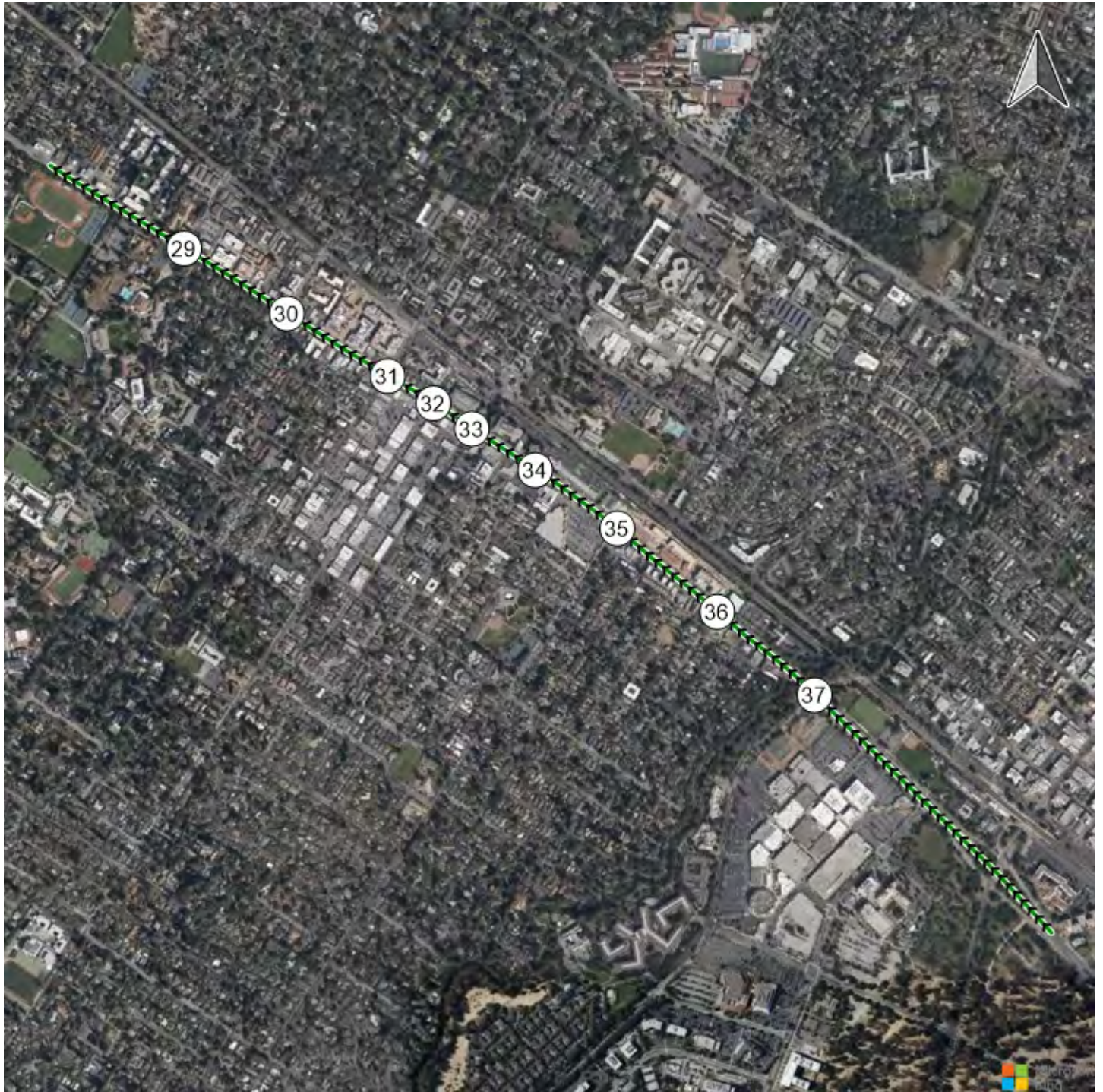


Route 2: ECR SB

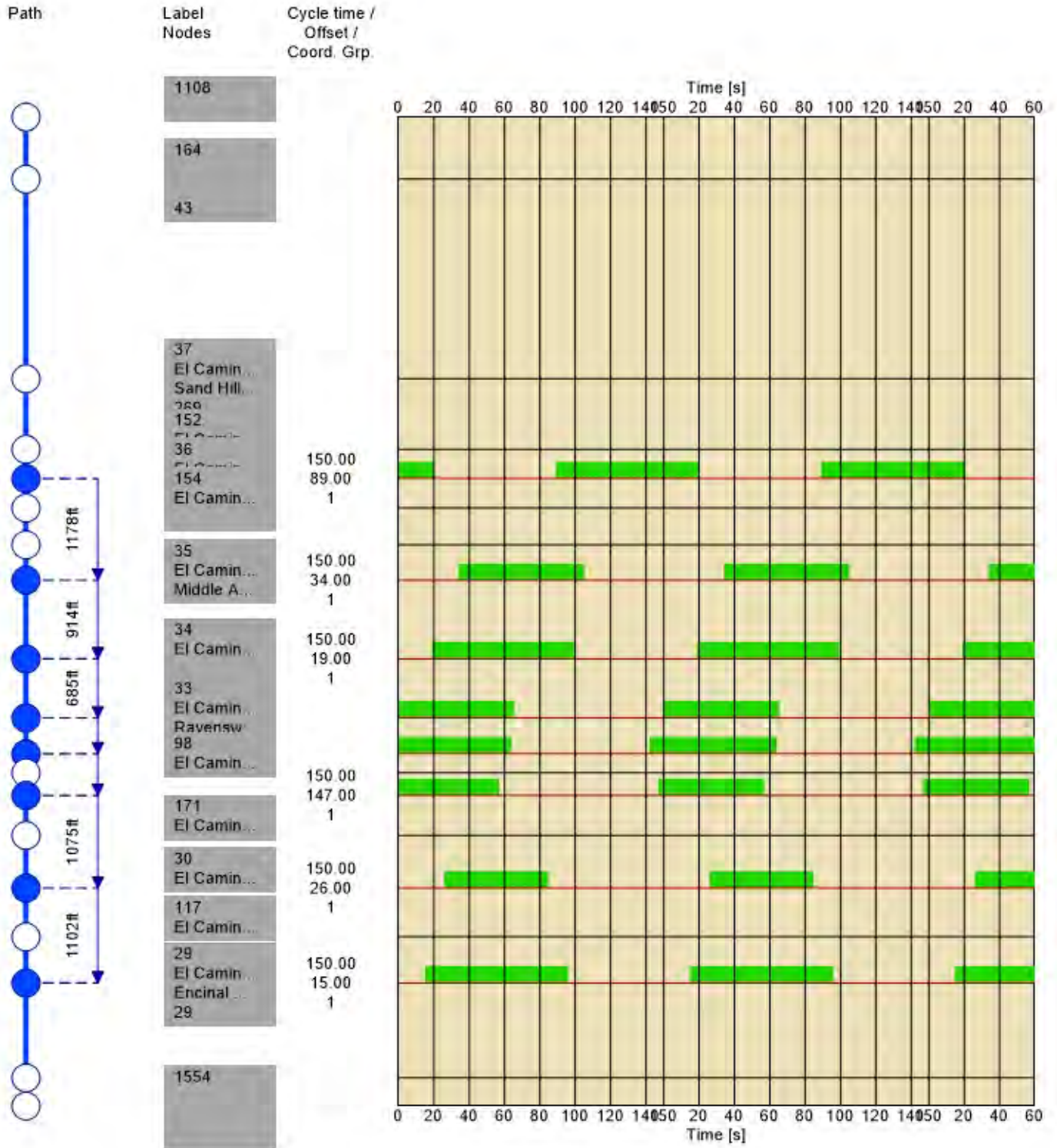


Time Space Diagram - Arterial Band

Route 1: ECR NB

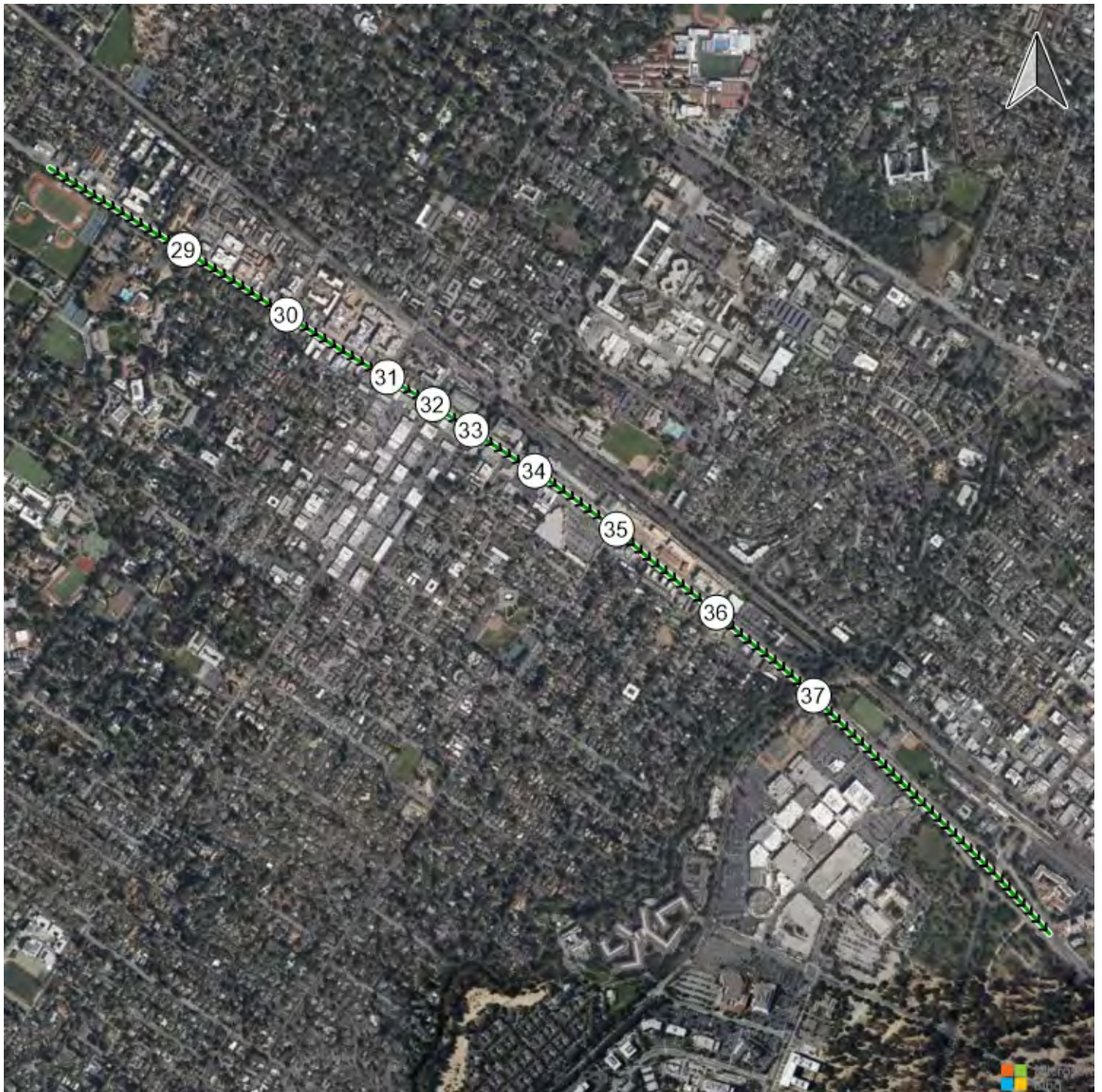


Route 1: ECR NB

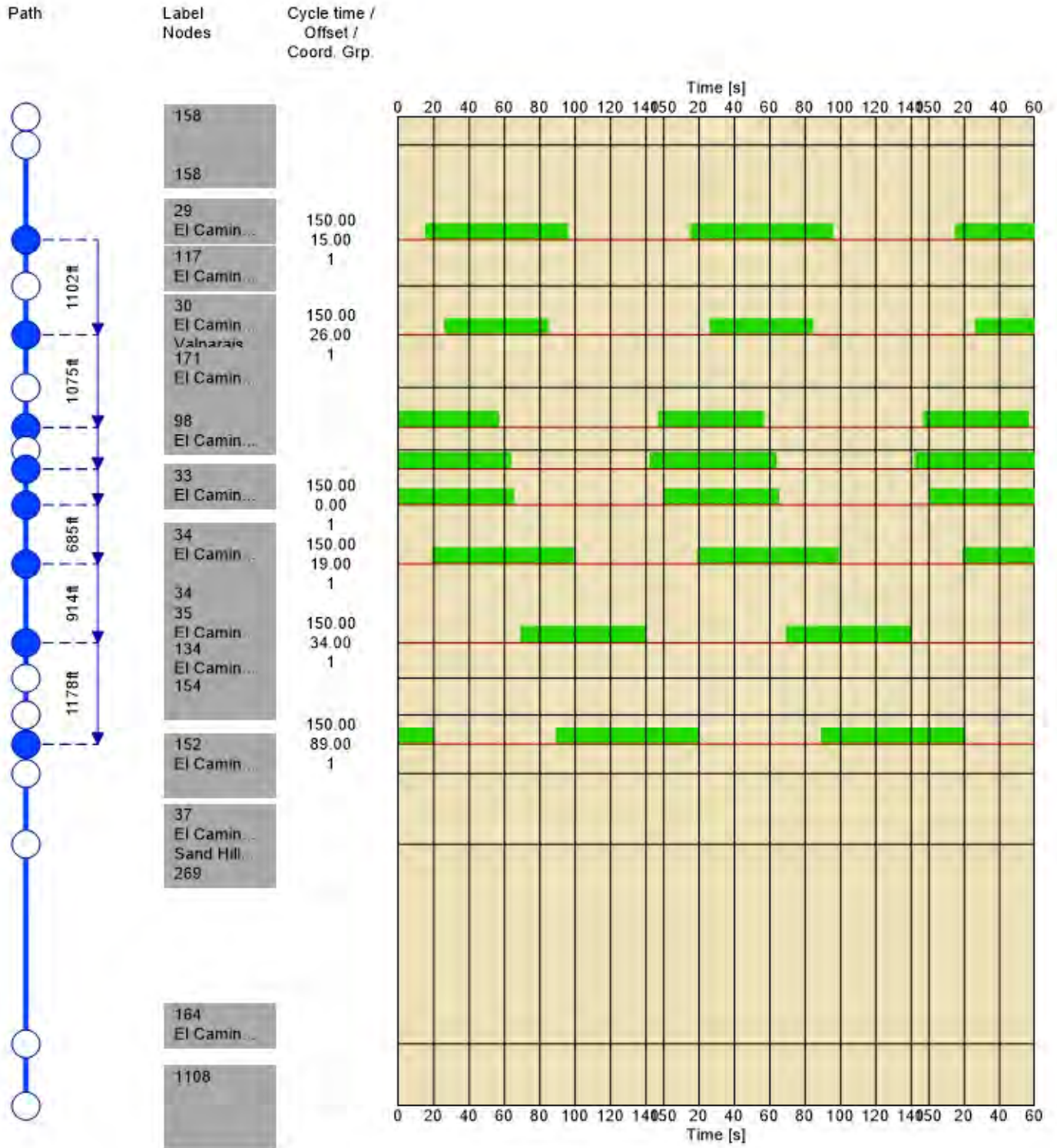


Time Space Diagram - Arterial Band

Route 2: ECR SB



Route 2: ECR SB





Vistro File: \...\Vistro\_AllScenarios\_AM -  
ReducedTripCap\_10.7.2021.vistro

Scenario 24 Imp-Cumulative AM (2040 vols)+Project

Report File: \...\Cumulative + P AM\_Imp.pdf

10/14/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Marsh Rd/Florence St- Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.707	56.7	E
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	NB Left	1.605	235.0	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.340	164.6	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Left	0.929	20.9	C
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.065	104.4	F
131	Chilco Street/Hamilton Avenue	Signalized	HCM 6th Edition	WB Right	0.485	17.7	B
200	O'Brien Drive/Kavanaugh Drive	Signalized	HCM 6th Edition	WB Right	0.786	24.9	C
264	Adams Drive/O'Brien Drive	Signalized	HCM 6th Edition	EB Left	0.722	21.9	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Vistro File: \...\Vistro\_AllScenarios\_PM -  
ReducedTripCap\_10.7.2021.vistro

Scenario 24 Imp-Cumulative PM (2040 vols)+Project

Report File: \...\Cumulative + P PM\_Imp.pdf

10/14/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Marsh Rd/Florence St- Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.736	48.3	D
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	SB Right	1.485	203.1	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	SB Right	1.345	177.6	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.232	98.1	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.214	204.9	F
131	Chilco Street/Hamilton Avenue	Signalized	HCM 6th Edition	EB Thru	0.669	21.3	C
200	O'Brien Drive/Kavanaugh Drive	Signalized	HCM 6th Edition	WB Right	0.784	33.7	C
264	Adams Drive/O'Brien Drive	Signalized	HCM 6th Edition	SB Left	0.586	18.6	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	48.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	296	675	54	13	1013	354	474	34	235	126	87	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	174	0	0	0
Total Hourly Volume [veh/h]	296	675	54	13	1013	354	474	34	61	126	87	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	181	15	3	272	95	127	9	16	34	23	11
Total Analysis Volume [veh/h]	318	726	58	14	1089	381	510	37	66	135	94	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing in	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	55	55	12	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	86	86	4	70	70	26	26	26	16	16
g / C, Green / Cycle	0.14	0.62	0.62	0.03	0.50	0.50	0.19	0.19	0.19	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.22	0.01	0.31	0.25	0.15	0.15	0.04	0.08	0.08
s, saturation flow rate [veh/h]	1771	1852	1797	1714	3555	1521	1774	1821	1572	1751	1788
c, Capacity [veh/h]	253	1141	1108	45	1777	760	332	341	294	198	202
d1, Uniform Delay [s]	59.96	13.11	13.12	66.87	25.23	23.13	54.49	54.49	48.18	59.62	59.59
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	144.34	0.84	0.87	1.45	1.59	2.35	3.61	3.52	0.28	3.06	2.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.26	0.35	0.35	0.31	0.61	0.50	0.81	0.81	0.22	0.68	0.68
d, Delay for Lane Group [s/veh]	204.30	13.95	13.99	68.31	26.82	25.49	58.10	58.00	48.46	62.68	62.53
Lane Group LOS	F	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.03	6.24	6.10	0.51	13.23	8.73	9.54	9.78	2.01	4.82	4.89
50th-Percentile Queue Length [ft/ln]	475.84	156.05	152.48	12.71	330.76	218.37	238.57	244.59	50.35	120.54	122.13
95th-Percentile Queue Length [veh/ln]	28.92	10.34	10.15	0.92	19.20	13.58	14.61	14.91	3.63	8.42	8.51
95th-Percentile Queue Length [ft/ln]	723.01	258.49	253.73	22.88	479.89	339.55	365.23	372.83	90.63	210.57	212.75

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	204.30	13.97	13.99	68.31	26.82	25.49	58.05	58.00	48.46	62.68	62.53	62.53
Movement LOS	F	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	68.89			26.87			57.02			62.60		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	48.33											
Intersection LOS	D											
Intersection V/C	0.736											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	59.40			59.40			59.40			59.40		
I_p,int, Pedestrian LOS Score for Intersection	2.960			3.139			2.721			2.064		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	720			577			457			469		
d_b, Bicycle Delay [s]	28.66			35.44			41.69			41.03		
I_b,int, Bicycle LOS Score for Intersection	2.469			2.784			2.858			2.008		
Bicycle LOS	B			C			C			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	203.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.485

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↵		↵		↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	



**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	269	933	1447	52	163	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	3.30	2.80	0.00	0.00	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	269	933	1447	52	163	114
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	251	389	14	44	31
Total Analysis Volume [veh/h]	289	1003	1556	56	175	123
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing in	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	22	63	41	41	67	67
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	0.00
g_i, Effective Green Time [s]	19	99	77	77	24	46
g / C, Green / Cycle	0.15	0.76	0.59	0.59	0.18	0.35
(v / s)_i Volume / Saturation Flow Rate	0.23	0.64	0.97	0.98	0.17	0.14
s, saturation flow rate [veh/h]	1270	1576	831	819	1025	911
c, Capacity [veh/h]	186	1204	494	487	187	320
d1, Uniform Delay [s]	55.40	9.95	26.33	26.33	52.34	31.49
k, delay calibration	0.50	0.50	0.50	0.50	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	273.79	6.84	293.34	304.01	8.74	0.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.55	0.83	1.63	1.66	0.94	0.38
d, Delay for Lane Group [s/veh]	329.19	16.79	319.67	330.34	61.08	31.77
Lane Group LOS	F	B	F	F	E	C
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	20.13	8.32	54.03	54.70	6.07	2.93
50th-Percentile Queue Length [ft/ln]	503.36	208.02	1350.81	1367.43	151.68	73.36
95th-Percentile Queue Length [veh/ln]	32.32	13.05	88.14	89.56	10.11	5.28
95th-Percentile Queue Length [ft/ln]	808.07	326.29	2203.38	2238.88	252.67	132.05

**Movement, Approach, & Intersection Results**

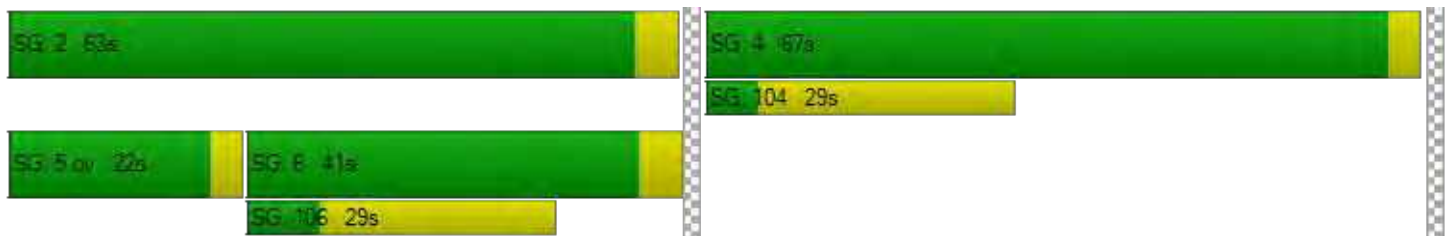
d_M, Delay for Movement [s/veh]	329.19	16.79	324.81	330.34	61.08	31.77
Movement LOS	F	B	F	F	E	C
d_A, Approach Delay [s/veh]	86.67		325.00		48.98	
Approach LOS	F		F		D	
d_I, Intersection Delay [s/veh]	203.15					
Intersection LOS	F					
Intersection V/C	1.485					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.091	3.057	2.167
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	908	570	985
d_b, Bicycle Delay [s]	19.35	33.31	16.74
I_b,int, Bicycle LOS Score for Intersection	2.626	2.890	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	177.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.345

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑ →			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	268	1389	355	78	1354	26	27	201	637	369	285	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	268	1389	355	78	1354	26	27	201	462	369	285	11
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	382	98	21	372	7	7	55	127	101	78	3
Total Analysis Volume [veh/h]	295	1526	390	86	1488	29	30	221	508	405	313	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	40	40	21	40	40	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	24	53	53	12	41	41	9	34	34	31	56	56
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	21	59	59	9	47	47	3	30	30	17	43	43
g / C, Green / Cycle	0.16	0.45	0.45	0.07	0.36	0.36	0.03	0.23	0.23	0.13	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.23	0.52	0.54	0.09	0.54	0.54	0.02	0.23	0.33	0.12	0.24	0.01
s, saturation flow rate [veh/h]	1273	2481	1171	952	1853	961	1752	965	1540	3409	1303	1523
c, Capacity [veh/h]	206	1123	530	66	668	346	45	222	354	452	429	502
d1, Uniform Delay [s]	54.50	35.57	35.57	60.50	41.57	41.57	62.80	49.99	49.43	55.49	38.48	29.46
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.11	0.44	0.50	0.04	0.16	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	221.36	77.24	99.91	151.56	230.18	239.05	15.94	55.35	211.05	2.59	3.43	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.44	1.15	1.18	1.30	1.49	1.50	0.67	1.00	1.43	0.90	0.73	0.02
d, Delay for Lane Group [s/veh]	275.87	112.81	135.48	212.06	271.75	280.62	78.74	105.34	260.48	58.09	41.91	29.48
Lane Group LOS	F	F	F	F	F	F	E	F	F	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	19.24	28.92	30.64	4.97	32.03	34.07	1.18	10.55	32.07	6.70	9.19	0.26
50th-Percentile Queue Length [ft/ln]	481.10	723.01	765.99	124.29	800.84	851.85	29.61	263.81	801.84	167.45	229.77	6.51
95th-Percentile Queue Length [veh/ln]	30.58	41.59	44.58	8.95	51.01	54.02	2.13	15.88	49.11	10.94	14.16	0.47
95th-Percentile Queue Length [ft/ln]	764.47	1039.73	1114.39	223.72	1275.35	1350.49	53.29	396.99	1227.78	273.56	354.06	11.72



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	275.87	116.32	135.48	212.06	274.67	280.62	78.74	105.34	260.48	58.09	41.91	29.48
Movement LOS	F	F	F	F	F	F	E	F	F	E	D	C
d_A, Approach Delay [s/veh]	140.99			271.42			208.12			50.68		
Approach LOS	F			F			F			D		
d_I, Intersection Delay [s/veh]	177.59											
Intersection LOS	F											
Intersection V/C	1.345											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	52.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	23.40	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.502	2.951	2.781	2.775
Crosswalk LOS	D	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	738	554	462	800
d_b, Bicycle Delay [s]	25.86	34.07	38.54	23.47
I_b,int, Bicycle LOS Score for Intersection	2.776	2.441	3.101	2.838
Bicycle LOS	C	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	98.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.232

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	⇐		⇐		⇐⇐⇐	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	40	1319	809	294	350	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	40	1319	809	71	350	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	340	209	18	90	0
Total Analysis Volume [veh/h]	41	1360	834	73	361	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	2	40	35	35	17	17
g / C, Green / Cycle	0.03	0.61	0.52	0.52	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.02	0.81	0.50	0.05	0.22	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	1576	1651	756
c, Capacity [veh/h]	58	1016	877	821	412	188
d1, Uniform Delay [s]	32.03	13.18	15.20	8.03	24.10	0.00
k, delay calibration	0.04	0.28	0.15	0.15	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.64	155.99	8.74	0.07	2.39	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.70	1.34	0.95	0.09	0.88	0.00
d, Delay for Lane Group [s/veh]	37.67	169.17	23.93	8.10	26.50	0.00
Lane Group LOS	D	F	C	A	C	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.72	27.72	5.83	0.46	2.68	0.00
50th-Percentile Queue Length [ft/ln]	18.06	692.97	145.66	11.39	67.10	0.00
95th-Percentile Queue Length [veh/ln]	1.30	44.15	9.79	0.82	4.83	0.00
95th-Percentile Queue Length [ft/ln]	32.51	1103.80	244.63	20.51	120.78	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.67	169.17	23.93	8.10	26.50	0.00
Movement LOS	D	F	C	A	C	A
d_A, Approach Delay [s/veh]	165.32		22.66		26.50	
Approach LOS	F		C		C	
d_I, Intersection Delay [s/veh]	98.06					
Intersection LOS	F					
Intersection V/C	1.232					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	23.25
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.363
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1080	1080	1080
d_b, Bicycle Delay [s]	7.10	7.08	7.07
I_b,int, Bicycle LOS Score for Intersection	2.715	2.492	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	204.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.214

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	9	1052	4	29	541	18	143	33	39	21	10	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	2.10	0.00	0.00	2.60	27.60	4.30	0.00	17.90	0.00	0.00	6.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	0
Total Hourly Volume [veh/h]	9	1052	4	29	541	18	143	33	21	21	10	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	292	1	8	150	5	40	9	6	6	3	13
Total Analysis Volume [veh/h]	10	1169	4	32	601	20	159	37	23	23	11	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing in	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												1,8
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	C	R
C, Cycle Length [s]	143	143	143	143	143	143	143	143	143	143
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.50	2.50	0.00	2.50	2.50	2.50	2.50	2.50	0.00
g_i, Effective Green Time [s]	109	100	100	109	103	12	12	12	8	17
g / C, Green / Cycle	0.77	0.70	0.70	0.77	0.72	0.09	0.09	0.09	0.05	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.99	0.99	0.06	1.06	0.05	0.05	0.05	0.02	0.03
s, saturation flow rate [veh/h]	515	590	589	575	584	1748	1842	445	1838	1501
c, Capacity [veh/h]	103	412	412	176	422	150	158	38	102	181
d1, Uniform Delay [s]	42.17	21.54	21.54	40.16	19.82	63.28	63.26	62.81	65.04	57.20
k, delay calibration	0.23	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.87	204.10	204.33	0.49	224.66	4.48	4.20	14.34	1.90	0.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.10	1.42	1.42	0.18	1.47	0.64	0.64	0.60	0.33	0.29
d, Delay for Lane Group [s/veh]	43.05	225.64	225.87	40.65	244.47	67.75	67.45	77.15	66.93	58.06
Lane Group LOS	D	F	F	D	F	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.09	36.03	36.01	0.24	38.97	3.66	3.82	0.98	1.26	1.78
50th-Percentile Queue Length [ft/ln]	2.30	900.86	900.18	6.02	974.14	91.50	95.60	24.52	31.52	44.48
95th-Percentile Queue Length [veh/ln]	0.17	58.24	58.21	0.43	63.65	6.59	6.88	1.77	2.27	3.20
95th-Percentile Queue Length [ft/ln]	4.14	1455.93	1455.14	10.83	1591.23	164.70	172.08	44.13	56.73	80.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.05	225.75	225.87	40.65	244.47	244.47	67.63	67.45	77.15	66.93	66.93	58.06
Movement LOS	D	F	F	D	F	F	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	224.21			234.48			68.60			61.57		
Approach LOS	F			F			E			E		
d_I, Intersection Delay [s/veh]	204.89											
Intersection LOS	F											
Intersection V/C	1.214											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.84	60.84	60.84	60.84
l_p,int, Pedestrian LOS Score for Intersection	2.529	2.750	2.212	2.038
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	280	280	420	420
d_b, Bicycle Delay [s]	52.90	53.06	44.59	44.59
l_b,int, Bicycle LOS Score for Intersection	2.536	2.637	1.951	1.702
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.669

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	22	402	18	76	797	36	21	124	23	7	16	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	402	18	76	797	36	21	124	23	7	16	59
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	109	5	21	216	10	6	35	7	2	4	16
Total Analysis Volume [veh/h]	24	434	19	82	863	39	24	140	26	8	17	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			1			2		
v_di, Inbound Pedestrian Volume crossing in	1			2			2			2		
v_co, Outbound Pedestrian Volume crossing	2			1			1			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			1			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	59	0	0	59	0	0	31	0	0	31	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	55	55	27	27
g / C, Green / Cycle	0.61	0.61	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.27	0.56	0.11	0.05
s, saturation flow rate [veh/h]	1741	1752	1773	1620
c, Capacity [veh/h]	1106	1114	577	530
d1, Uniform Delay [s]	9.16	15.09	24.61	23.31
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.23	10.25	1.52	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.43	0.88	0.33	0.17
d, Delay for Lane Group [s/veh]	10.39	25.34	26.14	23.99
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.77	18.20	3.39	1.48
50th-Percentile Queue Length [ft/ln]	119.18	455.09	84.80	36.89
95th-Percentile Queue Length [veh/ln]	8.35	25.20	6.11	2.66
95th-Percentile Queue Length [ft/ln]	208.69	630.02	152.64	66.41

**Movement, Approach, & Intersection Results**

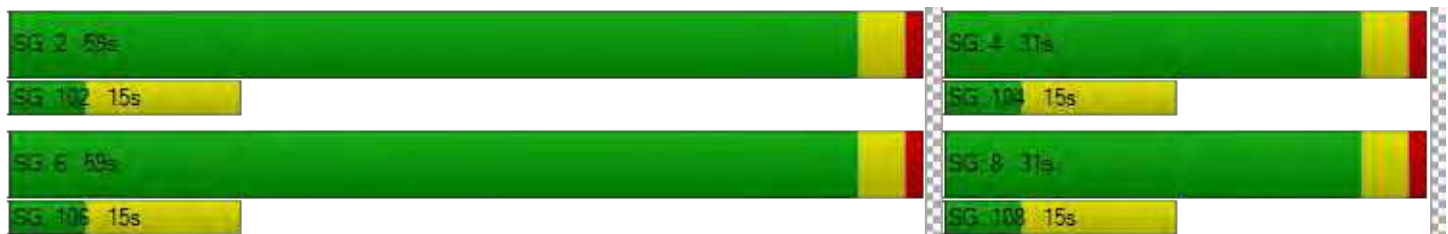
d_M, Delay for Movement [s/veh]	10.39	10.39	10.39	25.34	25.34	25.34	26.14	26.14	26.14	23.99	23.99	23.99
Movement LOS	B	B	B	C	C	C	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10.39			25.34			26.14			23.99		
Approach LOS	B			C			C			C		
d_I, Intersection Delay [s/veh]	21.26											
Intersection LOS	C											
Intersection V/C	0.669											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.398	2.485	1.860	1.994
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1222	1222	600	600
d_b, Bicycle Delay [s]	6.81	6.81	22.05	22.05
I_b,int, Bicycle LOS Score for Intersection	2.347	3.183	1.873	1.706
Bicycle LOS	B	C	A	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	Signalized	Delay (sec / veh):	33.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↬		↶↷		↶↷	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	397	386	167	285	101	336
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	397	386	167	285	101	336
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	111	48	82	29	97
Total Analysis Volume [veh/h]	456	444	192	328	116	386
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	0	0	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	64	0	0	64	26	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	60	60	60	22	22
g / C, Green / Cycle	0.67	0.67	0.67	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.54	0.32	0.18	0.07	0.25
s, saturation flow rate [veh/h]	1682	605	1828	1741	1554
c, Capacity [veh/h]	1121	238	1219	426	380
d1, Uniform Delay [s]	10.76	35.37	6.09	27.52	34.00
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.12	24.77	0.54	1.58	50.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.80	0.81	0.27	0.27	1.02
d, Delay for Lane Group [s/veh]	16.87	60.15	6.64	29.10	84.37
Lane Group LOS	B	E	A	C	F
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.46	5.88	2.36	2.18	13.36
50th-Percentile Queue Length [ft/ln]	311.41	147.04	59.05	54.39	333.98
95th-Percentile Queue Length [veh/ln]	18.24	9.86	4.25	3.92	19.54
95th-Percentile Queue Length [ft/ln]	456.11	246.47	106.29	97.90	488.39

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.87	16.87	60.15	6.64	29.10	84.37
Movement LOS	B	B	E	A	C	F
d_A, Approach Delay [s/veh]	16.87		26.39		71.60	
Approach LOS	B		C		E	
d_I, Intersection Delay [s/veh]	33.74					
Intersection LOS	C					
Intersection V/C	0.784					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.45	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.384	0.000
Crosswalk LOS	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1333	1333	489
d_b, Bicycle Delay [s]	5.00	5.00	25.69
I_b,int, Bicycle LOS Score for Intersection	3.045	2.418	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↔		↖		↗	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	118	76	232	669	299	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	76	232	669	299	22
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	23	70	202	90	7
Total Analysis Volume [veh/h]	142	92	280	806	360	27
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	33	0	0	57	57	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	L	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29	53	53	53
g / C, Green / Cycle	0.32	0.59	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.14	0.29	0.44	0.22
s, saturation flow rate [veh/h]	1651	968	1816	1794
c, Capacity [veh/h]	532	519	1069	1056
d1, Uniform Delay [s]	24.09	18.91	13.68	9.70
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.63	3.99	4.93	0.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.44	0.54	0.75	0.37
d, Delay for Lane Group [s/veh]	26.71	22.90	18.61	10.68
Lane Group LOS	C	C	B	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.22	4.82	12.18	3.94
50th-Percentile Queue Length [ft/ln]	105.54	120.53	304.50	98.41
95th-Percentile Queue Length [veh/ln]	7.59	8.42	17.90	7.09
95th-Percentile Queue Length [ft/ln]	189.79	210.56	447.59	177.14

**Movement, Approach, & Intersection Results**

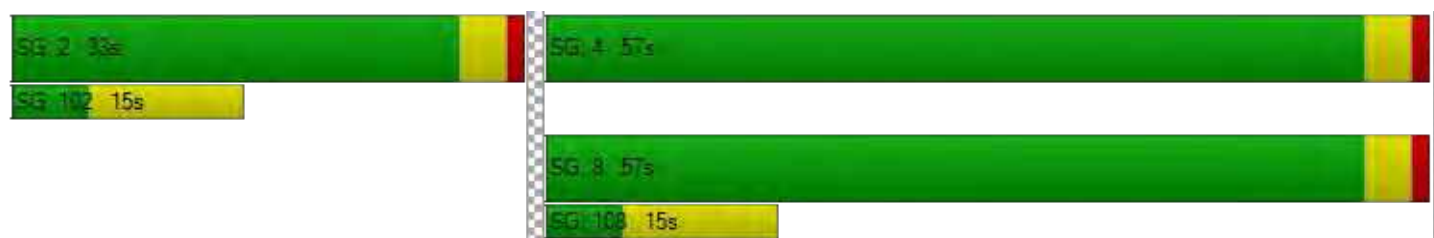
d_M, Delay for Movement [s/veh]	26.71	26.71	22.90	18.61	10.68	10.68
Movement LOS	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	26.71		19.71		10.68	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	18.62					
Intersection LOS	B					
Intersection V/C	0.586					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.378	2.442	2.367
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	644	1178	1178
d_b, Bicycle Delay [s]	20.67	7.61	7.61
I_b,int, Bicycle LOS Score for Intersection	1.946	3.352	2.198
Bicycle LOS	A	C	B

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Scenario 24 Imp-Cumulative PM (2040 vols)+Project

Report File: \\...\Cumulative + P PM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St- Bohannon Dr	296	675	54	13	1013	354	474	34	235	126	87	40	3401

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	269	933	1447	52	163	114	2978

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	268	1389	355	78	1354	26	27	201	637	369	285	56	5045

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	40	1319	809	294	350	40	2852

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	9	1052	4	29	541	18	143	33	39	21	10	47	1946

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	22	402	18	76	797	36	21	124	23	7	16	59	1601

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	397	386	167	285	101	336	1672

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	118	76	232	669	299	22	1416

Vistro File: \\...\Vistro\_AllScenarios\_PM -  
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Scenario 24 Imp-Cumulative PM (2040 vols)+Project

Report File: \\...\Cumulative + P PM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	296	675	54	13	1013	354	474	34	235	126	87	40	3401
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>296</b>	<b>675</b>	<b>54</b>	<b>13</b>	<b>1013</b>	<b>354</b>	<b>474</b>	<b>34</b>	<b>235</b>	<b>126</b>	<b>87</b>	<b>40</b>	<b>3401</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	269	933	1447	52	163	114	2978
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>269</b>	<b>933</b>	<b>1447</b>	<b>52</b>	<b>163</b>	<b>114</b>	<b>2978</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	268	1389	355	78	1354	26	27	201	637	369	285	56	5045
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>268</b>	<b>1389</b>	<b>355</b>	<b>78</b>	<b>1354</b>	<b>26</b>	<b>27</b>	<b>201</b>	<b>637</b>	<b>369</b>	<b>285</b>	<b>56</b>	<b>5045</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	40	1319	809	294	350	40	2852
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>40</b>	<b>1319</b>	<b>809</b>	<b>294</b>	<b>350</b>	<b>40</b>	<b>2852</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	9	1052	4	29	541	18	143	33	39	21	10	47	1946
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>1052</b>	<b>4</b>	<b>29</b>	<b>541</b>	<b>18</b>	<b>143</b>	<b>33</b>	<b>39</b>	<b>21</b>	<b>10</b>	<b>47</b>	<b>1946</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	22	402	18	76	797	36	21	124	23	7	16	59	1601
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>402</b>	<b>18</b>	<b>76</b>	<b>797</b>	<b>36</b>	<b>21</b>	<b>124</b>	<b>23</b>	<b>7</b>	<b>16</b>	<b>59</b>	<b>1601</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	397	386	167	285	101	336	1672
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>397</b>	<b>386</b>	<b>167</b>	<b>285</b>	<b>101</b>	<b>336</b>	<b>1672</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	118	76	232	669	299	22	1416
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>118</b>	<b>76</b>	<b>232</b>	<b>669</b>	<b>299</b>	<b>22</b>	<b>1416</b>

Study Intersections



Lane Configuration and Traffic Control

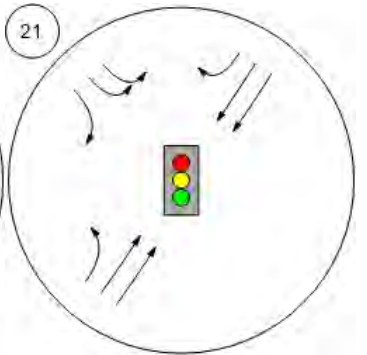
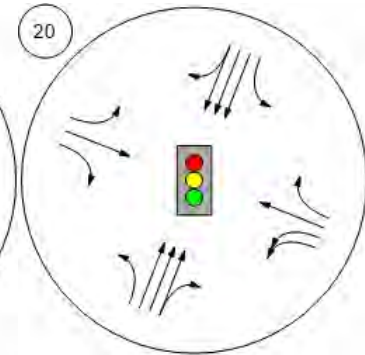
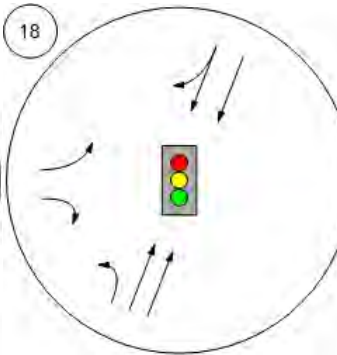
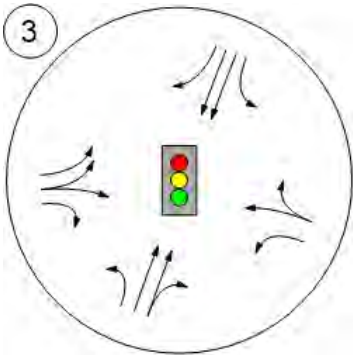


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

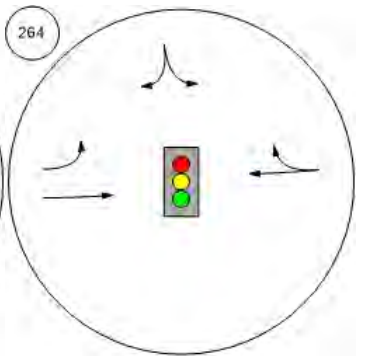
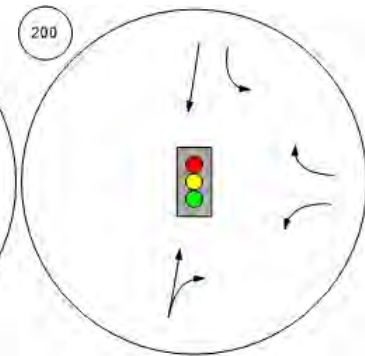
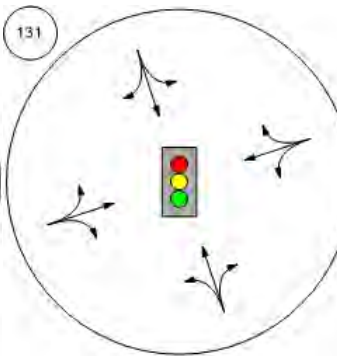
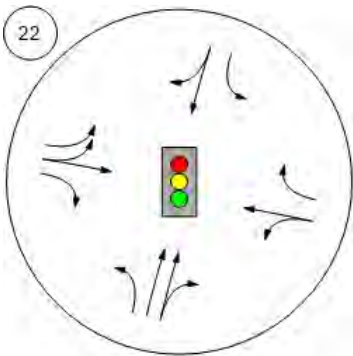
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Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive

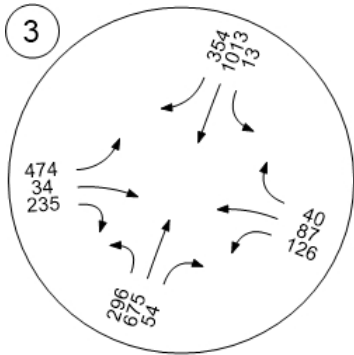




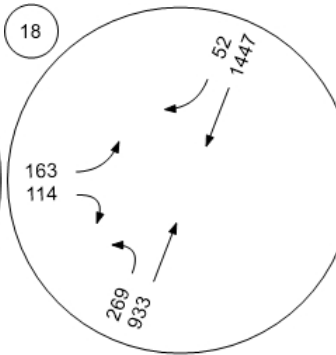
Traffic Volume - Base Volume



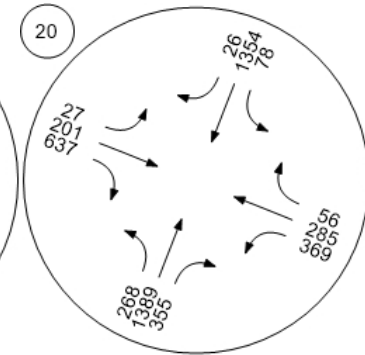
Marsh Rd/Florence St-Bohan



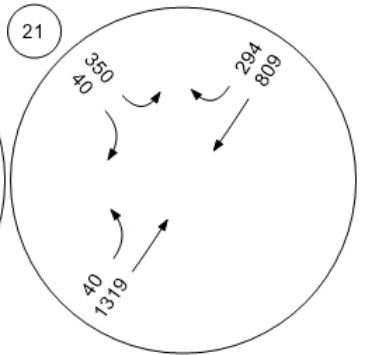
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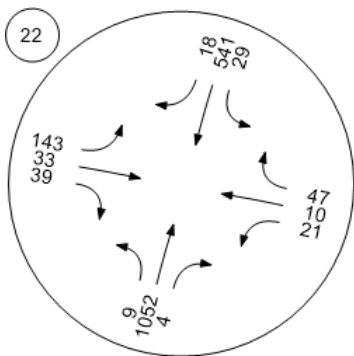
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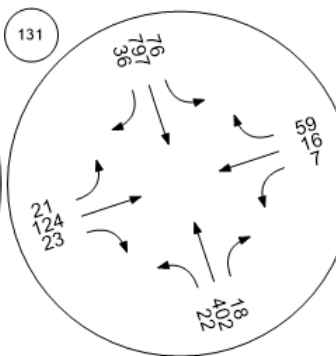
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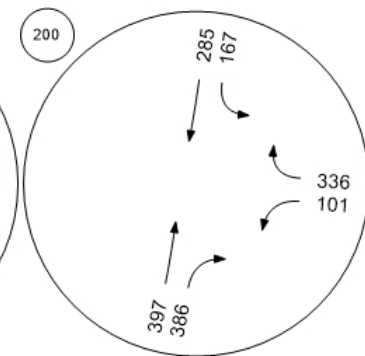
Willow Rd/Durham St-VA Me



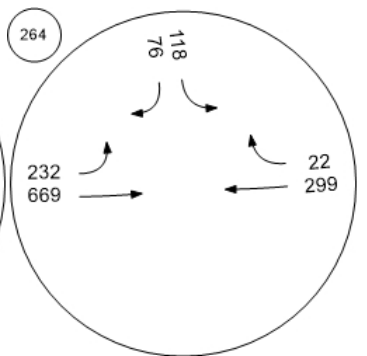
Chilco Street/Hamilton Avenu



O'Brien Drive/Kavanaugh Dri



Adams Drive/O'Brien Drive



Traffic Volume - In-Process Volume

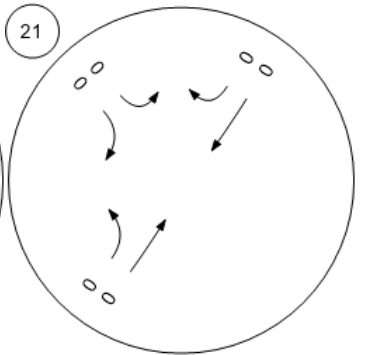
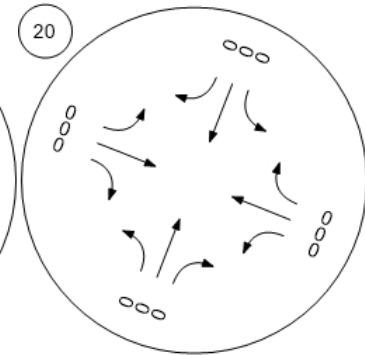
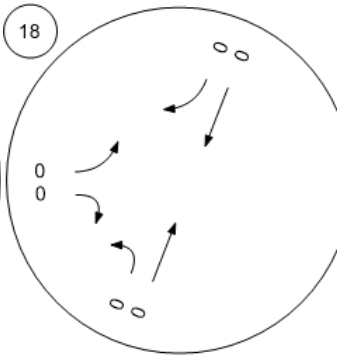
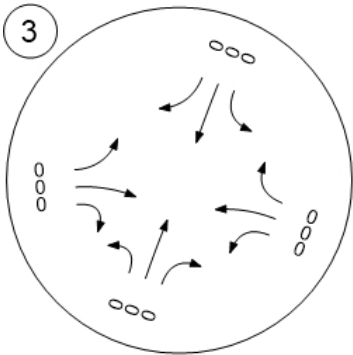


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

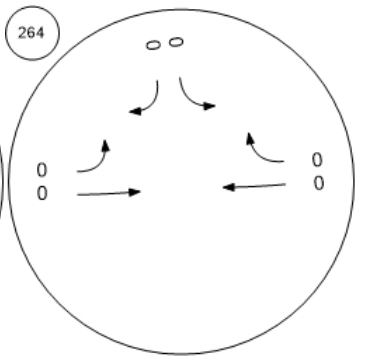
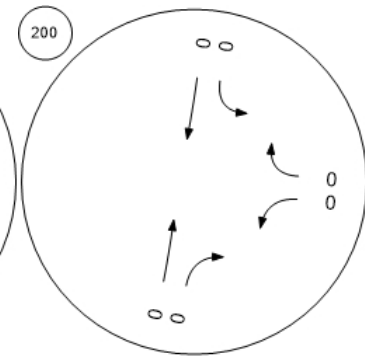
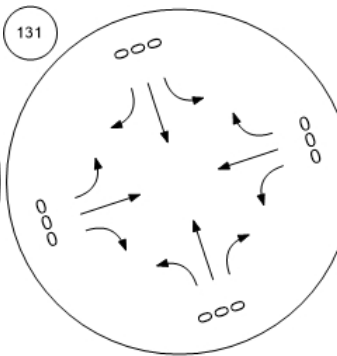
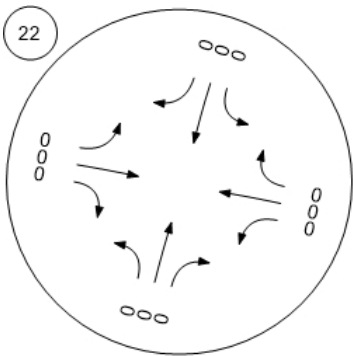
Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive



Traffic Volume - Net New Site Trips

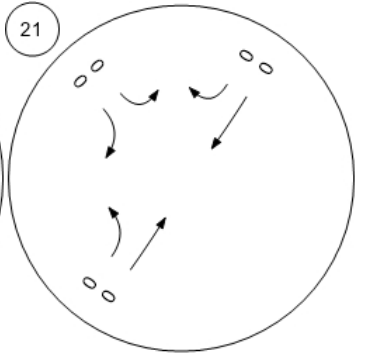
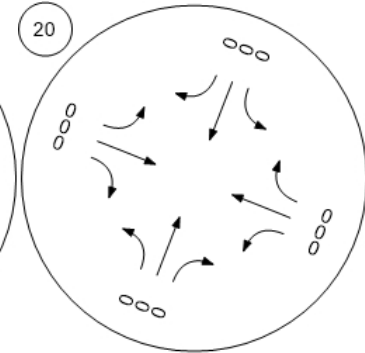
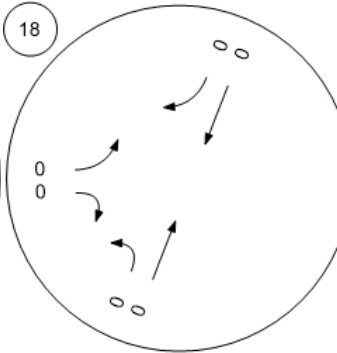
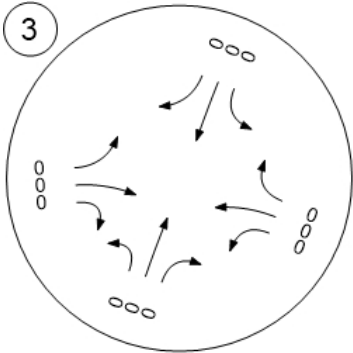


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

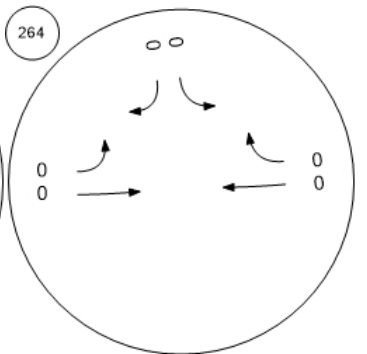
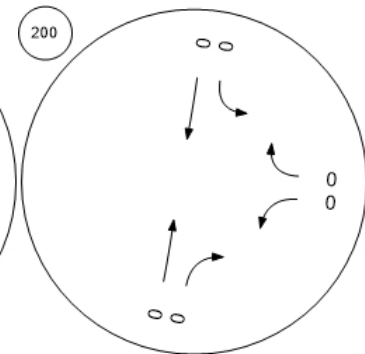
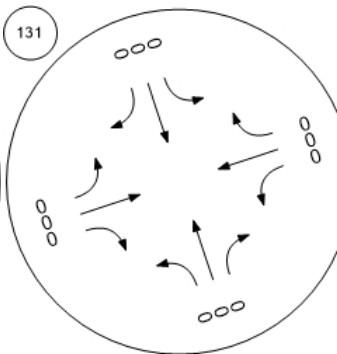
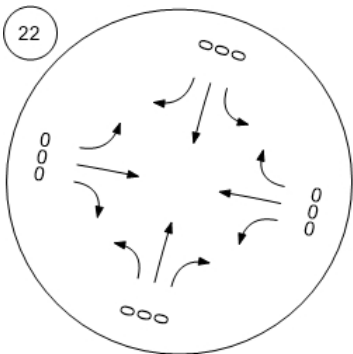
Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive



Traffic Volume - Other Volume

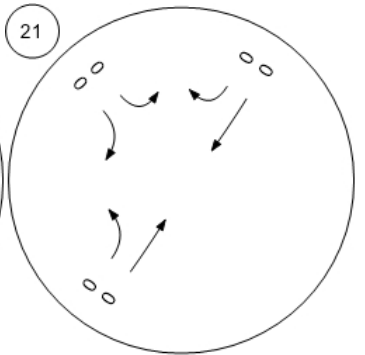
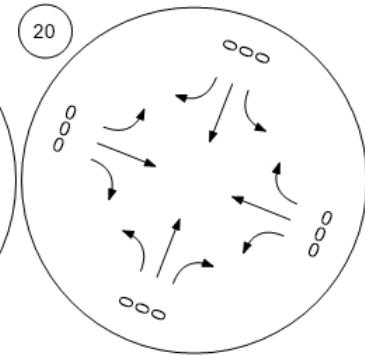
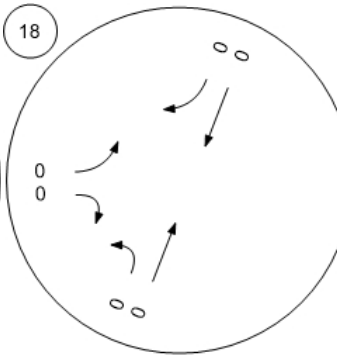
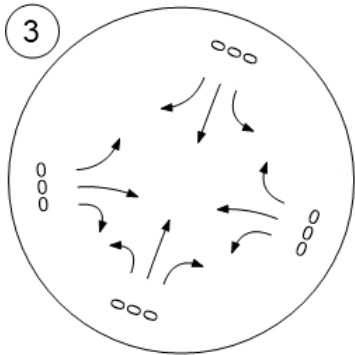


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd

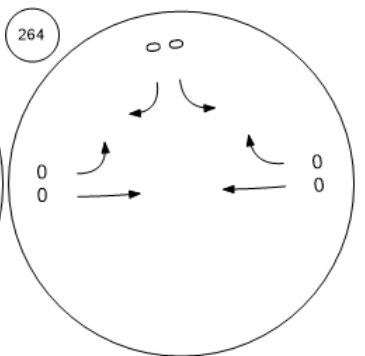
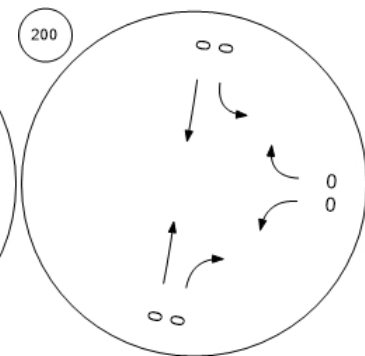
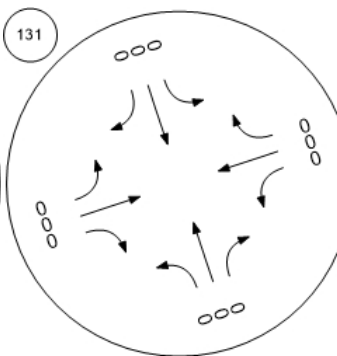
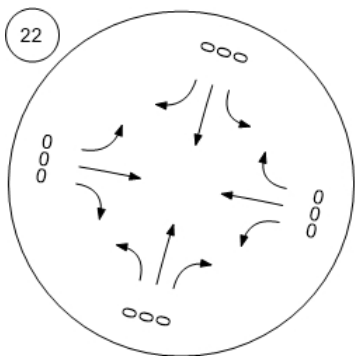


Willow Rd/Durham St-VA Me

Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri

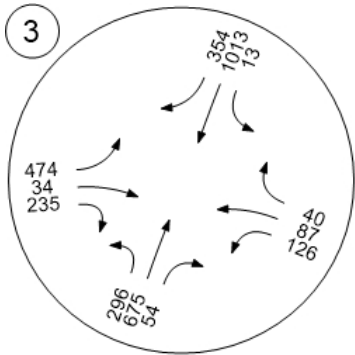
Adams Drive/O'Brien Drive



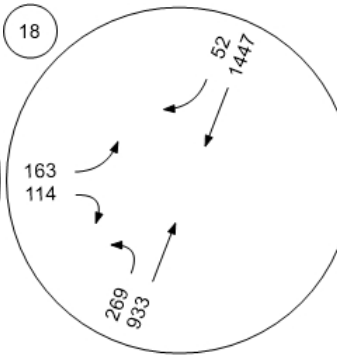
Traffic Volume - Future Total Volume



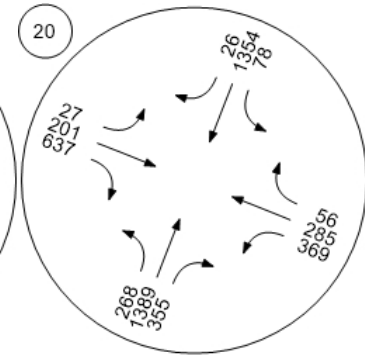
Marsh Rd/Florence St-Bohan



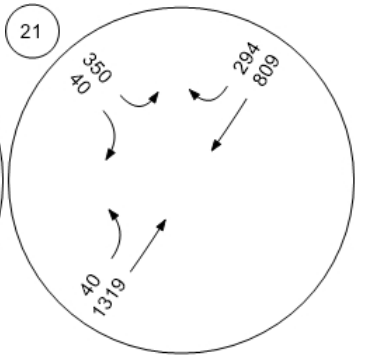
Willow Rd (SR 114)/Ivy Dr



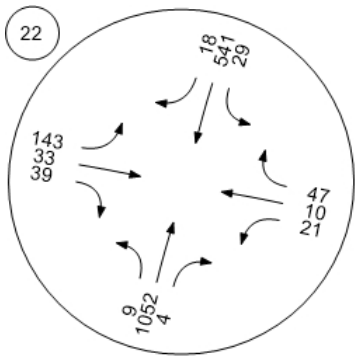
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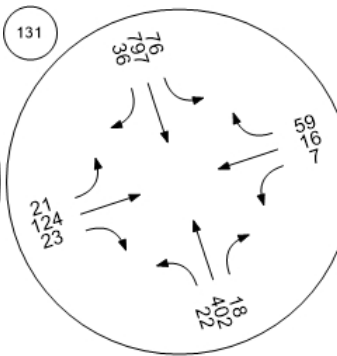
Willow Rd/Bay Rd



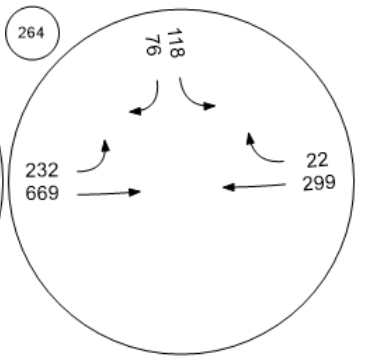
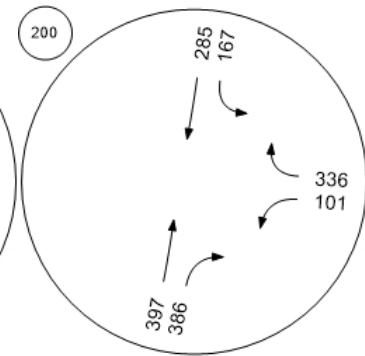
Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu



O'Brien Drive/Kavanaugh Dri



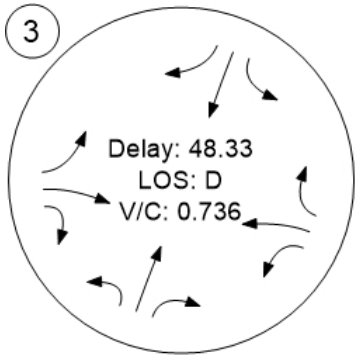
Adams Drive/O'Brien Drive



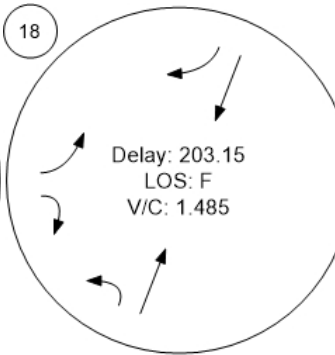
Traffic Conditions



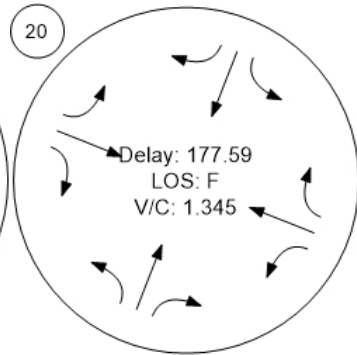
Marsh Rd/Florence St-Bohan



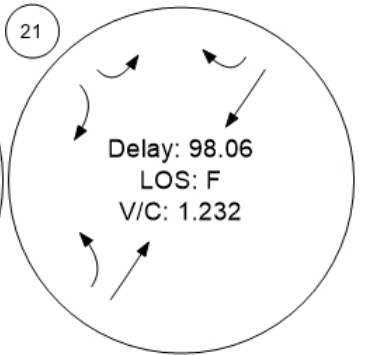
Willow Rd (SR 114)/Ivy Dr



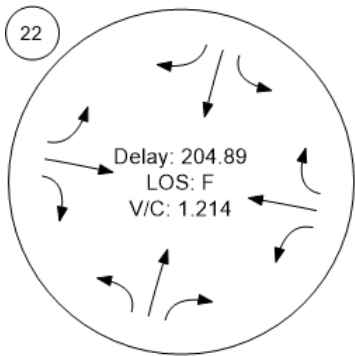
Willow Rd (SR 114)/Newbrid



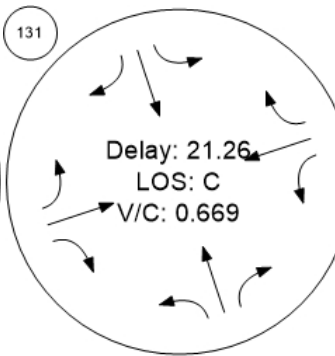
Willow Rd/Bay Rd



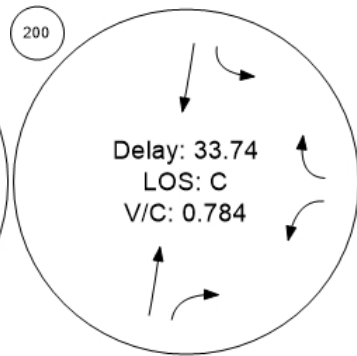
Willow Rd/Durham St-VA Me



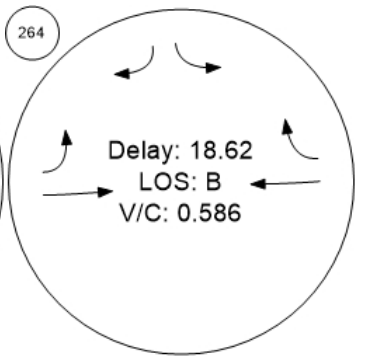
Chilco Street/Hamilton Avenu



O'Brien Drive/Kavanaugh Dri

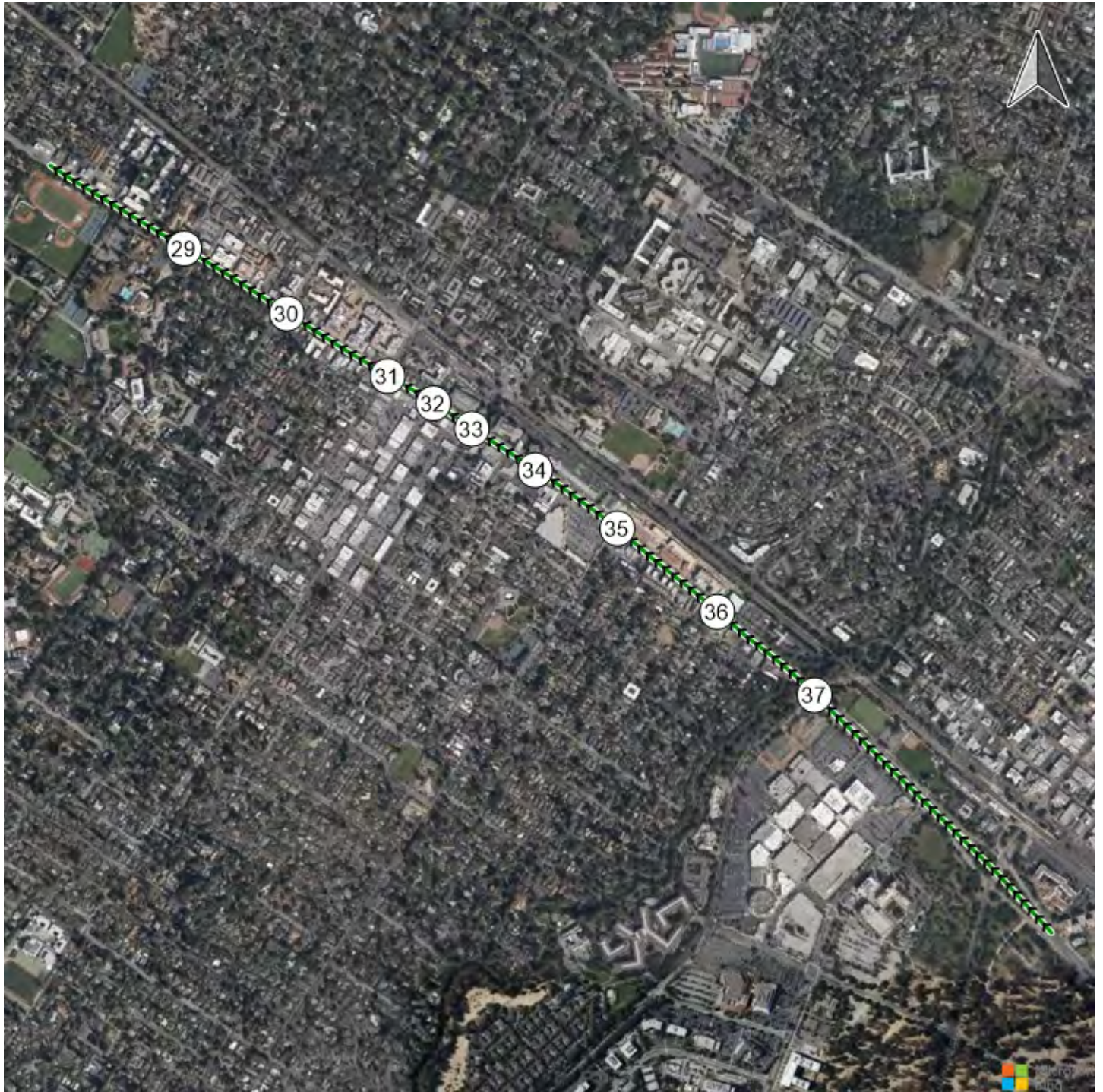


Adams Drive/O'Brien Drive

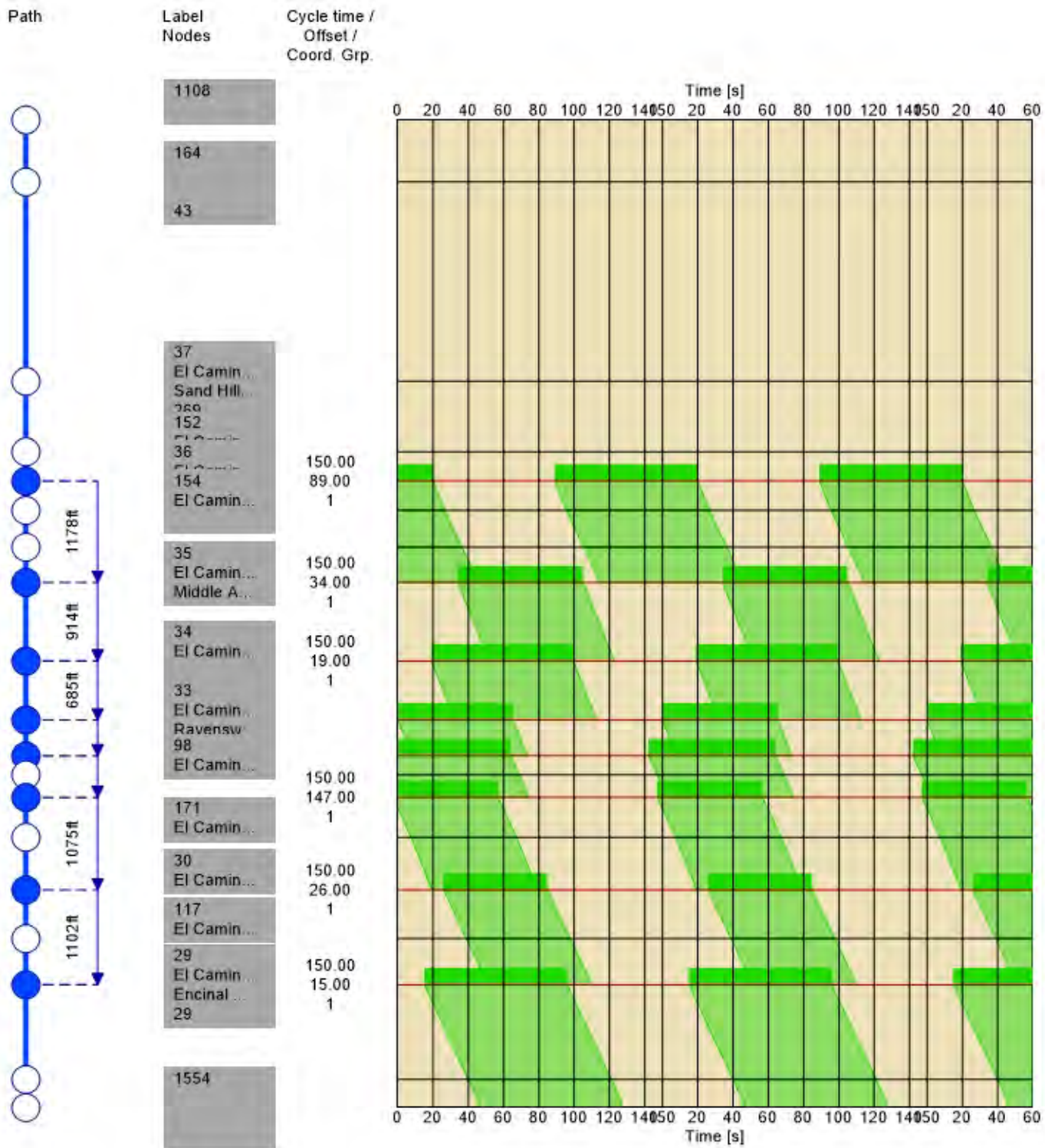


Time Space Diagram - Flowing Off

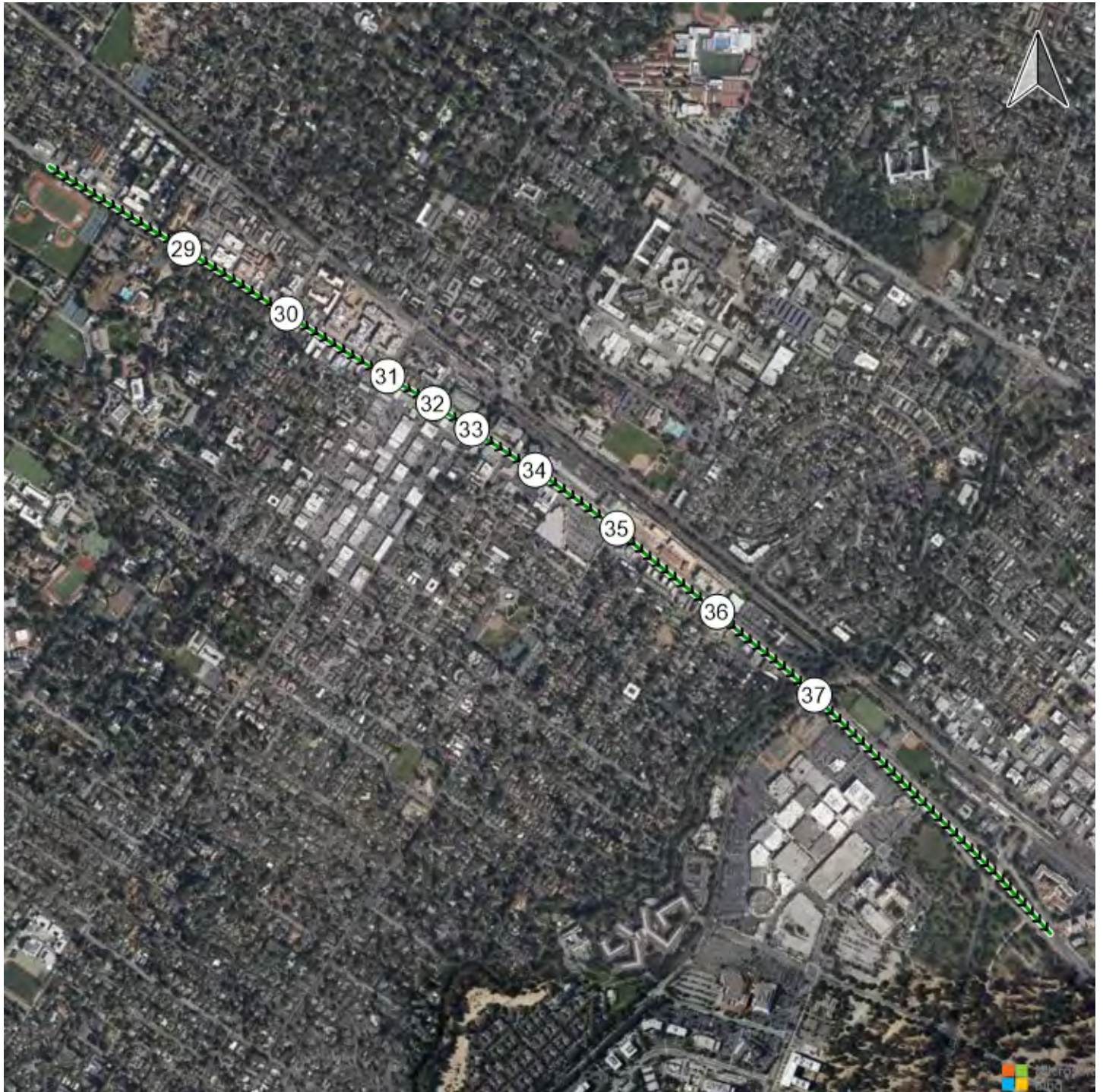
Route 1: ECR NB



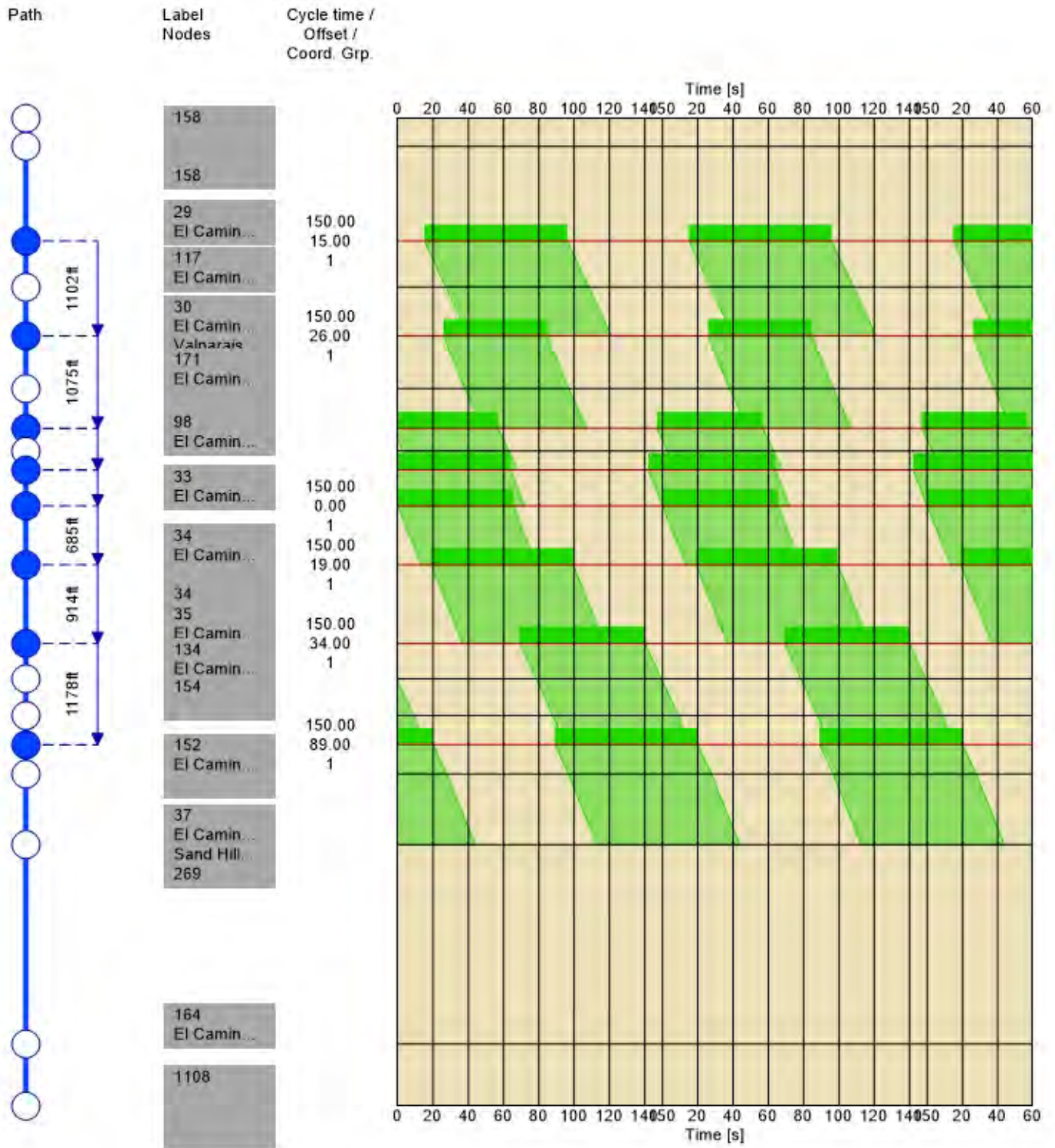
Route 1: ECR NB





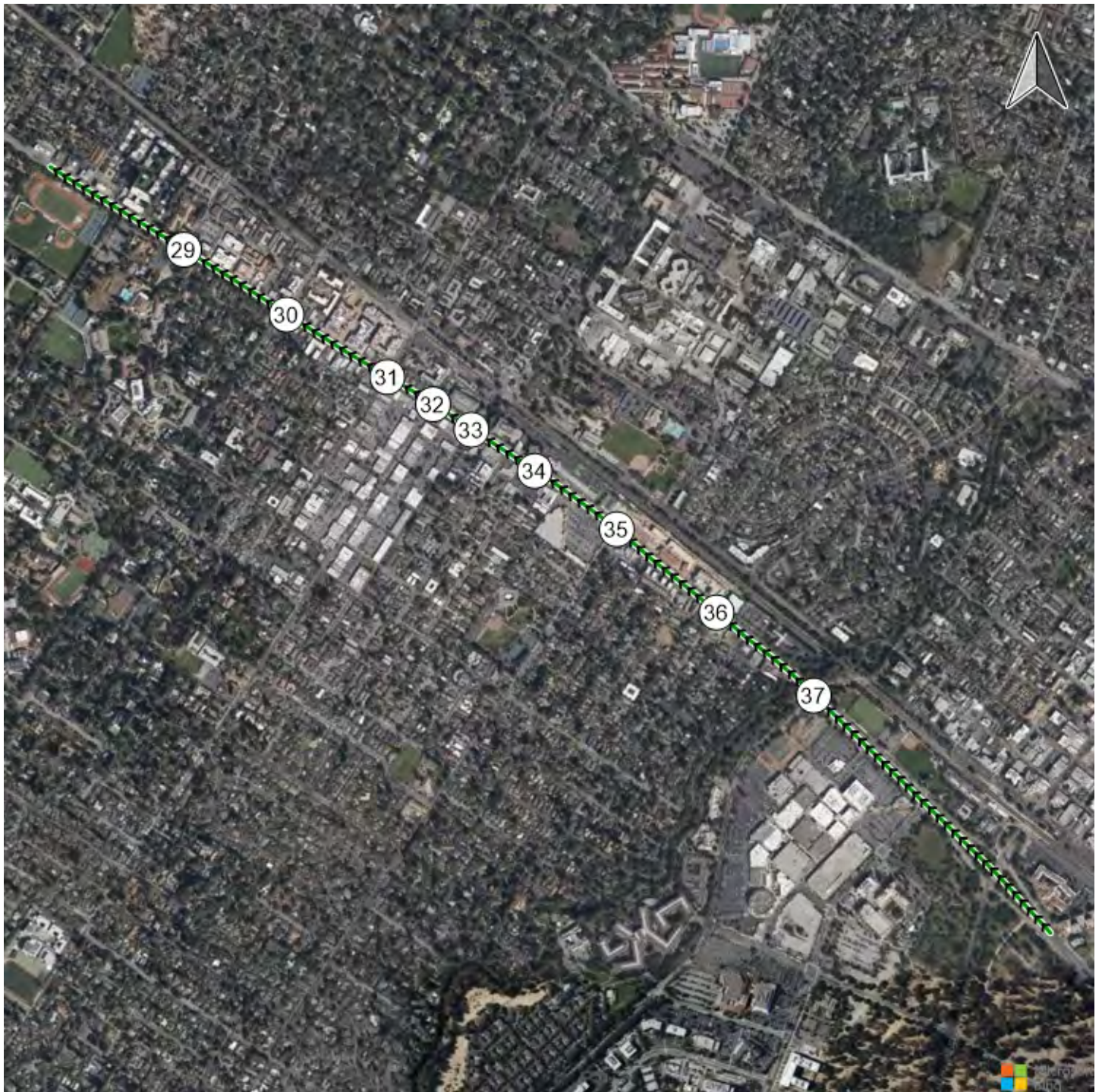


Route 2: ECR SB

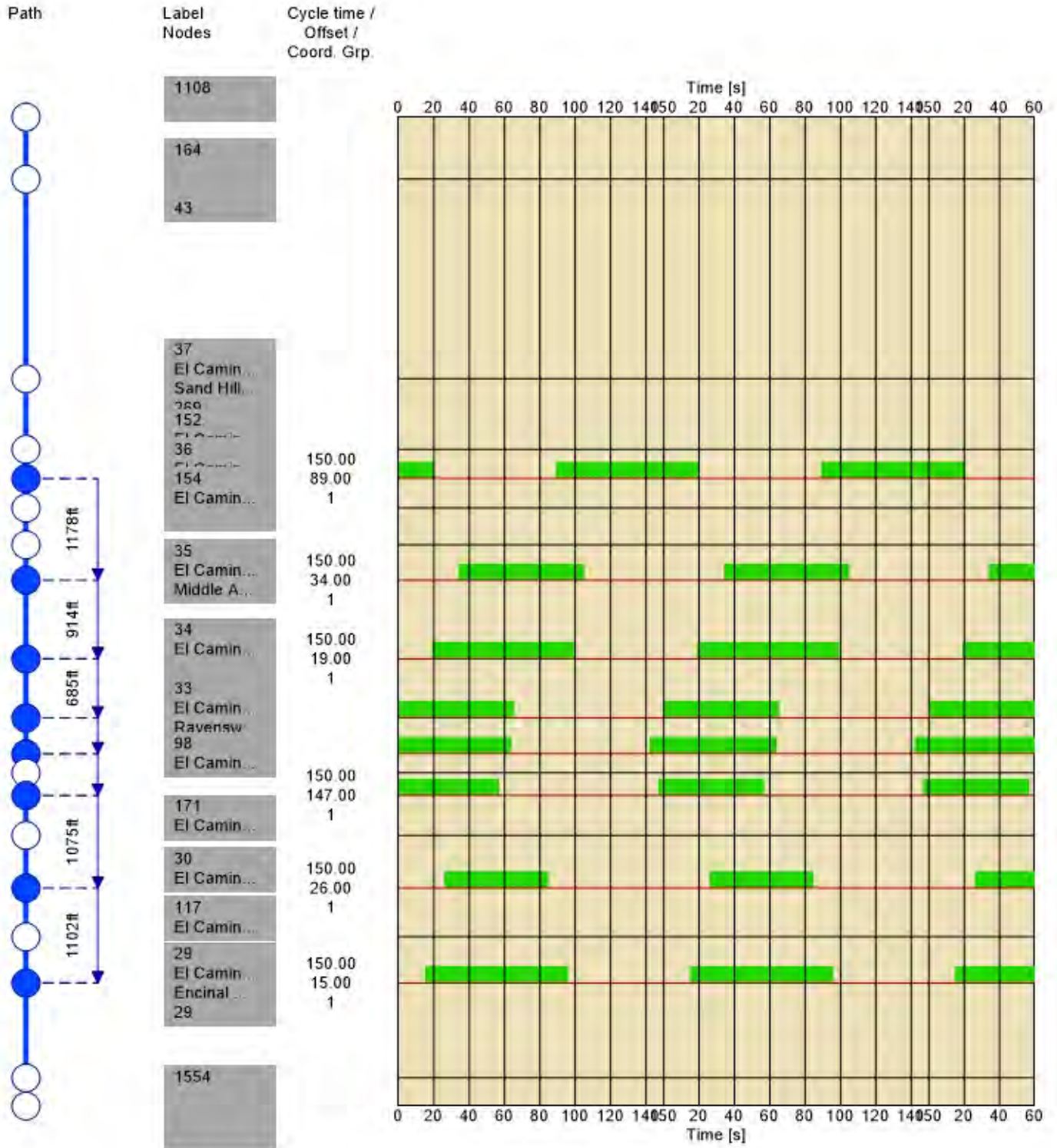


Time Space Diagram - Arterial Band

Route 1: ECR NB

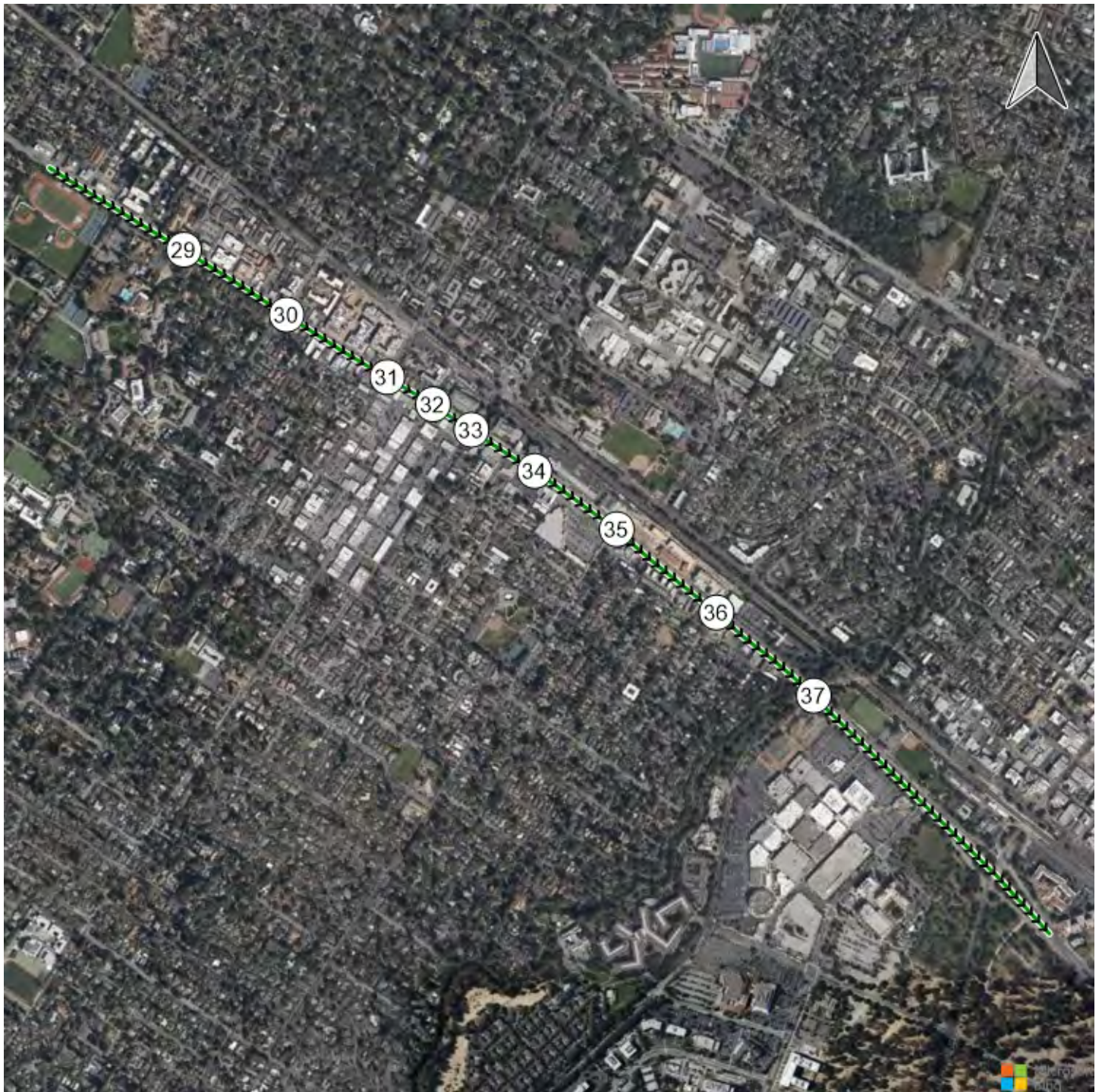


Route 1: ECR NB

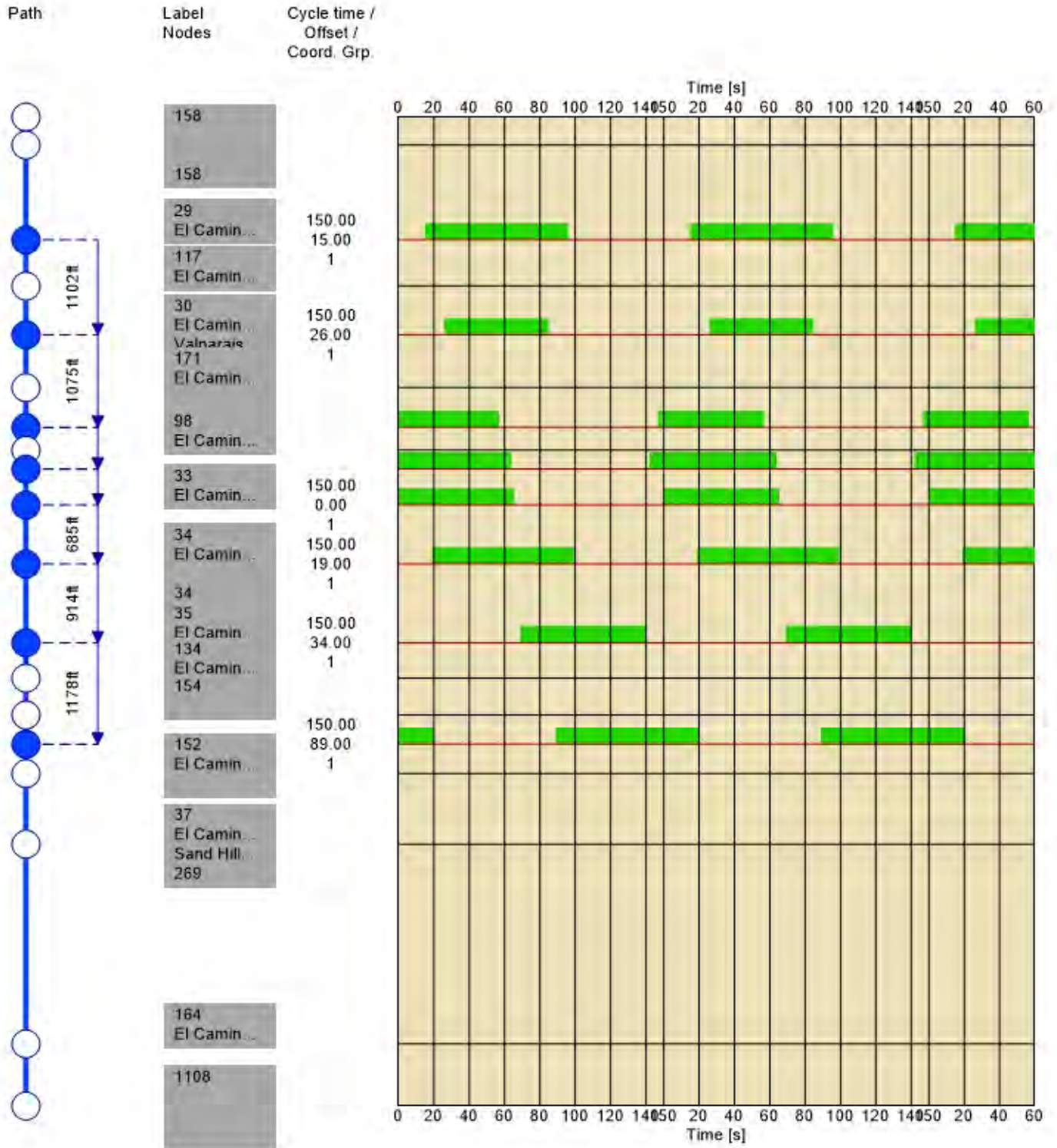


Time Space Diagram - Arterial Band

Route 2: ECR SB



Route 2: ECR SB



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	56.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	228	974	126	29	1014	413	629	77	230	38	22	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	228	974	126	29	1014	413	629	77	215	38	22	25
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	251	32	7	261	106	162	20	55	10	6	6
Total Analysis Volume [veh/h]	235	1004	130	30	1045	426	648	79	222	39	23	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			2			1			1		
v_di, Inbound Pedestrian Volume crossing in	1			1			1			2		
v_co, Outbound Pedestrian Volume crossing	0			0			1			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			0			6			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	95	95	5	88	88	39	39	39	12	12
g / C, Green / Cycle	0.08	0.60	0.60	0.03	0.55	0.55	0.24	0.24	0.24	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.31	0.02	0.30	0.27	0.21	0.21	0.15	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1792	1704	3472	1576	1717	1706	1527	1439	1214
c, Capacity [veh/h]	142	1120	1070	58	1910	867	419	416	372	107	91
d1, Uniform Delay [s]	73.44	18.72	18.83	75.88	23.13	22.15	58.10	57.96	53.30	70.35	71.32
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.18	0.18	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	322.04	1.69	1.81	2.58	1.13	1.99	9.32	8.64	1.14	1.52	3.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.65	0.51	0.52	0.51	0.55	0.49	0.88	0.87	0.60	0.36	0.54
d, Delay for Lane Group [s/veh]	395.48	20.41	20.64	78.45	24.26	24.14	67.43	66.60	54.44	71.87	75.00
Lane Group LOS	F	C	C	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	18.58	12.85	12.52	1.26	12.93	10.34	15.48	15.14	8.12	1.59	2.06
50th-Percentile Queue Length [ft/ln]	464.41	321.34	313.08	31.42	323.17	258.47	387.11	378.45	203.06	39.66	51.39
95th-Percentile Queue Length [veh/ln]	29.63	18.73	18.33	2.26	18.82	15.61	21.94	21.52	12.80	2.86	3.70
95th-Percentile Queue Length [ft/ln]	740.87	468.34	458.18	56.56	470.58	390.30	548.45	537.97	319.90	71.40	92.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	395.48	20.51	20.64	78.45	24.26	24.14	67.07	66.60	54.44	71.87	75.00	75.00
Movement LOS	F	C	C	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	84.89			25.31			64.08			73.62		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	56.69											
Intersection LOS	E											
Intersection V/C	0.707											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.34	69.34	69.34	69.34
I_p,int, Pedestrian LOS Score for Intersection	2.990	3.138	2.616	2.056
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	843	400	410
d_b, Bicycle Delay [s]	24.53	26.77	51.32	50.53
I_b,int, Bicycle LOS Score for Intersection	2.689	2.798	3.150	1.705
Bicycle LOS	B	C	C	A

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	235.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.605

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑ ↩		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	266	1221	1418	28	172	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	5.70	10.30	22.20	0.00	6.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	266	1221	1418	28	172	95
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	332	385	8	47	26
Total Analysis Volume [veh/h]	289	1327	1541	30	187	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing in	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	106	90	90	24	24
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	0.00
g_i, Effective Green Time [s]	13	106	90	90	16	32
g / C, Green / Cycle	0.10	0.82	0.70	0.70	0.13	0.25
(v / s)_i Volume / Saturation Flow Rate	0.36	0.86	1.01	1.01	0.11	0.13
s, saturation flow rate [veh/h]	795	1546	781	775	1732	792
c, Capacity [veh/h]	80	1267	544	539	219	198
d1, Uniform Delay [s]	58.39	11.71	19.72	19.72	55.52	41.90
k, delay calibration	0.50	0.50	0.50	0.50	0.17	0.29
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1210.33	38.72	210.54	215.54	13.25	5.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	3.62	1.05	1.45	1.46	0.85	0.52
d, Delay for Lane Group [s/veh]	1268.72	50.43	230.27	235.27	68.77	47.43
Lane Group LOS	F	F	F	F	E	D
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	29.41	17.99	45.44	45.84	6.81	3.16
50th-Percentile Queue Length [ft/ln]	735.22	449.83	1136.06	1145.98	170.16	79.02
95th-Percentile Queue Length [veh/ln]	47.55	25.98	72.56	73.39	11.08	5.69
95th-Percentile Queue Length [ft/ln]	1188.82	649.59	1813.88	1834.81	277.12	142.24

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	1268.72	50.43	232.72	235.27	68.77	47.43
Movement LOS	F	F	F	F	E	D
d_A, Approach Delay [s/veh]	268.30		232.77		61.19	
Approach LOS	F		F		E	
d_I, Intersection Delay [s/veh]	234.97					
Intersection LOS	F					
Intersection V/C	1.605					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.166	3.153	2.156
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.01	7.42	45.67
I_b,int, Bicycle LOS Score for Intersection	2.893	2.856	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	164.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.340

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐   ⇐			⇐   ⇐			⇐  ⇐			⇐  ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	143	1874	423	40	1370	7	17	93	421	262	121	305
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	143	1874	423	40	1370	7	17	93	377	262	121	271
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	498	113	11	364	2	5	25	100	70	32	72
Total Analysis Volume [veh/h]	152	1994	450	43	1457	7	18	99	401	279	129	288
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing in	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	40	40	21	40	40	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	10	59	59	7	56	56	9	33	33	31	55	55
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	2.00	2.00
g_i, Effective Green Time [s]	7	57	57	4	54	54	2	29	29	25	51	51
g / C, Green / Cycle	0.05	0.44	0.44	0.03	0.41	0.41	0.02	0.22	0.22	0.19	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.09	0.47	0.50	0.02	0.64	0.64	0.01	0.06	0.30	0.18	0.16	0.41
s, saturation flow rate [veh/h]	1781	3455	1628	1781	1491	781	1420	1577	1316	1536	800	696
c, Capacity [veh/h]	96	1511	712	55	618	323	26	350	292	299	312	272
d1, Uniform Delay [s]	61.50	36.57	36.57	62.57	38.07	38.07	63.44	41.97	50.04	51.56	28.81	38.71
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.50	0.04	0.11	0.47
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	267.66	45.81	84.49	8.78	257.84	264.95	27.62	0.16	187.89	5.77	0.87	70.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.59	1.07	1.15	0.78	1.56	1.56	0.69	0.28	1.37	0.93	0.41	1.06
d, Delay for Lane Group [s/veh]	329.16	82.37	121.06	71.35	295.91	303.02	91.06	42.13	237.93	57.32	29.68	108.81
Lane Group LOS	F	F	F	E	F	F	F	D	F	E	C	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.25	32.44	38.22	1.56	31.88	34.03	0.79	2.68	24.61	4.71	3.02	13.60
50th-Percentile Queue Length [ft/ln]	256.37	811.06	955.50	38.97	796.95	850.69	19.85	66.91	615.26	117.67	75.40	340.09
95th-Percentile Queue Length [veh/ln]	17.33	44.07	53.55	2.81	51.93	55.13	1.43	4.82	38.07	8.26	5.43	20.42
95th-Percentile Queue Length [ft/ln]	433.21	1101.86	1338.65	70.14	1298.36	1378.17	35.73	120.44	951.65	206.62	135.71	510.54

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	329.16	89.57	121.06	71.35	298.33	303.02	91.06	42.13	237.93	57.32	29.68	108.81
Movement LOS	F	F	F	E	F	F	F	D	F	E	C	F
d_A, Approach Delay [s/veh]	109.06			291.87			195.40			73.50		
Approach LOS	F			F			F			E		
d_I, Intersection Delay [s/veh]	164.63											
Intersection LOS	F											
Intersection V/C	1.340											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	51.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	24.00	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.500	3.024	2.418	2.625
Crosswalk LOS	D	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	831	785	446	785
d_b, Bicycle Delay [s]	22.24	24.02	39.33	24.17
I_b,int, Bicycle LOS Score for Intersection	2.987	2.388	2.487	2.764
Bicycle LOS	C	B	B	C

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.929

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	⇐		⇐		⇐⇐⇐	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1387	1216	627	469	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1387	1216	328	469	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	347	304	82	117	0
Total Analysis Volume [veh/h]	65	1387	1216	328	469	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	74	74	74	74	74	74
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	4	43	35	35	21	21
g / C, Green / Cycle	0.06	0.58	0.48	0.48	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.53	0.44	0.27	0.26	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1230	1801	841
c, Capacity [veh/h]	75	1518	1318	585	520	243
d1, Uniform Delay [s]	34.61	13.88	18.11	13.75	25.32	0.00
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.48	3.55	4.43	1.20	2.43	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.91	0.92	0.56	0.90	0.00
d, Delay for Lane Group [s/veh]	45.09	17.43	22.54	14.95	27.75	0.00
Lane Group LOS	D	B	C	B	C	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.34	9.20	9.08	3.58	3.89	0.00
50th-Percentile Queue Length [ft/ln]	33.61	229.93	227.07	89.55	97.25	0.00
95th-Percentile Queue Length [veh/ln]	2.42	14.17	14.03	6.45	7.00	0.00
95th-Percentile Queue Length [ft/ln]	60.49	354.27	350.64	161.20	175.05	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	45.09	17.43	22.54	14.95	27.75	0.00
Movement LOS	D	B	C	B	C	A
d_A, Approach Delay [s/veh]	18.67		20.93		27.75	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	20.90					
Intersection LOS	C					
Intersection V/C	0.929					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	26.74
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.531
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	975	975	975
d_b, Bicycle Delay [s]	9.70	9.71	9.70
I_b,int, Bicycle LOS Score for Intersection	2.758	3.080	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	104.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.065

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	22	909	7	36	928	108	68	15	32	59	12	363
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0
Total Hourly Volume [veh/h]	22	909	7	36	928	108	68	15	26	59	12	363
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	237	2	9	242	28	18	4	7	15	3	95
Total Analysis Volume [veh/h]	23	947	7	38	967	113	71	16	27	61	13	378
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing in	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			6			2		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												1,8
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	C	R
C, Cycle Length [s]	164	164	164	164	164	164	164	164	164	164
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.50	2.50	0.00	2.50	2.50	2.50	2.50	2.50	0.00
g_i, Effective Green Time [s]	107	74	74	107	100	14	14	14	30	63
g / C, Green / Cycle	0.65	0.45	0.45	0.65	0.61	0.08	0.08	0.08	0.18	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.29	0.29	0.05	0.76	0.04	0.04	0.02	0.08	0.45
s, saturation flow rate [veh/h]	551	1445	1894	700	1414	952	1397	1337	960	842
c, Capacity [veh/h]	92	652	855	380	860	80	117	112	175	322
d1, Uniform Delay [s]	41.56	34.67	34.67	14.65	32.24	71.73	71.71	70.23	59.56	50.40
k, delay calibration	0.23	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.99	2.17	1.67	0.11	124.65	3.86	2.60	1.10	1.61	105.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.25	0.63	0.63	0.10	1.26	0.45	0.44	0.24	0.42	1.17
d, Delay for Lane Group [s/veh]	44.55	36.84	36.34	14.76	156.89	75.59	74.31	71.34	61.17	156.23
Lane Group LOS	D	D	D	B	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.39	13.32	17.36	0.54	63.16	1.55	2.22	1.13	2.86	22.70
50th-Percentile Queue Length [ft/ln]	9.70	333.08	434.05	13.39	1579.00	38.83	55.46	28.22	71.44	567.62
95th-Percentile Queue Length [veh/ln]	0.70	19.31	24.20	0.96	90.70	2.80	3.99	2.03	5.14	33.79
95th-Percentile Queue Length [ft/ln]	17.47	482.74	604.89	24.10	2267.59	69.90	99.82	50.80	128.60	844.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.55	36.56	36.34	14.76	156.89	156.89	74.98	74.31	71.34	61.17	61.17	156.23
Movement LOS	D	D	D	B	F	F	E	E	E	E	E	F
d_A, Approach Delay [s/veh]	36.74			152.06			74.00			140.67		
Approach LOS	D			F			E			F		
d_I, Intersection Delay [s/veh]	104.44											
Intersection LOS	F											
Intersection V/C	1.065											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.55	71.55	71.55	71.55
I_p,int, Pedestrian LOS Score for Intersection	2.574	2.822	2.210	2.133
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	243	243	365	365
d_b, Bicycle Delay [s]	63.46	63.43	55.08	54.97
I_b,int, Bicycle LOS Score for Intersection	2.366	3.404	1.758	2.305
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.485

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	472	10	81	221	45	37	41	22	22	51	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	472	10	81	221	45	37	41	22	22	51	131
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	123	3	25	69	14	12	13	7	6	14	36
Total Analysis Volume [veh/h]	14	493	10	101	276	56	47	52	28	24	56	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			2			2	
v_co, Outbound Pedestrian Volume crossing		2			4			5			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			5			4			2	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	50	0	0	50	0	0	40	0	0	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	46	46	36	36
g / C, Green / Cycle	0.51	0.51	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.28	0.30	0.08	0.14
s, saturation flow rate [veh/h]	1848	1447	1506	1636
c, Capacity [veh/h]	986	789	657	699
d1, Uniform Delay [s]	14.89	14.81	17.44	18.70
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.00	2.74	0.65	1.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.55	0.19	0.32
d, Delay for Lane Group [s/veh]	16.88	17.55	18.10	19.91
Lane Group LOS	B	B	B	B
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.23	6.27	1.78	3.37
50th-Percentile Queue Length [ft/ln]	180.70	156.71	44.38	84.20
95th-Percentile Queue Length [veh/ln]	11.64	10.37	3.20	6.06
95th-Percentile Queue Length [ft/ln]	290.93	259.36	79.88	151.55

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.88	16.88	16.88	17.55	17.55	17.55	18.10	18.10	18.10	19.91	19.91	19.91
Movement LOS	B	B	B	B	B	B	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	16.88			17.55			18.10			19.91		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	17.74											
Intersection LOS	B											
Intersection V/C	0.485											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.162	2.328	1.860	2.049
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1022	1022	800	800
d_b, Bicycle Delay [s]	10.76	10.76	16.20	16.20
I_b,int, Bicycle LOS Score for Intersection	2.413	2.274	1.769	1.929
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	┌		┐		┐┌	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	663	270	74	388	210	257
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	663	270	74	388	210	257
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	188	77	21	110	60	73
Total Analysis Volume [veh/h]	753	307	84	441	239	292
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	65	0	0	65	25	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	61	61	61	21	21
g / C, Green / Cycle	0.68	0.68	0.68	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.60	0.16	0.24	0.14	0.19
s, saturation flow rate [veh/h]	1765	528	1855	1767	1577
c, Capacity [veh/h]	1196	170	1257	412	368
d1, Uniform Delay [s]	11.70	36.78	6.13	30.59	32.46
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.83	9.87	0.77	5.84	16.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.89	0.49	0.35	0.58	0.79
d, Delay for Lane Group [s/veh]	21.53	46.66	6.90	36.43	48.51
Lane Group LOS	C	D	A	D	D
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	16.99	2.25	3.26	5.17	7.48
50th-Percentile Queue Length [ft/ln]	424.82	56.23	81.53	129.24	186.88
95th-Percentile Queue Length [veh/ln]	23.75	4.05	5.87	8.90	11.96
95th-Percentile Queue Length [ft/ln]	593.83	101.21	146.76	222.46	298.98



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	21.53	21.53	46.66	6.90	36.43	48.51
Movement LOS	C	C	D	A	D	D
d_A, Approach Delay [s/veh]	21.53		13.26		43.07	
Approach LOS	C		B		D	
d_I, Intersection Delay [s/veh]	24.89					
Intersection LOS	C					
Intersection V/C	0.786					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1356	1356	467
d_b, Bicycle Delay [s]	4.67	4.67	26.45
I_b,int, Bicycle LOS Score for Intersection	3.309	2.426	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↔		↖		↗	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	33	72	155	353	762	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	72	155	353	762	112
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	23	50	115	247	36
Total Analysis Volume [veh/h]	43	94	201	458	990	145
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	71	71	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	67	67	67
g / C, Green / Cycle	0.17	0.74	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.09	0.42	0.25	0.64
s, saturation flow rate [veh/h]	1604	483	1823	1783
c, Capacity [veh/h]	267	213	1357	1328
d1, Uniform Delay [s]	34.17	36.83	3.92	8.08
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.86	48.74	0.67	7.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.51	0.94	0.34	0.85
d, Delay for Lane Group [s/veh]	41.03	85.57	4.60	15.28
Lane Group LOS	D	F	A	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.20	7.33	2.40	13.60
50th-Percentile Queue Length [ft/ln]	79.96	183.16	59.94	339.93
95th-Percentile Queue Length [veh/ln]	5.76	11.77	4.32	19.64
95th-Percentile Queue Length [ft/ln]	143.92	294.14	107.89	491.12

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	41.03	41.03	85.57	4.60	15.28	15.28
Movement LOS	D	D	F	A	B	B
d_A, Approach Delay [s/veh]	41.03		29.29		15.28	
Approach LOS	D		C		B	
d_I, Intersection Delay [s/veh]	21.89					
Intersection LOS	C					
Intersection V/C	0.722					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.238	2.508	2.514
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	1489	1489
d_b, Bicycle Delay [s]	31.25	2.94	2.94
I_b,int, Bicycle LOS Score for Intersection	1.786	2.647	3.432
Bicycle LOS	A	B	C

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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ReducedTripCap\_10.7.2021.vistro

Scenario 24 Imp-Cumulative AM (2040 vols)+Project

Report File: \\...\Cumulative + P AM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St- Bohannon Dr	228	974	126	29	1014	413	629	77	230	38	22	25	3805

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	266	1221	1418	28	172	95	3200

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	143	1874	423	40	1370	7	17	93	421	262	121	305	5076

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1387	1216	627	469	60	3824

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	22	909	7	36	928	108	68	15	32	59	12	363	2559

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	472	10	81	221	45	37	41	22	22	51	131	1146

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	663	270	74	388	210	257	1862

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	33	72	155	353	762	112	1487



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Scenario 24 Imp-Cumulative AM (2040 vols)+Project

Report File: \\...\Cumulative + P AM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	228	974	126	29	1014	413	629	77	230	38	22	25	3805
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>228</b>	<b>974</b>	<b>126</b>	<b>29</b>	<b>1014</b>	<b>413</b>	<b>629</b>	<b>77</b>	<b>230</b>	<b>38</b>	<b>22</b>	<b>25</b>	<b>3805</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	266	1221	1418	28	172	95	3200
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>266</b>	<b>1221</b>	<b>1418</b>	<b>28</b>	<b>172</b>	<b>95</b>	<b>3200</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	143	1874	423	40	1370	7	17	93	421	262	121	305	5076
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>143</b>	<b>1874</b>	<b>423</b>	<b>40</b>	<b>1370</b>	<b>7</b>	<b>17</b>	<b>93</b>	<b>421</b>	<b>262</b>	<b>121</b>	<b>305</b>	<b>5076</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1387	1216	627	469	60	3824
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1387</b>	<b>1216</b>	<b>627</b>	<b>469</b>	<b>60</b>	<b>3824</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	22	909	7	36	928	108	68	15	32	59	12	363	2559
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>909</b>	<b>7</b>	<b>36</b>	<b>928</b>	<b>108</b>	<b>68</b>	<b>15</b>	<b>32</b>	<b>59</b>	<b>12</b>	<b>363</b>	<b>2559</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	13	472	10	81	221	45	37	41	22	22	51	131	1146
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>472</b>	<b>10</b>	<b>81</b>	<b>221</b>	<b>45</b>	<b>37</b>	<b>41</b>	<b>22</b>	<b>22</b>	<b>51</b>	<b>131</b>	<b>1146</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	663	270	74	388	210	257	1862
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>663</b>	<b>270</b>	<b>74</b>	<b>388</b>	<b>210</b>	<b>257</b>	<b>1862</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	33	72	155	353	762	112	1487
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>33</b>	<b>72</b>	<b>155</b>	<b>353</b>	<b>762</b>	<b>112</b>	<b>1487</b>

Study Intersections



Lane Configuration and Traffic Control

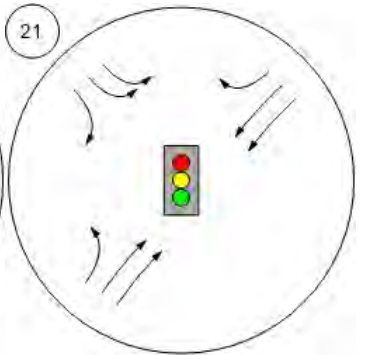
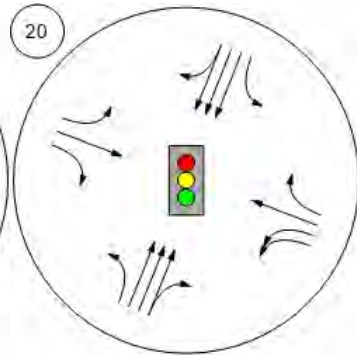
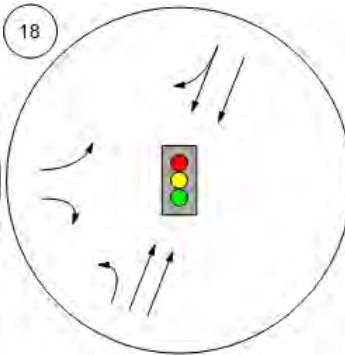
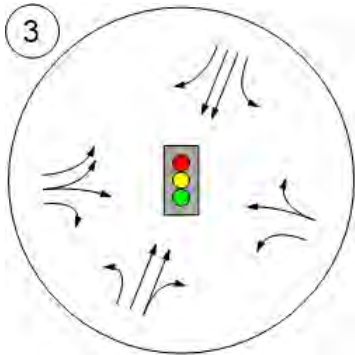


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

Willow Rd (SR 114)/Newbrid

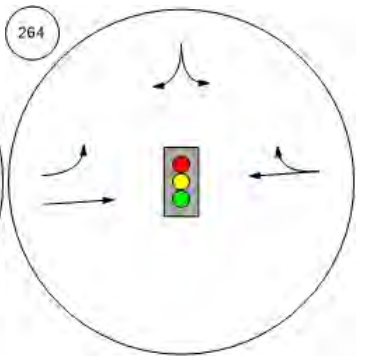
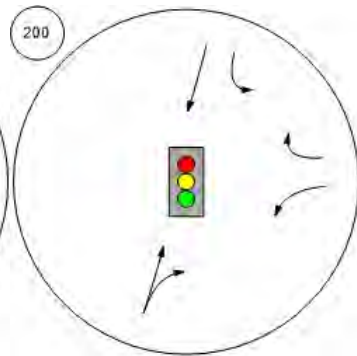
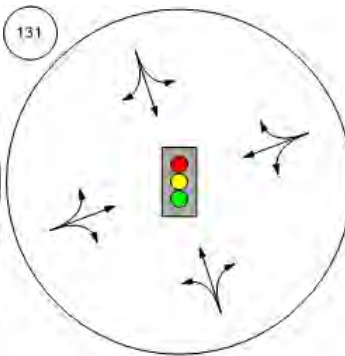
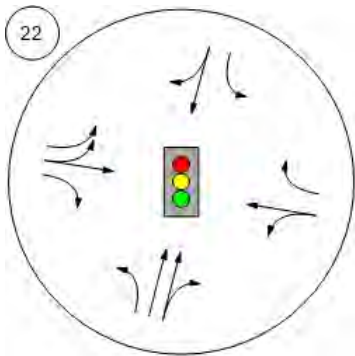
Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri

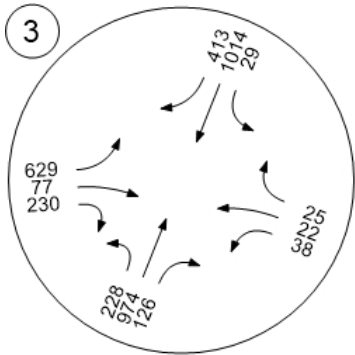
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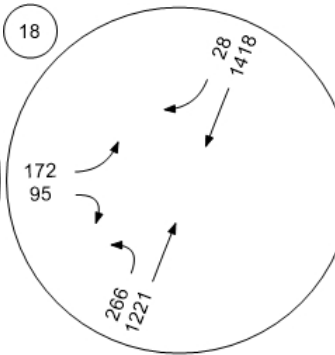
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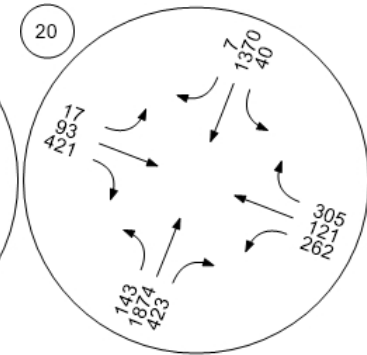
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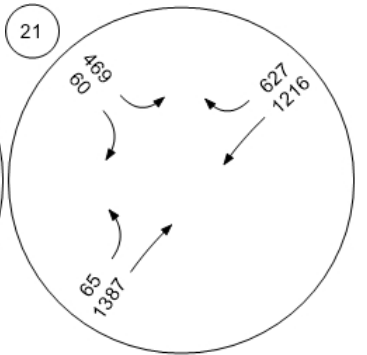
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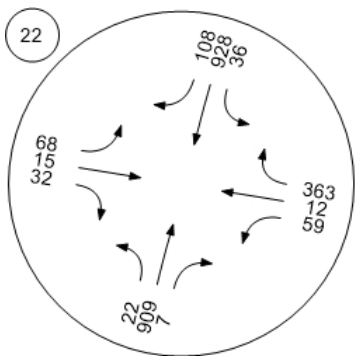
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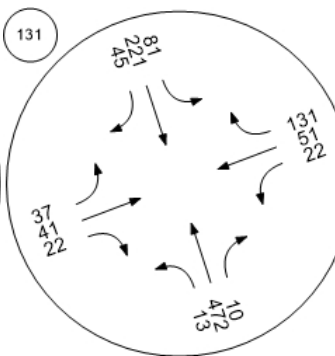
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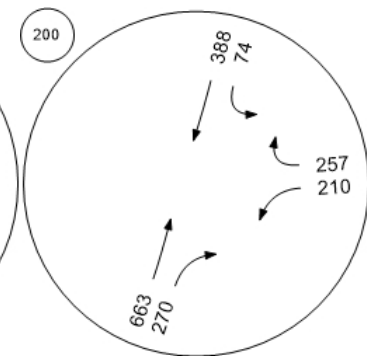
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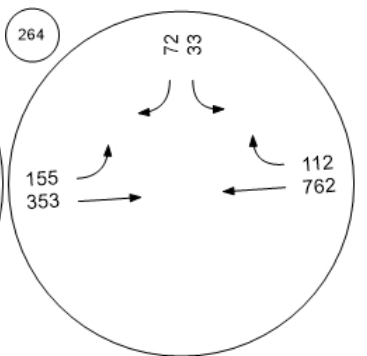
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O'Brien Drive/Kavanaugh Dri



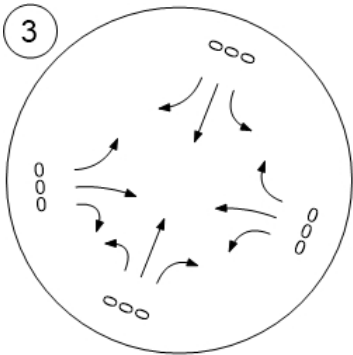
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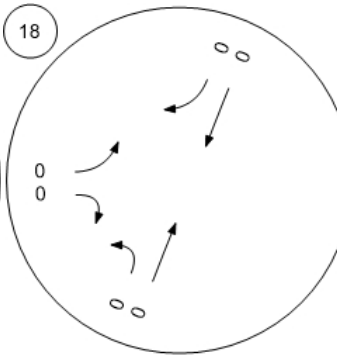
Traffic Volume - In-Process Volume



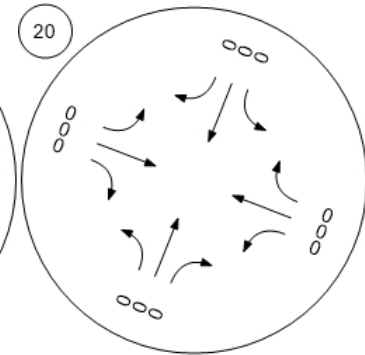
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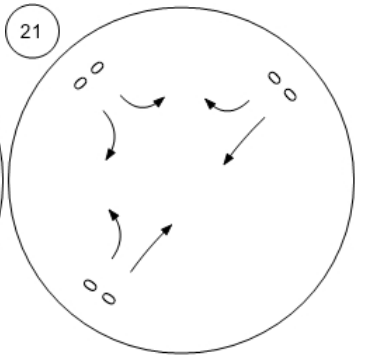
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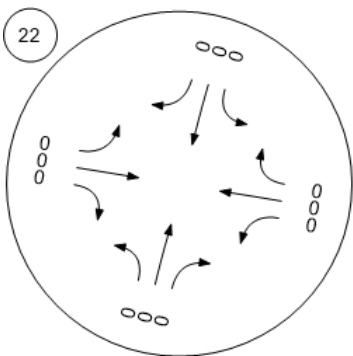
Willow Rd (SR 114)/Newbrid



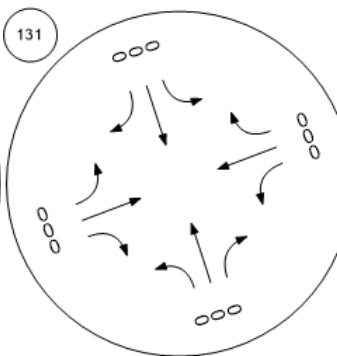
Willow Rd/Bay Rd



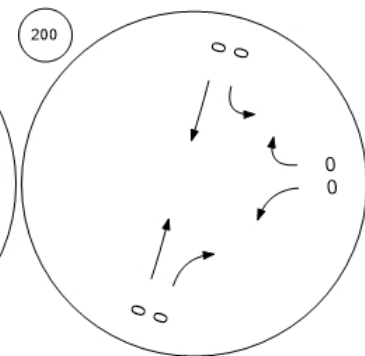
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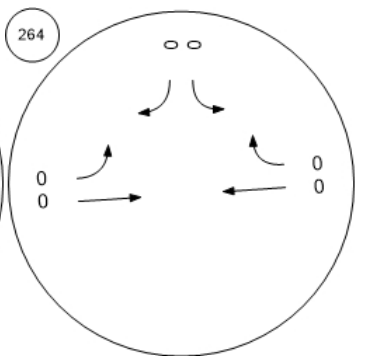
Chilco Street/Hamilton Avenu



O'Brien Drive/Kavanaugh Dri



Adams Drive/O'Brien Drive



Traffic Volume - Net New Site Trips

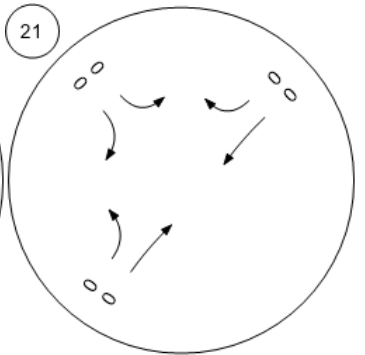
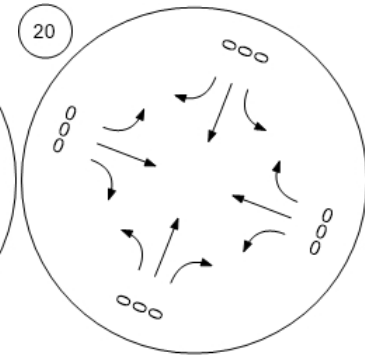
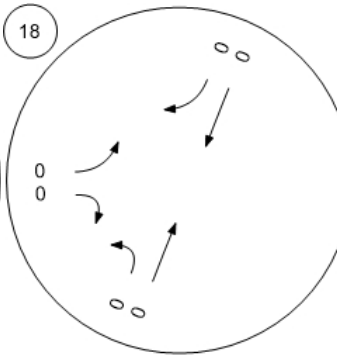
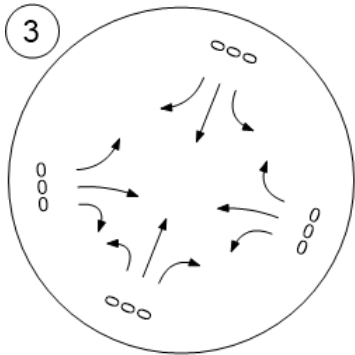


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd

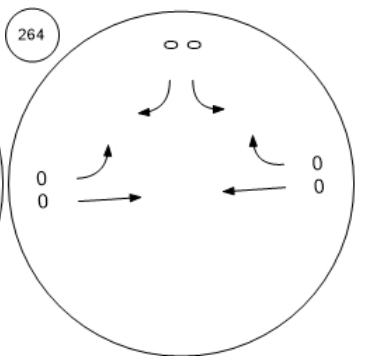
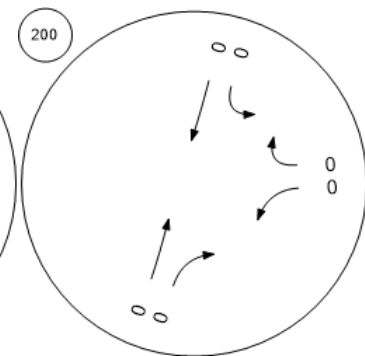
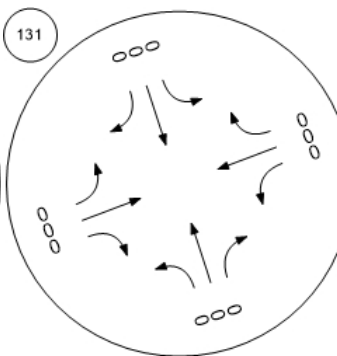
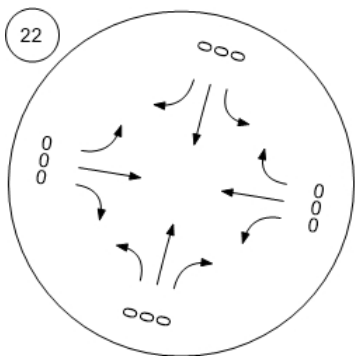


Willow Rd/Durham St-VA Me

Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri

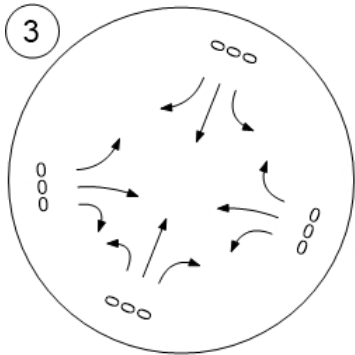
Adams Drive/O'Brien Drive



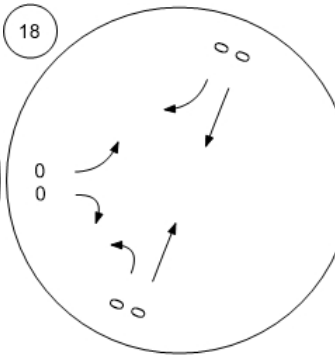
Traffic Volume - Other Volume



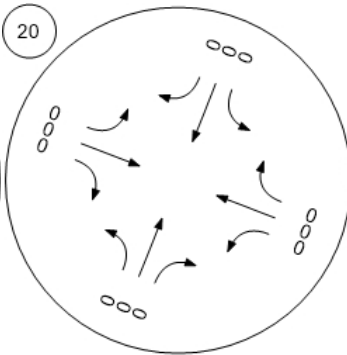
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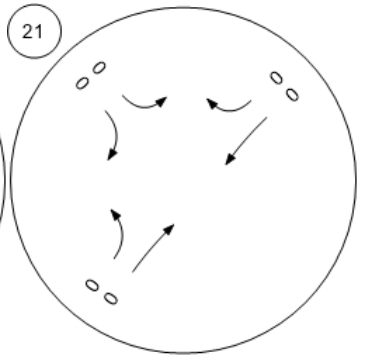
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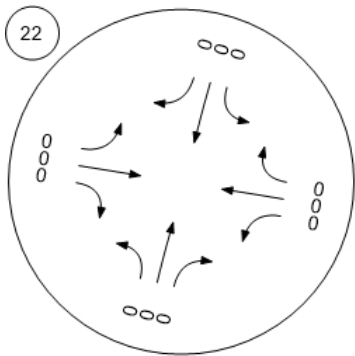
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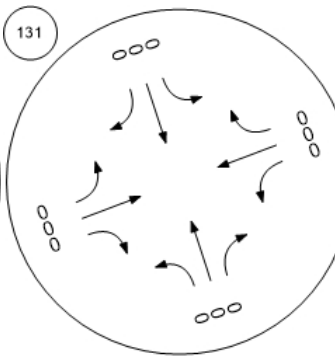
Willow Rd/Bay Rd



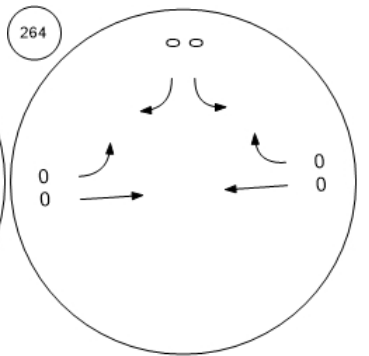
Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu



O'Brien Drive/Kavanaugh Dri



Adams Drive/O'Brien Drive

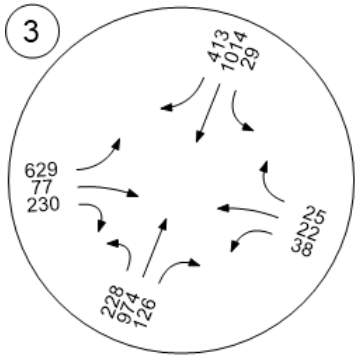




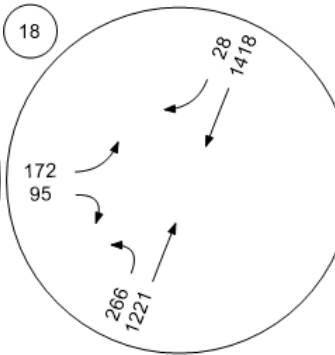
Traffic Volume - Future Total Volume



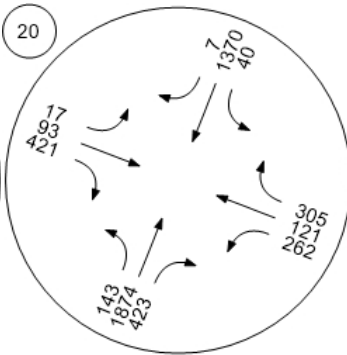
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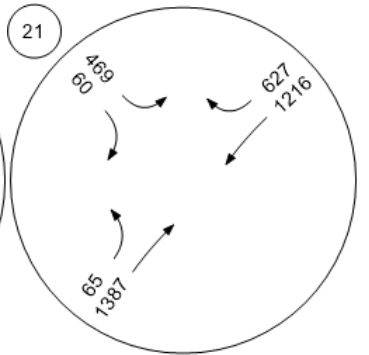
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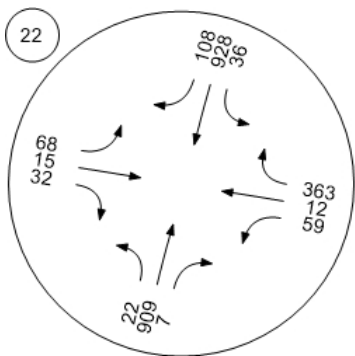
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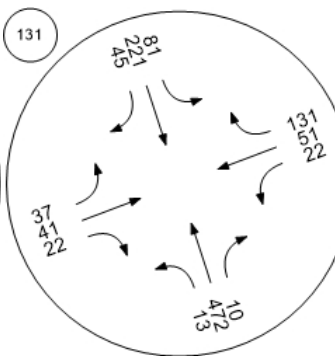
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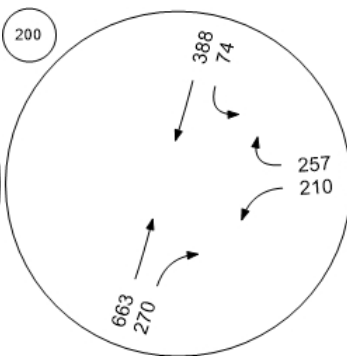
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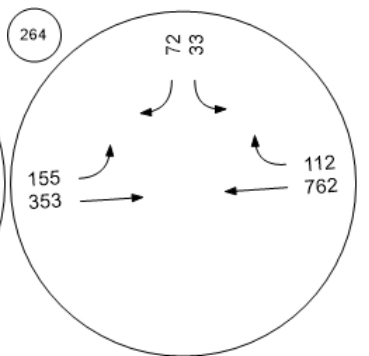
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O'Brien Drive/Kavanaugh Dri



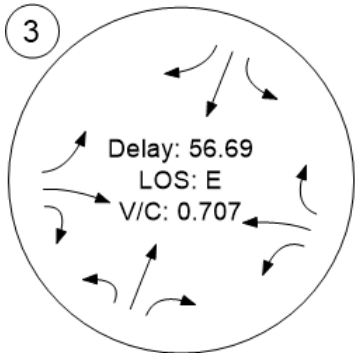
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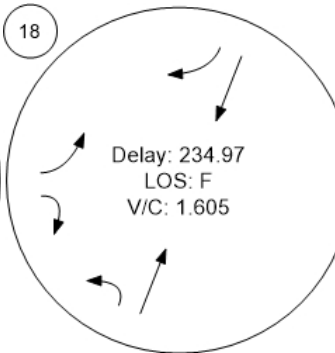
Traffic Conditions



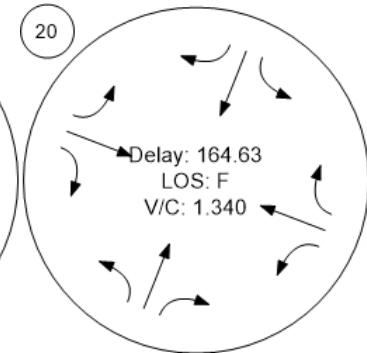
Marsh Rd/Florence St-Bohan



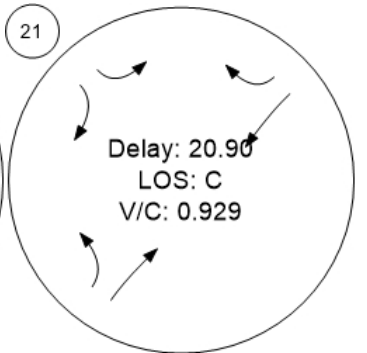
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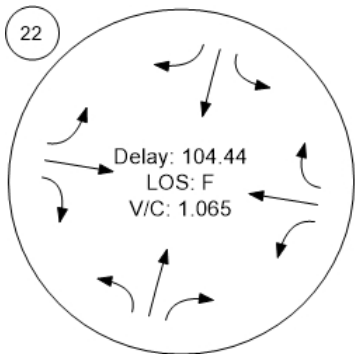
Willow Rd (SR 114)/Newbrid



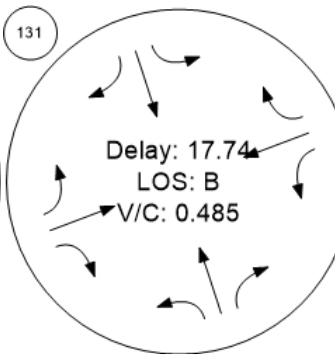
Willow Rd/Bay Rd



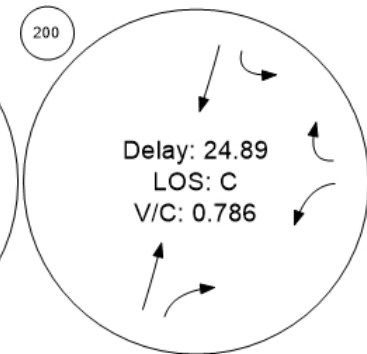
Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu



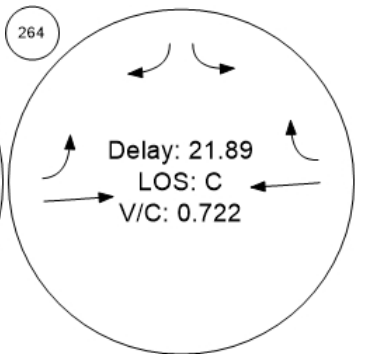
O'Brien Drive/Kavanaugh Dri



Adams Drive/O'Brien Drive

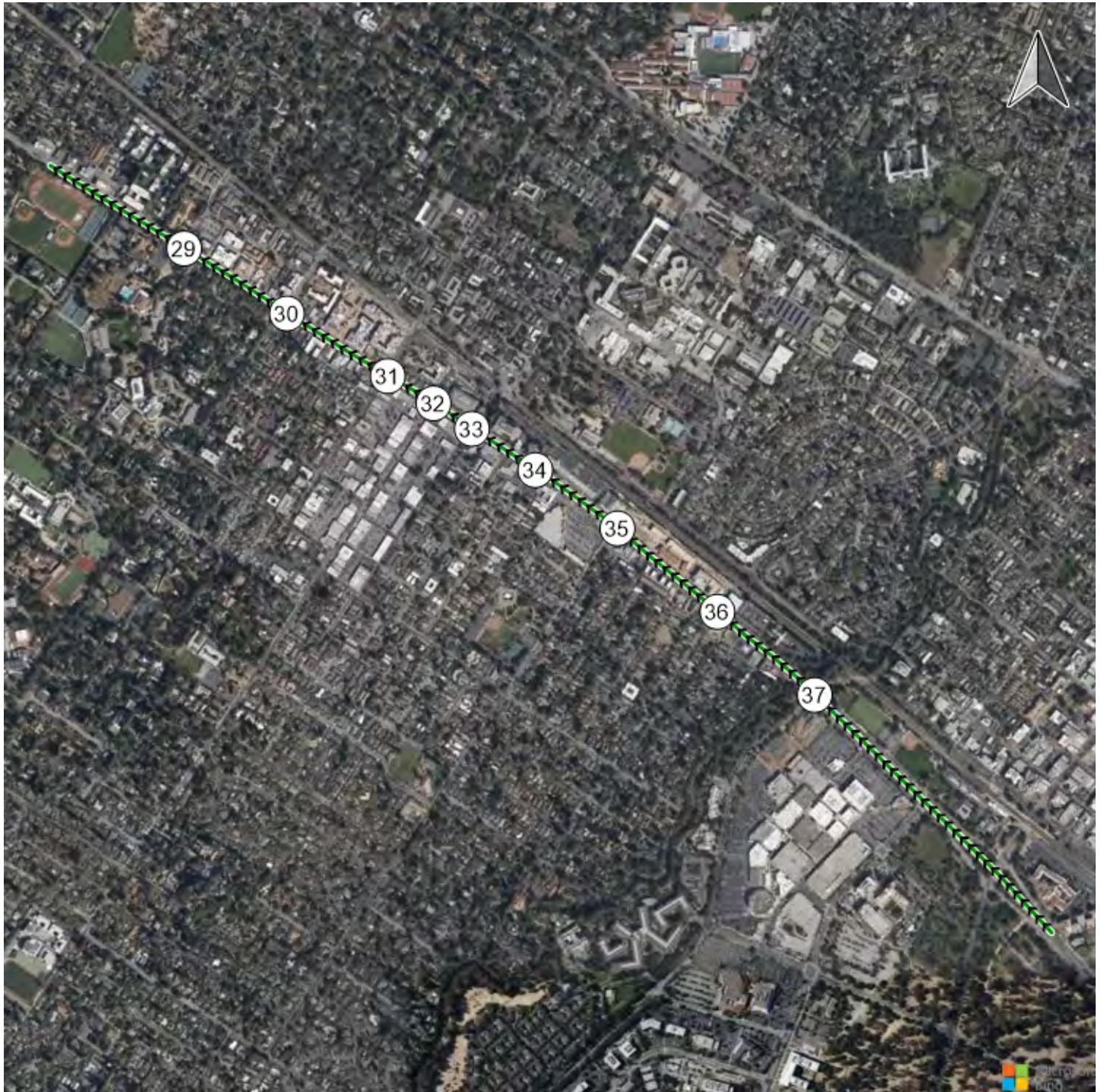


Adams Drive/O'Brien Drive



Time Space Diagram - Flowing Off

Route 1: ECR NB



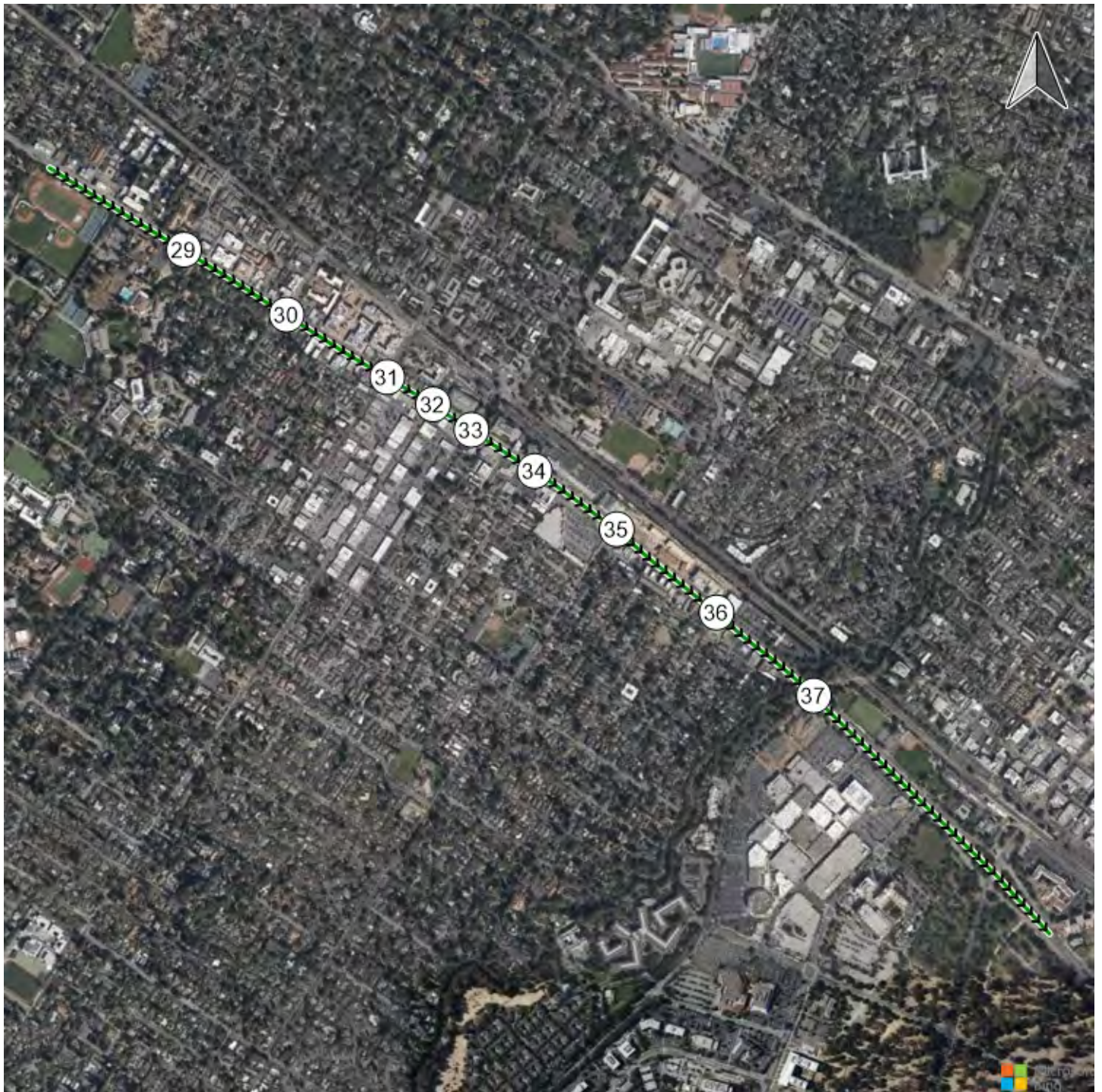
Generated with 

Version 2021 (SP 0-4)

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Route 1: ECR NB

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Version 2021 (SP 0-4)

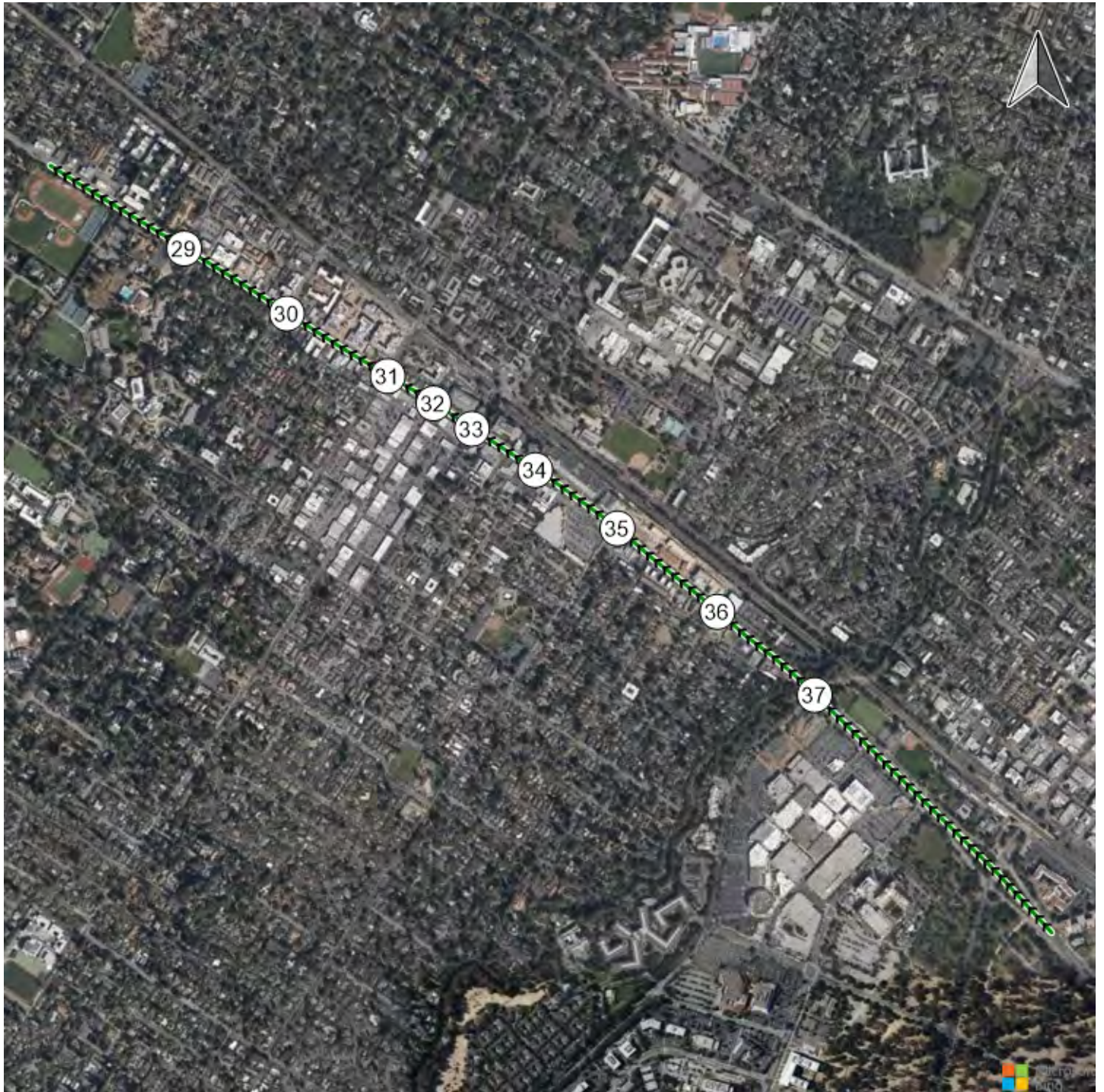
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



Generated with 

Version 2021 (SP 0-4)

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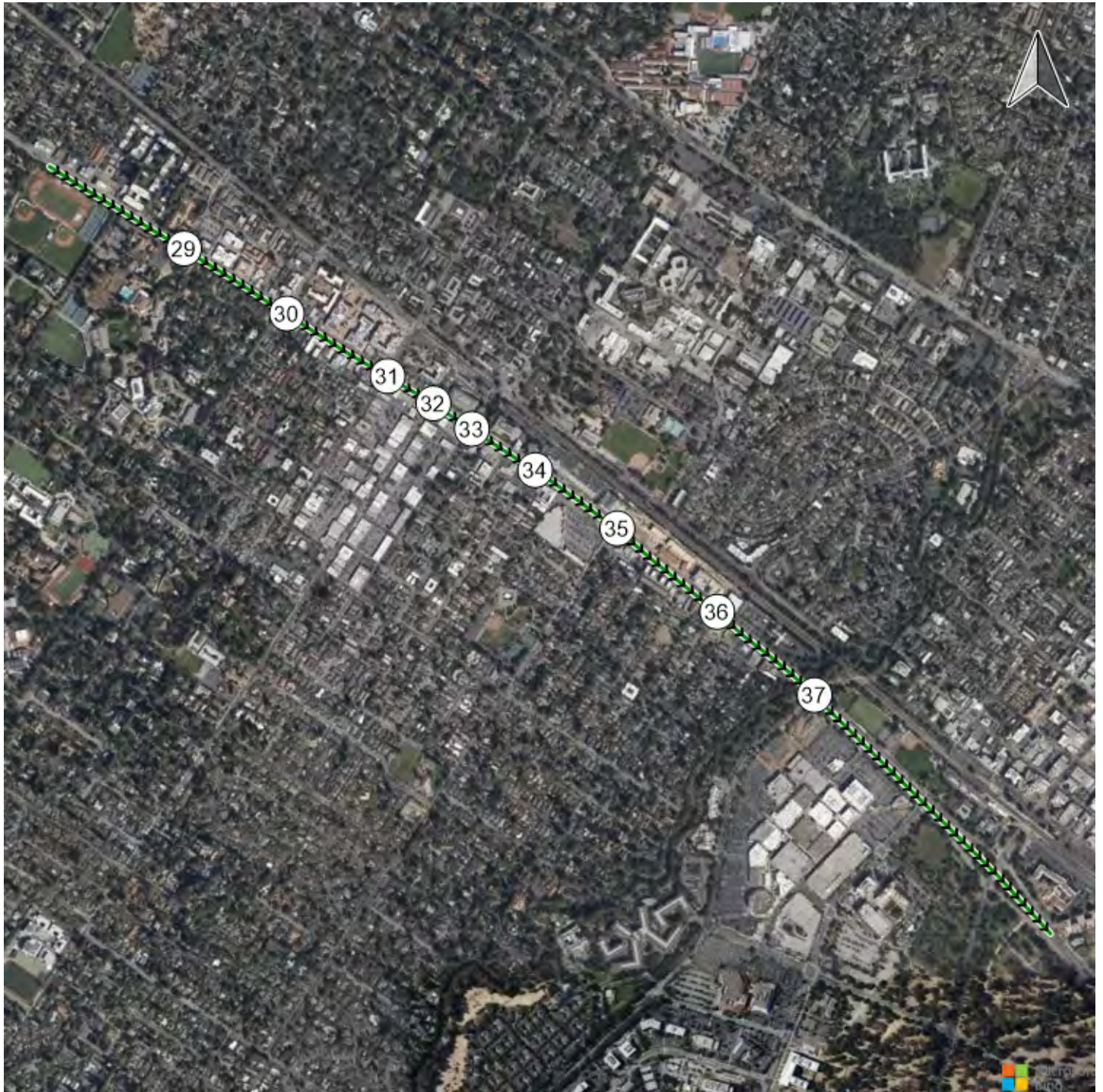
Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



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Version 2021 (SP 0-4)

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Route 2: ECR SB

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Vistro File: \...\Vistro\_AllScenarios\_AM - 12.1.2021.vistro

Scenario 21 Cumulative w/Dumbarton AM (2040 vols)

Report File: \...\Cumulative AM\_DUMB.pdf

12/9/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Right	0.913	22.8	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	SEB Left	0.842	31.2	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.833	57.8	E
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	1.122	54.5	D
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NWB Left	0.757	49.7	D
10	Middlefield Rd/Ringswood Ave	Signalized	HCM 6th Edition	NEB Left	0.407	13.2	B
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Left	0.801	14.7	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	WB Left	1.303	253.5	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	WB Thru	1.735	424.8	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	NB Left	1.421	199.1	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	NB Thru	1.246	102.7	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	WB Right	1.481	198.6	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	SEB Left	1.137	74.2	E
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	WB Right	1.135	127.7	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.933	33.9	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.696	23.7	C
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.619	64.4	E
110	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	1.095	60.7	E

131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	NB Thru	0.865	23.6	C
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.876	68.5	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.708	94.7	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.608	144.2	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.023	43.2	D
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.713	13.0	B
199	Bayfront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.734	5.7	A
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	1.466	134.8	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.945	10.1	B
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.707	95.1	F
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.507	294.4	F
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	0.410	47.2	E
265	Adam Court/Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.052	18.9	C
267	Willow Road(SR114)/Park Street	Signalized	HCM 6th Edition		0.000	0.0	A
269	O'Brien Drive/Loop Road	Roundabout	HCM 6th Edition	WB Left		2.7	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.913

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↵↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	1021	1472	217	1341	539
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1021	1472	217	1341	539
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	260	376	54	342	138
Total Analysis Volume [veh/h]	0	1042	1502	217	1368	550
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.26	0.43	0.41	0.35
s, saturation flow rate [veh/h]	4000	3515	3373	1572
c, Capacity [veh/h]	2121	1772	1394	650
d1, Uniform Delay [s]	11.91	17.15	23.13	21.15
k, delay calibration	0.50	0.50	0.05	0.38
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.82	5.26	4.17	10.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.49	0.85	0.98	0.85
d, Delay for Lane Group [s/veh]	12.73	22.41	27.30	31.38
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.39	11.64	12.49	10.44
50th-Percentile Queue Length [ft/ln]	134.74	291.06	312.30	260.92
95th-Percentile Queue Length [veh/ln]	9.20	17.24	18.29	15.73
95th-Percentile Queue Length [ft/ln]	229.92	430.96	457.21	393.37



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.73	22.41	0.00	27.30	31.38
Movement LOS		B	C		C	C
d_A, Approach Delay [s/veh]	12.73		22.41		28.47	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	22.76					
Intersection LOS	C					
Intersection V/C	0.913					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	3.007	0.000	2.588
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.419	2.799	1.560
Bicycle LOS	B	C	A

**Sequence**


Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	31.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	42	1288	7	448	1248	338	13	4	68	348	19	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	0.00	0.00	12.70	1.70	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	59	0	0	0
Total Hourly Volume [veh/h]	42	1288	7	448	1248	338	13	4	9	348	19	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	358	2	124	347	94	4	1	3	97	5	0
Total Analysis Volume [veh/h]	47	1431	8	498	1387	376	14	4	10	387	21	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			1			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			1			1	
v_co, Outbound Pedestrian Volume crossing		1			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		1			0			1			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	40	40	15	40	40	0	20	0	20	20	20
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	51	51	31	70	70	0	41	0	37	37	37
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	96	96	112	102	102	7	7	35	35
g / C, Green / Cycle	0.05	0.60	0.60	0.70	0.64	0.64	0.04	0.04	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.03	0.27	0.27	0.48	0.48	0.52	0.01	0.00	0.22	0.01
s, saturation flow rate [veh/h]	1758	3532	1849	1039	1840	1711	1829	2555	1785	1900
c, Capacity [veh/h]	82	2122	1111	708	1177	1095	82	115	390	415
d1, Uniform Delay [s]	74.70	17.39	17.39	15.58	19.91	21.39	73.64	73.20	62.32	49.35
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	0.68	1.29	5.78	4.39	6.33	0.98	0.24	43.45	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.58	0.45	0.45	0.70	0.75	0.81	0.22	0.09	0.99	0.05
d, Delay for Lane Group [s/veh]	79.39	18.07	18.69	21.37	24.29	27.72	74.62	73.44	105.76	49.39
Lane Group LOS	E	B	B	C	C	C	E	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.00	9.62	10.27	3.81	23.25	25.36	0.75	0.20	20.55	0.68
50th-Percentile Queue Length [ft/ln]	50.05	240.59	256.77	95.18	581.13	633.98	18.64	5.09	513.76	17.12
95th-Percentile Queue Length [veh/ln]	3.60	14.71	15.53	6.85	31.15	33.62	1.34	0.37	27.98	1.23
95th-Percentile Queue Length [ft/ln]	90.09	367.78	388.17	171.32	778.80	840.45	33.55	9.16	699.62	30.82

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	79.39	18.28	18.69	21.37	25.54	27.72	74.62	74.62	73.44	105.76	49.39	49.39
Movement LOS	E	B	B	C	C	C	E	E	E	F	D	D
d_A, Approach Delay [s/veh]	20.22			24.99			74.20			102.86		
Approach LOS	C			C			E			F		
d_I, Intersection Delay [s/veh]	31.22											
Intersection LOS	C											
Intersection V/C	0.842											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.43	68.43	69.35	69.35
I_p,int, Pedestrian LOS Score for Intersection	3.090	3.295	2.945	2.194
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	575	813	460	410
d_b, Bicycle Delay [s]	40.61	28.18	47.41	50.54
I_b,int, Bicycle LOS Score for Intersection	2.377	3.425	1.703	2.233
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	57.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.833

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	220	960	124	29	1031	413	609	76	229	38	21	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	220	960	124	29	1031	413	609	76	214	38	21	25
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	247	32	7	266	106	157	20	55	10	5	6
Total Analysis Volume [veh/h]	227	990	128	30	1063	426	628	78	221	39	22	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			2			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			1			2	
v_co, Outbound Pedestrian Volume crossing		0			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			0			6			0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	97	97	5	89	89	38	38	38	12	12
g / C, Green / Cycle	0.08	0.60	0.60	0.03	0.56	0.56	0.24	0.24	0.24	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.13	0.30	0.31	0.02	0.42	0.44	0.21	0.21	0.14	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1792	1704	1823	1650	1717	1706	1526	1439	1212
c, Capacity [veh/h]	142	1133	1082	58	1016	919	408	405	363	106	90
d1, Uniform Delay [s]	73.44	17.98	18.07	75.88	27.14	27.77	58.60	58.47	54.14	70.46	71.37
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.16	0.16	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	298.03	1.59	1.70	2.58	5.30	6.58	8.57	7.98	1.23	1.56	3.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.59	0.50	0.51	0.51	0.76	0.78	0.87	0.86	0.61	0.37	0.54
d, Delay for Lane Group [s/veh]	371.47	19.56	19.77	78.45	32.43	34.35	67.17	66.45	55.37	72.02	75.03
Lane Group LOS	F	B	B	E	C	C	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	17.63	12.33	12.00	1.26	23.61	22.80	14.96	14.65	8.16	1.59	2.01
50th-Percentile Queue Length [ft/ln]	440.67	308.31	300.00	31.42	590.23	569.99	374.07	366.35	203.95	39.71	50.35
95th-Percentile Queue Length [veh/ln]	28.13	18.09	17.68	2.26	31.58	30.63	21.31	20.93	12.84	2.86	3.63
95th-Percentile Queue Length [ft/ln]	703.25	452.29	442.03	56.56	789.44	765.76	532.66	523.30	321.06	71.48	90.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	371.47	19.65	19.77	78.45	32.96	34.35	66.86	66.45	55.37	72.02	75.03	75.03
Movement LOS	F	B	B	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	79.04			34.25			64.09			73.68		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	57.80											
Intersection LOS	E											
Intersection V/C	0.833											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	69.34			69.34			69.34			69.34		
I_p,int, Pedestrian LOS Score for Intersection	2.989			3.080			2.508			2.055		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	893			843			400			410		
d_b, Bicycle Delay [s]	24.53			26.77			51.32			50.53		
I_b,int, Bicycle LOS Score for Intersection	2.669			2.813			3.114			1.703		
Bicycle LOS	B			C			C			A		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	54.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.122

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	836	82	425	755	47	292	68	2	43	46	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	836	82	425	755	47	292	68	2	43	46	339
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	213	21	108	193	12	74	17	1	11	12	86
Total Analysis Volume [veh/h]	0	853	84	434	770	48	298	69	2	44	47	346
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			5			0			5	
v_di, Inbound Pedestrian Volume crossing in		0			5			0			5	
v_co, Outbound Pedestrian Volume crossing		1			1			1			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			1			1			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			12			9			2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	30	30
g / C, Green / Cycle	0.33	0.33	0.20	0.57	0.57	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.25	0.23	0.23	0.55	0.26
s, saturation flow rate [veh/h]	1882	1656	1708	1807	1763	675	1702
c, Capacity [veh/h]	669	549	343	1030	1005	333	684
d1, Uniform Delay [s]	24.38	24.39	32.07	9.62	9.64	30.99	21.70
k, delay calibration	0.50	0.50	0.23	0.50	0.50	0.50	0.33
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.38	11.55	129.85	1.16	1.21	82.16	3.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.74	0.80	1.26	0.40	0.40	1.11	0.64
d, Delay for Lane Group [s/veh]	31.76	35.93	161.92	10.79	10.84	113.14	24.72
Lane Group LOS	C	D	F	B	B	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.35	8.79	18.68	3.80	3.74	14.11	7.19
50th-Percentile Queue Length [ft/ln]	233.73	219.65	467.07	94.97	93.56	352.74	179.77
95th-Percentile Queue Length [veh/ln]	14.36	13.65	28.83	6.84	6.74	21.62	11.59
95th-Percentile Queue Length [ft/ln]	359.10	341.18	720.64	170.94	168.42	540.60	289.71

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.76	33.50	35.93	161.92	10.81	10.84	113.14	113.14	113.14	24.72	24.72	24.72
Movement LOS	C	C	D	F	B	B	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	33.71			63.20			113.14			24.72		
Approach LOS	C			E			F			C		
d_I, Intersection Delay [s/veh]	54.51											
Intersection LOS	D											
Intersection V/C	1.122											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			23.9		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	29.82			29.82			29.82			19.73		
I_p,int, Pedestrian LOS Score for Intersection	2.686			3.343			1.897			2.191		
Crosswalk LOS	B			C			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	596			1071			681			681		
d_b, Bicycle Delay [s]	19.73			8.70			17.50			17.44		
I_b,int, Bicycle LOS Score for Intersection	2.333			2.593			2.168			2.281		
Bicycle LOS	B			B			B			B		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	49.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	87	569	520	508	501	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	11.80	4.20	3.10	2.50	3.30	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	87	0	520	508	501	104
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	138	135	133	28
Total Analysis Volume [veh/h]	93	0	553	540	533	111
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing in	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	10	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.6	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	13	13	33	100	68
g / C, Green / Cycle	0.11	0.11	0.28	0.84	0.57
(v / s)_i Volume / Saturation Flow Rate	0.06	0.00	0.31	0.29	0.36
s, saturation flow rate [veh/h]	1641	1561	1765	1862	1779
c, Capacity [veh/h]	180	172	485	1555	1005
d1, Uniform Delay [s]	50.42	0.00	43.52	2.30	17.79
k, delay calibration	0.08	0.08	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.69	0.00	84.97	0.61	3.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	1.14	0.35	0.64
d, Delay for Lane Group [s/veh]	52.11	0.00	128.49	2.91	20.92
Lane Group LOS	D	A	F	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	0.00	25.56	2.07	12.35
50th-Percentile Queue Length [ft/ln]	68.20	0.00	639.03	51.64	308.77
95th-Percentile Queue Length [veh/ln]	4.91	0.00	36.59	3.72	18.11
95th-Percentile Queue Length [ft/ln]	122.76	0.00	914.81	92.96	452.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.11	0.00	128.49	2.91	20.92	20.92
Movement LOS	D	A	F	A	C	C
d_A, Approach Delay [s/veh]	52.11		66.45		20.92	
Approach LOS	D		E		C	
d_I, Intersection Delay [s/veh]	49.70					
Intersection LOS	D					
Intersection V/C	0.757					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.52	49.52	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.948	2.892	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	763	1090	507
d_b, Bicycle Delay [s]	23.21	12.68	34.09
I_b,int, Bicycle LOS Score for Intersection	1.560	3.363	2.622
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringswood Ave**

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.407

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	↵↑			↑↵			↵↵↵			↵↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	6	11	9	129	28	344	21	683	206	288	747	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	8.30	4.40	0.00	4.00	0.00	3.20	0.00	4.60	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	222	0	0	96	0	0	0
Total Hourly Volume [veh/h]	6	11	9	129	28	122	21	683	110	288	747	56
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	2	34	7	32	6	182	29	77	199	15
Total Analysis Volume [veh/h]	6	12	10	137	30	130	22	727	117	306	795	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			5			2			6	
v_di, Inbound Pedestrian Volume crossing in		2			6			1			5	
v_co, Outbound Pedestrian Volume crossing		9			41			40			8	
v_ci, Inbound Pedestrian Volume crossing mi		8			40			41			9	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		8			23			15			38	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	22	22	22	22	94	80	80	91	85	85
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.78	0.67	0.67	0.76	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.00	0.01	0.13	0.09	0.03	0.21	0.08	0.36	0.24	0.24
s, saturation flow rate [veh/h]	1397	1736	1310	1477	706	3526	1474	846	1840	1779
c, Capacity [veh/h]	124	325	300	277	579	2343	979	666	1301	1258
d1, Uniform Delay [s]	54.82	40.13	46.92	43.22	4.12	8.51	7.28	5.14	6.73	6.75
k, delay calibration	0.10	0.10	0.10	0.10	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.08	1.54	1.18	0.03	0.35	0.25	2.28	0.69	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.07	0.56	0.47	0.04	0.31	0.12	0.46	0.33	0.34
d, Delay for Lane Group [s/veh]	54.97	40.22	48.46	44.40	4.14	8.86	7.53	7.42	7.42	7.48
Lane Group LOS	D	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.18	0.56	4.82	3.52	0.11	3.80	1.08	2.26	4.01	3.93
50th-Percentile Queue Length [ft/ln]	4.56	13.93	120.50	88.10	2.87	94.99	27.09	56.54	100.19	98.34
95th-Percentile Queue Length [veh/ln]	0.33	1.00	8.42	6.34	0.21	6.84	1.95	4.07	7.21	7.08
95th-Percentile Queue Length [ft/ln]	8.20	25.07	210.52	158.59	5.16	170.98	48.76	101.77	180.33	177.01

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	54.97	40.22	40.22	48.46	48.46	44.40	4.14	8.86	7.53	7.42	7.45	7.48
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	43.38			46.68			8.56			7.44		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	13.23											
Intersection LOS	B											
Intersection V/C	0.407											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.008			2.898			3.159			2.833		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	513			513			757			507		
d_b, Bicycle Delay [s]	33.29			33.54			23.36			34.10		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.416			2.353			2.517		
Bicycle LOS	A			B			B			B		

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.801

**Intersection Setup**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	829	101	1288	2933	333	416
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	3.50	1.60	3.10	2.20	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	829	101	1288	2933	333	416
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	214	26	332	756	86	107
Total Analysis Volume [veh/h]	855	104	1328	3024	343	429
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	78	78	78	78	78	78
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	21	21	33	58	10	48
g / C, Green / Cycle	0.27	0.27	0.43	0.74	0.13	0.61
(v / s)_i Volume / Saturation Flow Rate	0.17	0.07	0.38	0.60	0.10	0.10
s, saturation flow rate [veh/h]	4955	1547	3470	5049	3453	4166
c, Capacity [veh/h]	1324	414	1475	3729	464	2545
d1, Uniform Delay [s]	25.30	22.42	20.87	6.64	32.43	6.58
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.64	0.38	0.87	0.54	0.87	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.65	0.25	0.90	0.81	0.74	0.17
d, Delay for Lane Group [s/veh]	25.94	22.80	21.73	7.18	33.30	6.59
Lane Group LOS	C	C	C	A	C	A
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.15	1.36	9.23	4.30	3.03	0.85
50th-Percentile Queue Length [ft/ln]	103.84	34.03	230.75	107.43	75.73	21.22
95th-Percentile Queue Length [veh/ln]	7.48	2.45	14.21	7.70	5.45	1.53
95th-Percentile Queue Length [ft/ln]	186.91	61.26	355.31	192.43	136.31	38.20

**Movement, Approach, & Intersection Results**

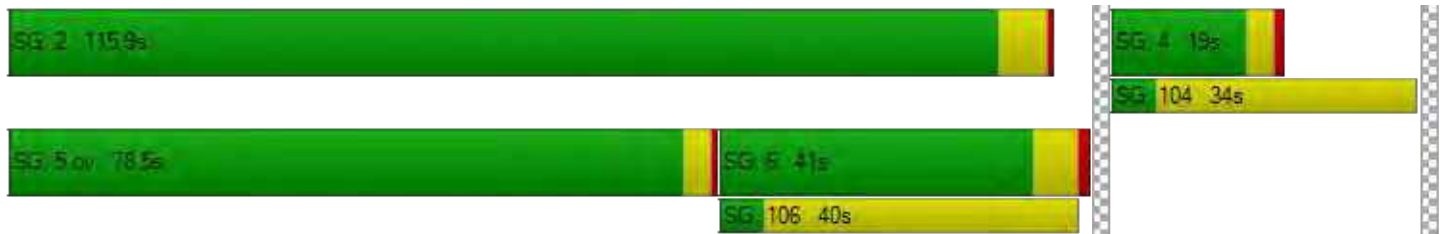
d_M, Delay for Movement [s/veh]	25.94	22.80	21.73	7.18	33.30	6.59
Movement LOS	C	C	C	A	C	A
d_A, Approach Delay [s/veh]	25.60		11.62		18.46	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	14.69					
Intersection LOS	B					
Intersection V/C	0.801					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.45	0.00	30.45
I_p,int, Pedestrian LOS Score for Intersection	3.693	0.000	2.946
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	899	360	385
d_b, Bicycle Delay [s]	11.80	26.21	25.38
I_b,int, Bicycle LOS Score for Intersection	2.087	3.953	1.670
Bicycle LOS	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	253.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.303

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		



**Volumes**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	249	596	277	35	75	72	386	465	191	1101	2572	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	249	596	277	35	75	56	386	465	85	1101	2572	72
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	152	71	9	19	14	98	119	22	281	656	18
Total Analysis Volume [veh/h]	254	608	283	36	77	57	394	474	87	1123	2624	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			2			3			0	
v_di, Inbound Pedestrian Volume crossing in		0			3			2			0	
v_co, Outbound Pedestrian Volume crossing		4			0			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		3			0			4			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	22	21	51	9	9	9	26	51	51	25	50	50
g / C, Green / Cycle	0.17	0.17	0.40	0.07	0.07	0.07	0.21	0.40	0.40	0.20	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.34	0.28	0.07	0.05	0.03	0.05	0.26	0.10	0.06	0.41	0.52	0.05
s, saturation flow rate [veh/h]	740	2209	3942	670	2746	1075	1515	4922	1458	2715	5020	1615
c, Capacity [veh/h]	128	369	1578	48	196	77	312	1989	589	538	1990	640
d1, Uniform Delay [s]	52.15	52.54	24.45	57.49	55.96	57.37	50.10	24.79	23.83	50.58	38.08	24.08
k, delay calibration	0.50	0.50	0.11	0.16	0.11	0.15	0.17	0.11	0.11	0.46	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	467.79	302.80	0.05	28.36	1.27	17.49	127.00	0.06	0.11	495.14	144.31	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.98	1.65	0.18	0.75	0.39	0.74	1.26	0.24	0.15	2.09	1.32	0.11
d, Delay for Lane Group [s/veh]	519.94	355.34	24.50	85.86	57.23	74.85	177.10	24.85	23.94	545.73	182.40	24.16
Lane Group LOS	F	F	C	F	E	E	F	C	C	F	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	20.65	21.26	1.81	1.52	1.23	2.18	10.40	3.16	1.69	45.46	46.68	1.41
50th-Percentile Queue Length [ft/ln]	516.15	531.54	45.13	38.08	30.70	54.61	260.10	79.03	42.14	1136.58	1166.96	35.31
95th-Percentile Queue Length [veh/ln]	34.82	34.60	3.25	2.74	2.21	3.93	17.40	5.69	3.03	72.48	68.84	2.54
95th-Percentile Queue Length [ft/ln]	870.62	865.09	81.24	68.54	55.27	98.31	435.04	142.26	75.86	1811.92	1720.97	63.56

**Movement, Approach, & Intersection Results**

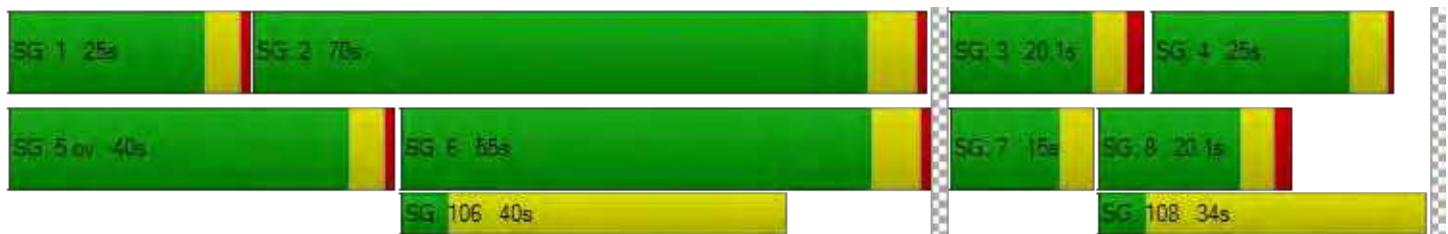
d_M, Delay for Movement [s/veh]	519.94	355.34	24.50	85.86	57.23	74.85	177.10	24.85	23.94	545.73	182.40	24.16
Movement LOS	F	F	C	F	E	E	F	C	C	F	F	C
d_A, Approach Delay [s/veh]	310.08			69.20			87.58			286.18		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	253.48											
Intersection LOS	F											
Intersection V/C	1.303											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.44	0.00	54.44	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.136	0.000	3.346	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	326	238	776	1014
d_b, Bicycle Delay [s]	44.20	49.01	23.63	15.34
I_b,int, Bicycle LOS Score for Intersection	2.504	1.713	2.143	3.661
Bicycle LOS	B	A	B	D

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	424.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.735

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	99	820	359	190	1255	45	47	56	48	56	422	349
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	6.30	7.00	9.10	8.40	10.50	1.30	4.50	6.00	23.10	12.50	30.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	820	359	190	1255	45	47	56	48	56	422	349
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	220	97	51	337	12	13	15	13	15	113	94
Total Analysis Volume [veh/h]	106	882	386	204	1349	48	51	60	52	60	454	375
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing in	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	90	73	73	90	78	78	33	33
g / C, Green / Cycle	0.69	0.56	0.56	0.69	0.60	0.60	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.25	0.82	0.85	0.42	0.75	0.76	0.44	0.97
s, saturation flow rate [veh/h]	432	808	714	491	934	917	371	914
c, Capacity [veh/h]	133	454	401	178	562	552	130	247
d1, Uniform Delay [s]	33.71	28.50	28.50	47.18	25.84	25.84	51.50	48.23
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	37.55	219.03	242.10	113.07	125.20	131.27	162.70	1180.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.80	1.46	1.51	1.15	1.25	1.26	1.25	3.60
d, Delay for Lane Group [s/veh]	71.26	247.52	270.60	160.24	151.04	157.11	214.20	1229.07
Lane Group LOS	E	F	F	F	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.34	40.52	38.41	7.41	35.82	36.10	10.22	89.02
50th-Percentile Queue Length [ft/ln]	58.45	1012.90	960.18	185.21	895.38	902.44	255.42	2225.56
95th-Percentile Queue Length [veh/ln]	4.21	64.57	62.29	13.01	53.59	54.32	17.21	142.54
95th-Percentile Queue Length [ft/ln]	105.20	1614.24	1557.15	325.26	1339.79	1358.12	430.19	3563.59



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	71.26	253.27	270.60	160.24	153.96	157.11	214.20	214.20	214.20	1229.07	1229.07	1229.07
Movement LOS	E	F	F	F	F	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	244.10			154.85			214.20			1229.07		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	424.85											
Intersection LOS	F											
Intersection V/C	1.735											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.46	54.46
I_p,int, Pedestrian LOS Score for Intersection	3.488	3.017	2.139	2.542
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1123	1077	505	508
d_b, Bicycle Delay [s]	12.59	14.11	36.42	36.38
I_b,int, Bicycle LOS Score for Intersection	2.693	2.880	1.829	3.026
Bicycle LOS	B	C	A	C

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	199.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.421

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↪	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	235	1304	1205	31	86	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	5.70	10.30	22.20	0.00	6.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	235	1304	1205	31	86	95
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	354	327	8	23	26
Total Analysis Volume [veh/h]	255	1417	1310	34	93	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing in	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	106	90	90	24	24
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	103	87	87	20	20
g / C, Green / Cycle	0.10	0.80	0.67	0.67	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.32	0.92	0.86	0.87	0.05	0.13
s, saturation flow rate [veh/h]	795	1546	781	773	1745	779
c, Capacity [veh/h]	80	1230	525	520	262	117
d1, Uniform Delay [s]	58.39	13.26	21.27	21.27	49.50	53.78
k, delay calibration	0.50	0.50	0.50	0.50	0.04	0.30
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1020.00	78.17	140.17	145.86	0.30	38.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	3.20	1.15	1.28	1.29	0.35	0.88
d, Delay for Lane Group [s/veh]	1078.39	91.43	161.44	167.14	49.80	92.65
Lane Group LOS	F	F	F	F	D	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	25.19	25.52	34.04	34.51	2.75	4.55
50th-Percentile Queue Length [ft/ln]	629.76	638.11	850.97	862.80	68.74	113.66
95th-Percentile Queue Length [veh/ln]	41.29	38.01	52.26	53.23	4.95	8.04
95th-Percentile Queue Length [ft/ln]	1032.21	950.13	1306.51	1330.65	123.73	201.09

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	1078.39	91.43	164.21	167.14	49.80	92.65
Movement LOS	F	F	F	F	D	F
d_A, Approach Delay [s/veh]	241.95		164.29		72.32	
Approach LOS	F		F		E	
d_I, Intersection Delay [s/veh]	199.10					
Intersection LOS	F					
Intersection V/C	1.421					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.121	3.078	2.115
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.01	7.42	45.67
I_b,int, Bicycle LOS Score for Intersection	2.939	2.668	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	102.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.246

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1395	828	42	1173	237	230
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.30	7.40	9.70	10.30	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1395	828	42	1173	237	230
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	371	220	11	312	63	61
Total Analysis Volume [veh/h]	1484	881	45	1248	252	245
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	93	93	4	100	23	23
g / C, Green / Cycle	0.71	0.71	0.03	0.77	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.96	0.60	0.03	0.84	0.18	0.18
s, saturation flow rate [veh/h]	1549	1477	1704	1494	1312	1519
c, Capacity [veh/h]	1104	1052	57	1149	230	266
d1, Uniform Delay [s]	18.68	12.47	62.31	14.99	53.56	53.56
k, delay calibration	0.50	0.50	0.04	0.50	0.45	0.45
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	161.07	7.95	8.53	53.02	56.77	52.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.34	0.84	0.79	1.09	1.00	1.00
d, Delay for Lane Group [s/veh]	179.74	20.41	70.85	68.01	110.33	106.37
Lane Group LOS	F	C	E	F	F	F
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	38.21	16.72	1.59	20.90	11.13	12.59
50th-Percentile Queue Length [ft/ln]	955.16	418.01	39.85	522.46	278.37	314.76
95th-Percentile Queue Length [veh/ln]	59.83	23.43	2.87	30.44	16.61	18.42
95th-Percentile Queue Length [ft/ln]	1495.82	585.67	71.73	760.90	415.37	460.47

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	179.74	20.41	70.85	68.01	110.27	106.37
Movement LOS	F	C	E	F	F	F
d_A, Approach Delay [s/veh]	120.39		68.11		108.20	
Approach LOS	F		E		F	
d_I, Intersection Delay [s/veh]	102.66					
Intersection LOS	F					
Intersection V/C	1.246					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.420
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.18	3.45	44.20
I_b,int, Bicycle LOS Score for Intersection	3.511	2.626	2.380
Bicycle LOS	D	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	198.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.481

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐			⇐			⇐ ⇐			⇐ ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	160	1806	351	40	1335	7	79	135	445	298	167	221
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	160	1806	351	40	1335	7	79	135	401	298	167	187
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	480	93	11	355	2	21	36	107	79	44	50
Total Analysis Volume [veh/h]	170	1921	373	43	1420	7	84	144	427	317	178	199
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			3			3	
v_di, Inbound Pedestrian Volume crossing in		3			3			2			2	
v_co, Outbound Pedestrian Volume crossing		8			12			7			11	
v_ci, Inbound Pedestrian Volume crossing mi		7			11			8			12	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			1			5			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	55	55	4	46	46	36	36	36	20	20	20
g / C, Green / Cycle	0.10	0.43	0.43	0.03	0.36	0.36	0.27	0.27	0.27	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.10	0.44	0.47	0.02	0.63	0.63	0.06	0.09	0.32	0.21	0.22	0.30
s, saturation flow rate [veh/h]	1781	3455	1647	1781	1491	781	1420	1577	1322	1536	800	668
c, Capacity [veh/h]	178	1480	706	55	536	281	386	428	359	236	123	103
d1, Uniform Delay [s]	58.21	37.15	37.15	62.54	41.63	41.63	36.66	37.96	46.79	55.02	55.02	54.28
k, delay calibration	0.10	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.50	0.14	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.82	31.85	60.12	8.43	344.05	351.13	0.10	0.17	109.84	162.65	241.75	455.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.95	1.03	1.09	0.78	1.75	1.75	0.22	0.34	1.19	1.34	1.45	1.94
d, Delay for Lane Group [s/veh]	79.02	69.00	97.27	70.97	385.69	392.76	36.77	38.13	156.63	217.66	296.76	510.04
Lane Group LOS	E	F	F	E	F	F	D	D	F	F	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.51	29.04	33.22	1.55	34.20	36.37	2.10	3.72	22.32	9.19	12.26	16.31
50th-Percentile Queue Length [ft/ln]	162.76	726.01	830.56	38.85	854.94	909.14	52.41	93.03	558.00	229.68	306.59	407.77
95th-Percentile Queue Length [veh/ln]	10.70	38.78	45.39	2.80	56.55	59.84	3.77	6.70	33.17	15.82	20.65	27.96
95th-Percentile Queue Length [ft/ln]	267.38	969.51	1134.85	69.93	1413.87	1495.95	94.33	167.46	829.31	395.52	516.35	699.09

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	79.02	74.80	97.27	70.97	388.09	392.76	36.77	38.13	156.63	217.66	296.76	510.04
Movement LOS	E	E	F	E	F	F	D	D	F	F	F	F
d_A, Approach Delay [s/veh]	78.50			378.84			115.21			321.79		
Approach LOS	E			F			F			F		
d_I, Intersection Delay [s/veh]	198.58											
Intersection LOS	F											
Intersection V/C	1.481											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.481	3.043	2.468	2.618
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.33	21.07	38.56	50.34
I_b,int, Bicycle LOS Score for Intersection	2.915	2.368	2.713	2.761
Bicycle LOS	C	B	B	C

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	74.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.137

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩		↩		↩ ↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1402	1215	655	429	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1402	1215	356	429	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	351	304	89	107	0
Total Analysis Volume [veh/h]	65	1402	1215	356	429	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	5	45	36	36	36	36
g / C, Green / Cycle	0.06	0.49	0.40	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.54	0.44	0.29	0.46	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1229	928	1597
c, Capacity [veh/h]	78	1296	1101	489	369	635
d1, Uniform Delay [s]	42.15	22.85	27.29	22.94	27.29	0.00
k, delay calibration	0.04	0.23	0.16	0.27	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.15	44.07	51.61	5.08	99.41	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	1.08	1.10	0.73	1.16	0.00
d, Delay for Lane Group [s/veh]	50.30	66.92	78.90	28.02	126.71	0.00
Lane Group LOS	D	F	F	C	F	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.60	20.53	18.87	6.66	17.67	0.00
50th-Percentile Queue Length [ft/ln]	39.96	513.21	471.85	166.55	441.87	0.00
95th-Percentile Queue Length [veh/ln]	2.88	29.62	27.76	10.90	27.03	0.00
95th-Percentile Queue Length [ft/ln]	71.92	740.57	694.06	272.38	675.75	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	50.30	66.92	78.90	28.02	126.71	0.00
Movement LOS	D	F	F	C	F	A
d_A, Approach Delay [s/veh]	66.18		67.37		126.71	
Approach LOS	E		E		F	
d_I, Intersection Delay [s/veh]	74.21					
Intersection LOS	E					
Intersection V/C	1.137					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.91
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.448
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	796	796	796
d_b, Bicycle Delay [s]	16.41	16.42	16.41
I_b,int, Bicycle LOS Score for Intersection	2.770	3.102	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	127.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.135

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	22	911	7	36	931	108	67	13	32	59	12	359
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0
Total Hourly Volume [veh/h]	22	911	7	36	931	108	67	13	26	59	12	359
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	237	2	9	242	28	17	3	7	15	3	93
Total Analysis Volume [veh/h]	23	949	7	38	970	113	70	14	27	61	13	374
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing in	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			6			2		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	166	166	166	166	166	166	166	166	166	166
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	4	97	97	7	100	14	14	14	30	30
g / C, Green / Cycle	0.02	0.58	0.58	0.04	0.60	0.08	0.08	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.29	0.29	0.04	0.70	0.04	0.04	0.02	0.06	0.32
s, saturation flow rate [veh/h]	952	1445	1895	952	1537	952	1395	1334	952	1202
c, Capacity [veh/h]	23	844	1106	42	927	79	115	110	172	217
d1, Uniform Delay [s]	80.81	20.09	20.10	78.92	32.88	72.36	72.34	70.94	59.40	67.88
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	82.45	0.94	0.72	44.70	87.33	3.76	2.54	1.14	1.23	368.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.49	0.49	0.91	1.17	0.44	0.43	0.25	0.35	1.78
d, Delay for Lane Group [s/veh]	163.26	21.04	20.82	123.61	120.21	76.12	74.88	72.08	60.63	436.61
Lane Group LOS	F	C	C	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.53	9.76	12.73	2.16	58.89	1.51	2.16	1.14	2.34	31.57
50th-Percentile Queue Length [ft/ln]	38.26	243.93	318.36	53.88	1472.16	37.78	53.94	28.50	58.53	789.35
95th-Percentile Queue Length [veh/ln]	2.76	14.88	18.59	3.88	81.09	2.72	3.88	2.05	4.21	50.37
95th-Percentile Queue Length [ft/ln]	68.88	372.00	464.67	96.98	2027.21	68.01	97.09	51.29	105.35	1259.37

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	163.26	20.91	20.82	123.61	120.21	120.21	75.51	74.88	72.08	60.63	436.61	436.61
Movement LOS	F	C	C	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	24.26			120.32			74.58			385.42		
Approach LOS	C			F			E			F		
d_I, Intersection Delay [s/veh]	127.71											
Intersection LOS	F											
Intersection V/C	1.135											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	72.18			72.18			72.18			72.18		
I_p,int, Pedestrian LOS Score for Intersection	2.575			2.822			2.190			2.106		
Crosswalk LOS	B			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	242			242			362			362		
d_b, Bicycle Delay [s]	64.09			64.05			55.70			55.59		
I_b,int, Bicycle LOS Score for Intersection	2.367			3.409			1.753			2.299		
Bicycle LOS	B			C			A			B		

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.933

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	37	783	7	4	878	186	275	6	64	1	2	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.70	0.00	0.00	3.90	3.30	1.00	0.00	0.00	0.00	0.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	783	7	4	878	186	275	6	64	1	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	206	2	1	231	49	72	2	17	0	1	2
Total Analysis Volume [veh/h]	39	824	7	4	924	196	289	6	67	1	2	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			20			8			20		
v_di, Inbound Pedestrian Volume crossing in	8			20			8			20		
v_co, Outbound Pedestrian Volume crossing	4			2			2			5		
v_ci, Inbound Pedestrian Volume crossing mi	5			2			2			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			2			13			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	109	109	109	109	109	109	41	41	41	0	41	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	105	105	105	105	37	37
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.46	0.01	0.63	0.26	0.01
s, saturation flow rate [veh/h]	493	1826	671	1778	1393	1743
c, Capacity [veh/h]	137	1278	342	1244	385	454
d1, Uniform Delay [s]	54.55	12.39	23.78	18.25	57.25	42.92
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.11	2.58	0.06	10.57	32.93	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.28	0.65	0.01	0.90	0.94	0.02
d, Delay for Lane Group [s/veh]	59.66	14.96	23.84	28.81	90.18	42.94
Lane Group LOS	E	B	C	C	F	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.53	15.94	0.09	32.80	17.48	0.26
50th-Percentile Queue Length [ft/ln]	38.17	398.50	2.21	819.98	436.90	6.56
95th-Percentile Queue Length [veh/ln]	2.75	22.49	0.16	42.19	24.33	0.47
95th-Percentile Queue Length [ft/ln]	68.71	562.19	3.98	1054.79	608.29	11.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	59.66	14.96	14.96	23.84	28.81	28.81	90.18	90.18	90.18	42.94	42.94	42.94
Movement LOS	E	B	B	C	C	C	F	F	F	D	D	D
d_A, Approach Delay [s/veh]	16.97			28.80			90.18			42.94		
Approach LOS	B			C			F			D		
d_I, Intersection Delay [s/veh]	33.89											
Intersection LOS	C											
Intersection V/C	0.933											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.38			64.38			64.38			64.38		
I_p,int, Pedestrian LOS Score for Intersection	2.470			3.105			2.087			1.755		
Crosswalk LOS	B			C			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1399			1399			492			492		
d_b, Bicycle Delay [s]	6.79			6.77			42.89			42.63		
I_b,int, Bicycle LOS Score for Intersection	2.995			3.414			2.157			1.574		
Bicycle LOS	C			C			B			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇒			⇑⇒⇐			⇑⇒⇐			⇑⇒⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	7	686	151	52	905	0	21	98	11	150	95	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.20	10.00	7.40	3.60	0.00	2.70	0.00	0.00	2.60	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	686	151	52	905	0	21	98	11	150	95	93
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	186	41	14	246	0	6	27	3	41	26	25
Total Analysis Volume [veh/h]	8	746	164	57	984	0	23	107	12	163	103	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		6			4			6			3	
v_di, Inbound Pedestrian Volume crossing in		6			3			6			4	
v_co, Outbound Pedestrian Volume crossing		0			2			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			2			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		9			12			11			11	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	116	116	116	116	116	116	34	34	34	0	34	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	112	112	112	112	30	30	30	30
g / C, Green / Cycle	0.75	0.75	0.75	0.75	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.01	0.52	0.10	0.53	0.02	0.06	0.13	0.12
s, saturation flow rate [veh/h]	581	1756	586	1846	1169	1851	1246	1715
c, Capacity [veh/h]	305	1311	318	1377	138	369	210	341
d1, Uniform Delay [s]	23.59	10.01	24.23	10.34	65.03	51.33	65.22	54.52
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.20	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	3.05	1.24	3.19	0.56	0.50	10.54	2.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.03	0.69	0.18	0.71	0.17	0.32	0.78	0.60
d, Delay for Lane Group [s/veh]	23.75	13.07	25.47	13.53	65.59	51.84	75.76	56.88
Lane Group LOS	C	B	C	B	E	D	E	E
Critical Lane Group	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.18	16.06	1.36	17.90	0.86	3.95	6.91	7.33
50th-Percentile Queue Length [ft/ln]	4.50	401.39	34.04	447.46	21.50	98.84	172.71	183.20
95th-Percentile Queue Length [veh/ln]	0.32	22.63	2.45	24.84	1.55	7.12	11.22	11.77
95th-Percentile Queue Length [ft/ln]	8.10	565.68	61.28	620.92	38.71	177.91	280.47	294.19

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	23.75	13.07	13.07	25.47	13.53	13.53	65.59	51.84	51.84	75.76	56.88	56.88
Movement LOS	C	B	B	C	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	13.16			14.18			54.06			65.26		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	23.69											
Intersection LOS	C											
Intersection V/C	0.696											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.35			64.35			64.35			64.35		
I_p,int, Pedestrian LOS Score for Intersection	2.759			2.576			2.044			2.234		
Crosswalk LOS	C			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1493			1493			399			399		
d_b, Bicycle Delay [s]	4.84			4.84			48.29			48.29		
I_b,int, Bicycle LOS Score for Intersection	3.074			3.277			1.794			2.165		
Bicycle LOS	C			C			A			B		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	64.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	27	295	153	374	135	445	130	456	170	343	331	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	3.60	2.60	2.70	3.80	2.50	0.50	5.50	5.30	3.70	13.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	119	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	27	295	34	374	135	0	130	456	170	343	331	20
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	77	9	97	35	0	34	119	44	89	86	5
Total Analysis Volume [veh/h]	28	307	35	390	141	0	135	475	177	357	345	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		10			2			10			2	
v_di, Inbound Pedestrian Volume crossing in		10			2			10			2	
v_co, Outbound Pedestrian Volume crossing		5			3			2			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			2			3			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		29			22			6			20	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			Yes	
Maximum Recall		No			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	27	27	27	57	57	57	22	22	22	22	25	25	25
g / C, Green / Cycle	0.18	0.18	0.18	0.38	0.38	0.38	0.15	0.15	0.15	0.15	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.02	0.15	0.15	0.00	0.08	0.12	0.13	0.12	0.14	0.14	0.14
s, saturation flow rate [veh/h]	1810	1825	1447	1772	1816	1567	1774	1892	1892	1491	1734	1803	1634
c, Capacity [veh/h]	330	332	264	676	693	597	265	282	282	222	286	297	269
d1, Uniform Delay [s]	50.94	60.29	51.30	33.67	33.67	0.00	58.75	61.83	62.30	61.30	60.79	60.77	60.87
k, delay calibration	0.11	0.35	0.11	0.50	0.50	0.50	0.11	0.19	0.22	0.18	0.14	0.14	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	26.31	0.23	1.68	1.64	0.00	1.52	10.01	14.49	10.30	8.81	8.39	9.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.08	0.92	0.13	0.39	0.39	0.00	0.51	0.82	0.86	0.80	0.85	0.85	0.85
d, Delay for Lane Group [s/veh]	51.05	86.60	51.52	35.35	35.31	0.00	60.27	71.83	76.79	71.60	69.60	69.16	70.83
Lane Group LOS	D	F	D	D	D	A	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.90	13.94	1.13	7.44	7.61	0.00	4.87	9.36	10.25	7.14	9.67	10.00	9.28
50th-Percentile Queue Length [ft/ln]	22.42	348.41	28.32	185.89	190.26	0.00	121.7	233.9	256.2	178.6	241.71	250.06	232.11
95th-Percentile Queue Length [veh/ln]	1.61	20.06	2.04	11.91	12.13	0.00	8.49	14.37	15.50	11.53	14.77	15.19	14.28
95th-Percentile Queue Length [ft/ln]	40.35	501.47	50.97	297.69	303.37	0.00	212.1	359.3	387.4	288.1	369.19	379.73	357.04



**Movement, Approach, & Intersection Results**

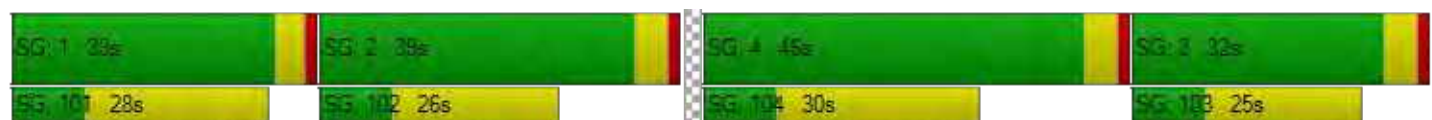
d_M, Delay for Movement [s/veh]	51.05	86.60	51.52	35.34	35.31	0.00	60.27	74.38	71.60	69.45	70.17	70.83
Movement LOS	D	F	D	D	D	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	80.59			35.33			71.33			69.84		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	64.38											
Intersection LOS	E											
Intersection V/C	0.619											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.46	63.46	63.46	63.46
I_p,int, Pedestrian LOS Score for Intersection	2.516	4.294	4.334	2.758
Crosswalk LOS	B	E	E	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	457
d_b, Bicycle Delay [s]	49.75	39.81	50.32	45.06
I_b,int, Bicycle LOS Score for Intersection	2.366	4.086	3.034	2.156
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road and US 101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	60.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.095

**Intersection Setup**

Name	Marsh Road		Marsh Road			
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road			
Base Volume Input [veh/h]	1802	0	0	906	771	1250
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1802	0	0	906	771	1250
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	464	0	0	234	199	322
Total Analysis Volume [veh/h]	1858	0	0	934	795	1289
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.53	0.27	0.23	0.47
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	14.14	9.05	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.24
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.67	0.72	0.23	152.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.90	0.45	0.66	1.33
d, Delay for Lane Group [s/veh]	20.81	9.77	22.10	178.79
Lane Group LOS	C	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	14.13	4.13	6.00	29.15
50th-Percentile Queue Length [ft/ln]	353.15	103.34	149.89	728.66
95th-Percentile Queue Length [veh/ln]	20.29	7.44	10.01	44.76
95th-Percentile Queue Length [ft/ln]	507.25	186.00	250.29	1118.93

**Movement, Approach, & Intersection Results**

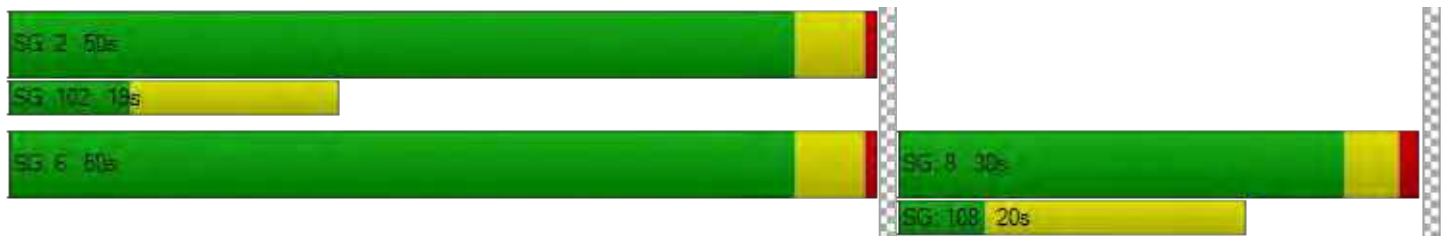
d_M, Delay for Movement [s/veh]	20.81	0.00	0.00	9.77	22.10	178.79
Movement LOS	C			A	C	F
d_A, Approach Delay [s/veh]	20.81		9.77		119.02	
Approach LOS	C		A		F	
d_I, Intersection Delay [s/veh]	60.67					
Intersection LOS	E					
Intersection V/C	1.095					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.121	2.632
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	3.092	2.330	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	23.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.865

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	493	10	52	171	31	37	41	22	22	55	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	493	10	52	171	31	37	41	22	22	55	131
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	129	3	16	53	10	12	13	7	6	15	36
Total Analysis Volume [veh/h]	14	515	10	65	214	39	47	52	28	24	60	144
Pedestrian Volume [ped/h]	3			3			9			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	623	586	511	559
Degree of Utilization, x	0.87	0.54	0.25	0.41

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	9.90	3.24	0.97	1.97
95th-Percentile Queue Length [ft]	247.60	81.09	24.33	49.30
Approach Delay [s/veh]	34.74	16.18	12.36	13.80
Approach LOS	D	C	B	B
Intersection Delay [s/veh]	23.59			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	68.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	1345	10	30	7	8	464	296	2095	757	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1345	10	30	7	8	464	296	2095	757	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	350	3	8	2	2	121	77	546	197	9
Total Analysis Volume [veh/h]	169	28	1401	10	31	7	8	483	308	2182	789	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			1			1			0	
v_di, Inbound Pedestrian Volume crossing in		0			1			1			0	
v_co, Outbound Pedestrian Volume crossing		0			22			0			22	
v_ci, Inbound Pedestrian Volume crossing mi		0			22			0			22	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			13			25			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	69	11	11	0	32	25	32	48	32	48	69	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	18	87	29	29	36	36	36	67	67
g / C, Green / Cycle	0.11	0.54	0.18	0.18	0.23	0.23	0.23	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.34	0.01	0.01	0.16	0.16	0.21	0.43	0.46
s, saturation flow rate [veh/h]	1822	4114	1863	1610	1624	1480	1444	5075	1806
c, Capacity [veh/h]	208	2144	339	293	367	334	326	2121	755
d1, Uniform Delay [s]	70.36	27.70	54.28	54.32	56.94	56.94	60.33	46.57	46.57
k, delay calibration	0.50	0.50	0.04	0.04	0.15	0.15	0.30	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	49.59	1.57	0.03	0.04	3.29	3.60	26.84	27.36	60.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.95	0.65	0.07	0.08	0.70	0.70	0.94	1.03	1.09
d, Delay for Lane Group [s/veh]	119.95	29.27	54.31	54.36	60.23	60.54	87.17	73.94	107.29
Lane Group LOS	F	C	D	D	E	E	F	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	10.93	13.30	0.86	0.78	9.95	9.10	14.65	33.27	42.50
50th-Percentile Queue Length [ft/ln]	273.30	332.44	21.43	19.47	248.83	227.50	366.26	831.64	1062.47
95th-Percentile Queue Length [veh/ln]	16.35	19.28	1.54	1.40	15.13	14.05	20.93	43.67	56.81
95th-Percentile Queue Length [ft/ln]	408.86	481.95	38.58	35.04	378.18	351.18	523.19	1091.78	1420.26

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	119.95	119.95	29.27	54.31	54.34	54.36	60.23	60.38	87.17	73.94	107.29	107.29
Movement LOS	F	F	C	D	D	D	E	E	F	F	F	F
d_A, Approach Delay [s/veh]	40.45			54.33			70.71			83.08		
Approach LOS	D			D			E			F		
d_I, Intersection Delay [s/veh]	68.51											
Intersection LOS	E											
Intersection V/C	0.876											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.589			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			555			791		
d_b, Bicycle Delay [s]	73.76			54.89			42.29			29.24		
I_b,int, Bicycle LOS Score for Intersection	4.196			1.599			2.219			6.520		
Bicycle LOS	D			A			B			F		

**Sequence**

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	94.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.708

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1357	623	0	1313	905	0	0	0	1062	0	394
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	3.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1357	623	0	1313	905	0	0	0	1062	0	394
Peak Hour Factor	1.0000	0.9700	1.0000	1.0000	0.9700	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	350	156	0	338	233	0	0	0	266	0	109
Total Analysis Volume [veh/h]	0	1399	623	0	1354	933	0	0	0	1062	0	438
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	44	44	44		28	28
g / C, Green / Cycle	0.55	0.55	0.55		0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.28	0.27	1.06		0.30	0.15
s, saturation flow rate [veh/h]	5053	5053	877		3514	2859
c, Capacity [veh/h]	2757	2757	479		1244	1012
d1, Uniform Delay [s]	11.39	11.25	17.69		23.86	19.66
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.67	0.63	434.64		1.77	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.51	0.49	1.95		0.85	0.43
d, Delay for Lane Group [s/veh]	12.06	11.88	452.33		25.63	19.95
Lane Group LOS	B	B	F		C	B
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	4.82	4.61	65.21		9.01	3.00
50th-Percentile Queue Length [ft/ln]	120.56	115.18	1630.28		225.21	74.97
95th-Percentile Queue Length [veh/ln]	8.42	8.13	109.11		13.93	5.40
95th-Percentile Queue Length [ft/ln]	210.59	203.18	2727.83		348.27	134.94

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.06	0.00	0.00	11.88	452.33	0.00	0.00	0.00	25.63	0.00	19.95
Movement LOS		B			B	F				C		B
d_A, Approach Delay [s/veh]	12.06		191.57				0.00			23.97		
Approach LOS	B		F				A			C		
d_I, Intersection Delay [s/veh]	94.67											
Intersection LOS	F											
Intersection V/C	1.708											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.034	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.10	12.07	39.95	12.06
I_b,int, Bicycle LOS Score for Intersection	2.329	2.817	4.132	1.560
Bicycle LOS	B	C	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	144.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.608

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1674	748	0	1914	424	0	0	0	386	0	789
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	2.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1674	748	0	1914	424	0	0	0	386	0	789
Peak Hour Factor	1.0000	0.9700	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	431	193	0	493	106	0	0	0	97	0	219
Total Analysis Volume [veh/h]	0	1726	771	0	1973	424	0	0	0	386	0	877
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			3			0			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	36	36	36		36	36
g / C, Green / Cycle	0.45	0.45	0.45		0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.34	0.50	0.73		0.11	0.56
s, saturation flow rate [veh/h]	5012	1551	2715		3514	1567
c, Capacity [veh/h]	2253	697	1220		1582	706
d1, Uniform Delay [s]	18.45	21.54	21.97		13.54	21.71
k, delay calibration	0.50	0.50	0.50		0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	2.56	66.88	281.45		0.08	113.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.77	1.11	1.62		0.24	1.24
d, Delay for Lane Group [s/veh]	21.00	88.42	303.41		13.62	135.29
Lane Group LOS	C	F	F		B	F
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	8.72	24.54	38.69		2.04	17.06
50th-Percentile Queue Length [ft/ln]	217.99	613.40	967.24		50.95	426.41
95th-Percentile Queue Length [veh/ln]	13.56	35.09	63.12		3.67	27.23
95th-Percentile Queue Length [ft/ln]	339.05	877.28	1578.12		91.71	680.82

**Movement, Approach, & Intersection Results**

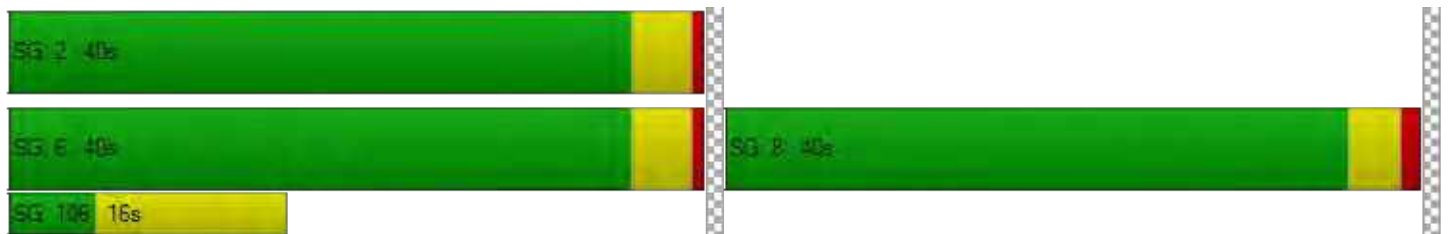
d_M, Delay for Movement [s/veh]	0.00	21.00	88.42	0.00	303.41	0.00	0.00	0.00	0.00	13.62	0.00	135.29
Movement LOS		C	F		F					B		F
d_A, Approach Delay [s/veh]	41.82			303.41			0.00			98.10		
Approach LOS	D			F			A			F		
d_I, Intersection Delay [s/veh]	144.25											
Intersection LOS	F											
Intersection V/C	1.608											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.09	12.08	39.95	12.07
I_b,int, Bicycle LOS Score for Intersection	2.933	2.645	4.132	1.560
Bicycle LOS	C	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	43.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.023

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	



**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	308	292	1210	744	625	1963
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	308	292	1210	744	625	1963
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	77	318	196	164	517
Total Analysis Volume [veh/h]	324	307	1274	783	658	2066
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	79	79
g / C, Green / Cycle	0.18	0.18	0.46	0.46	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.09	0.23	0.26	0.51	0.76	0.41
s, saturation flow rate [veh/h]	3420	1320	4967	1547	865	5020
c, Capacity [veh/h]	627	242	2278	710	646	3643
d1, Uniform Delay [s]	40.14	44.50	21.48	29.50	28.60	6.97
k, delay calibration	0.04	0.50	0.04	0.50	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.24	148.76	0.08	65.59	40.00	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	1.27	0.56	1.10	1.02	0.57
d, Delay for Lane Group [s/veh]	40.38	193.26	21.56	95.09	68.60	7.02
Lane Group LOS	D	F	C	F	F	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.93	16.49	7.21	29.45	12.09	5.57
50th-Percentile Queue Length [ft/ln]	98.23	412.23	180.28	736.27	302.29	139.13
95th-Percentile Queue Length [veh/ln]	7.07	25.79	11.62	41.22	18.05	9.43
95th-Percentile Queue Length [ft/ln]	176.82	644.63	290.38	1030.45	451.36	235.85

**Movement, Approach, & Intersection Results**

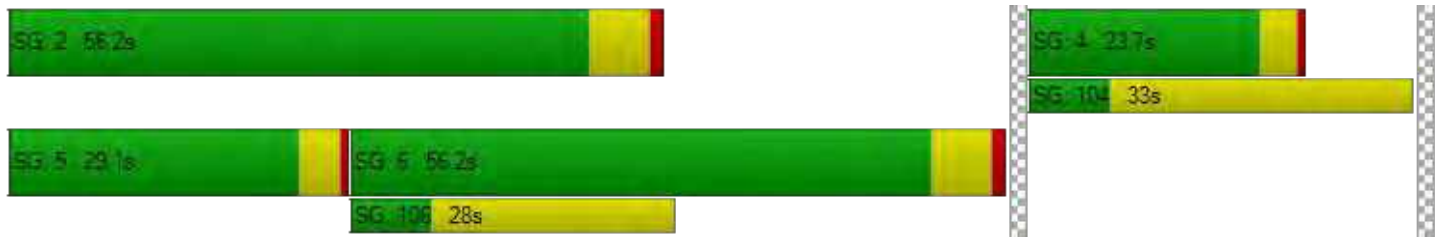
d_M, Delay for Movement [s/veh]	40.38	193.26	21.56	95.09	68.60	7.02
Movement LOS	D	F	C	F	F	A
d_A, Approach Delay [s/veh]	114.76		49.55		21.90	
Approach LOS	F		D		C	
d_I, Intersection Delay [s/veh]	43.23					
Intersection LOS	D					
Intersection V/C	1.023					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.06	44.06	44.06
I_p,int, Pedestrian LOS Score for Intersection	3.245	3.638	3.502
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	917	917
d_b, Bicycle Delay [s]	36.33	15.97	15.97
I_b,int, Bicycle LOS Score for Intersection	1.560	2.691	3.058
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	437	93	1762	469	160	2354
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	437	93	1762	469	160	2354
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	24	454	121	41	607
Total Analysis Volume [veh/h]	451	96	1816	484	165	2427
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	12	12	38	38	8	50
g / C, Green / Cycle	0.17	0.17	0.52	0.52	0.11	0.69
(v / s)_i Volume / Saturation Flow Rate	0.14	0.06	0.37	0.32	0.09	0.48
s, saturation flow rate [veh/h]	3173	1509	4959	1493	1810	5024
c, Capacity [veh/h]	532	253	2551	768	207	3440
d1, Uniform Delay [s]	29.55	27.07	13.61	12.64	31.60	7.04
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.47	0.35	0.14	0.32	2.68	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	0.38	0.71	0.63	0.80	0.71
d, Delay for Lane Group [s/veh]	31.02	27.41	13.75	12.96	34.28	7.14
Lane Group LOS	C	C	B	B	C	A
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.85	1.48	6.01	4.51	2.77	4.45
50th-Percentile Queue Length [ft/ln]	96.34	37.12	150.32	112.70	69.32	111.17
95th-Percentile Queue Length [veh/ln]	6.94	2.67	10.03	7.99	4.99	7.91
95th-Percentile Queue Length [ft/ln]	173.41	66.82	250.85	199.75	124.77	197.63



**Movement, Approach, & Intersection Results**

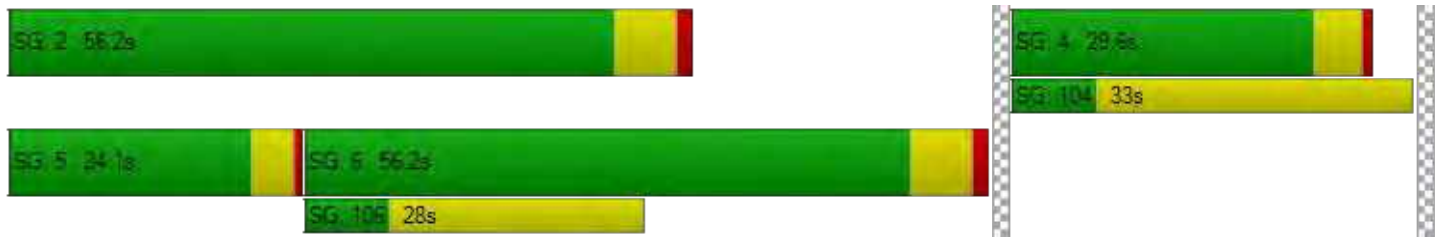
d_M, Delay for Movement [s/veh]	31.02	27.41	13.75	12.96	34.28	7.14
Movement LOS	C	C	B	B	C	A
d_A, Approach Delay [s/veh]	30.38		13.59		8.87	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	13.03					
Intersection LOS	B					
Intersection V/C	0.713					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	26.35	26.35	26.35
I_p,int, Pedestrian LOS Score for Intersection	2.363	3.661	3.523
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	685	1369	1369
d_b, Bicycle Delay [s]	15.80	3.64	3.64
I_b,int, Bicycle LOS Score for Intersection	1.560	2.825	2.985
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bayfront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	5.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

**Intersection Setup**

Name	Bldg 21		Bayfront Expwy		Bayfront Expwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑⇐		⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	66	51	1101	396	247	2478
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	35.50	35.50	11.60	11.60	4.40	4.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	51	1101	396	247	2478
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	13	287	103	64	645
Total Analysis Volume [veh/h]	69	53	1147	413	257	2581
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	25	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	64	64	64	64	64	64
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	5	5	40	40	49	49
g / C, Green / Cycle	0.08	0.08	0.62	0.62	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.27	0.31	0.22	0.57
s, saturation flow rate [veh/h]	1172	1058	4231	1320	1162	4496
c, Capacity [veh/h]	92	83	2640	824	975	3447
d1, Uniform Delay [s]	28.70	28.79	6.21	6.59	2.90	4.09
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.22	4.23	0.04	0.18	0.05	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.68	0.72	0.43	0.50	0.26	0.75
d, Delay for Lane Group [s/veh]	31.93	33.03	6.25	6.76	2.95	4.21
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.97	0.95	1.63	1.90	0.09	1.18
50th-Percentile Queue Length [ft/ln]	24.28	23.70	40.76	47.41	2.15	29.38
95th-Percentile Queue Length [veh/ln]	1.75	1.71	2.93	3.41	0.15	2.12
95th-Percentile Queue Length [ft/ln]	43.70	42.67	73.37	85.34	3.87	52.88

**Movement, Approach, & Intersection Results**

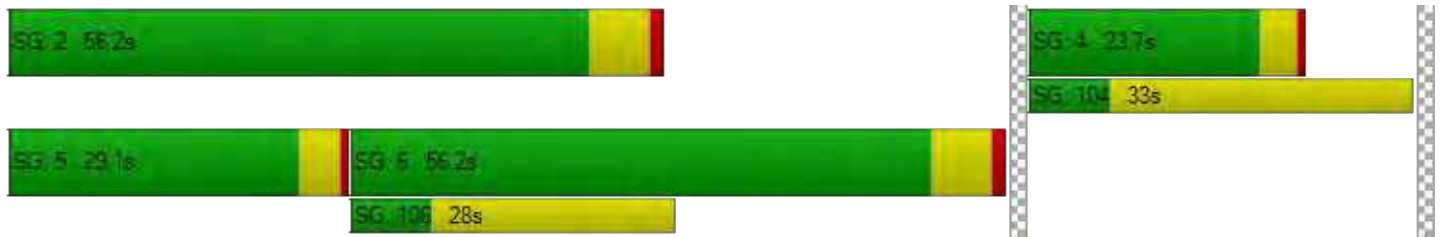
d_M, Delay for Movement [s/veh]	32.05	33.03	6.25	6.76	2.95	4.21
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	32.46		6.39		4.10	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	5.65					
Intersection LOS	A					
Intersection V/C	0.734					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.87	21.87	21.87
I_p,int, Pedestrian LOS Score for Intersection	2.545	3.455	3.445
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	626	1566	1566
d_b, Bicycle Delay [s]	15.06	1.50	1.50
I_b,int, Bicycle LOS Score for Intersection	1.761	2.418	3.121
Bicycle LOS	A	B	C

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	134.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.466

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	395	365	10	388	327	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	395	365	10	388	327	21
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	112	104	3	110	93	6
Total Analysis Volume [veh/h]	449	415	11	441	372	24
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	864	552	516
Degree of Utilization, x	1.47	0.82	0.77

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	42.06	8.19	6.79
95th-Percentile Queue Length [ft]	1051.42	204.75	169.81
Approach Delay [s/veh]	236.73	32.50	29.30
Approach LOS	F	D	D
Intersection Delay [s/veh]	134.83		
Intersection LOS	F		

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**Intersection Level Of Service Report  
Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.945

**Intersection Setup**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	980.00	760.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	

**Volumes**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Base Volume Input [veh/h]	0	48	955	234	86	2766
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	88.60	11.70	11.70	6.30	6.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	48	955	234	86	2766
Peak Hour Factor	0.9500	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	254	62	23	736
Total Analysis Volume [veh/h]	0	51	1016	249	91	2943
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	25	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	52	52	52	52	52
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	3	31	31	39	39
g / C, Green / Cycle	0.06	0.59	0.59	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.12	0.24	0.19	0.14	0.66
s, saturation flow rate [veh/h]	436	4227	1319	654	4426
c, Capacity [veh/h]	28	2481	774	622	3300
d1, Uniform Delay [s]	24.41	5.86	5.49	2.33	5.05
k, delay calibration	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	372.10	0.04	0.09	0.04	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.80	0.41	0.32	0.15	0.89
d, Delay for Lane Group [s/veh]	396.52	5.90	5.58	2.37	5.40
Lane Group LOS	F	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.27	1.09	0.76	0.02	0.45
50th-Percentile Queue Length [ft/ln]	81.70	27.13	18.99	0.45	11.23
95th-Percentile Queue Length [veh/ln]	5.88	1.95	1.37	0.03	0.81
95th-Percentile Queue Length [ft/ln]	147.05	48.83	34.19	0.81	20.22

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	396.52	5.90	5.58	2.37	5.40
Movement LOS		F	A	A	A	A
d_A, Approach Delay [s/veh]	396.52		5.84		5.31	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	10.05					
Intersection LOS	B					
Intersection V/C	0.945					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	16.21	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.442	0.000
Crosswalk LOS	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	768	1920	1920
d_b, Bicycle Delay [s]	9.89	0.04	0.04
I_b,int, Bicycle LOS Score for Intersection	1.560	2.255	3.228
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	95.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

**Intersection Setup**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	255	380	196	766	263	423	90	10	111	42	24	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	255	380	196	766	263	423	90	10	111	42	24	84
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	97	50	195	67	108	23	3	28	11	6	21
Total Analysis Volume [veh/h]	260	388	200	782	268	432	92	10	113	43	24	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing in	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing mi	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	11	46	0	11	46	0	0	36	0	0	21	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	14	53	0	37	76	0	0	19	0	0	21	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	49	33	72	15	15	17	17
g / C, Green / Cycle	0.08	0.38	0.25	0.55	0.12	0.12	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.15	0.35	0.23	0.42	0.06	0.08	0.04	0.05
s, saturation flow rate [veh/h]	1767	1664	3431	1673	1775	1433	1760	1577
c, Capacity [veh/h]	136	627	871	926	205	165	230	206
d1, Uniform Delay [s]	60.00	39.03	46.87	22.25	53.97	54.79	51.41	51.54
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	437.05	23.52	13.95	5.71	8.41	20.53	4.02	4.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.91	0.94	0.90	0.76	0.50	0.68	0.34	0.36
d, Delay for Lane Group [s/veh]	497.05	62.55	60.82	27.96	62.37	75.32	55.43	56.36
Lane Group LOS	F	E	E	C	E	E	E	E
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	20.98	21.94	13.87	17.39	3.62	4.48	2.61	2.49
50th-Percentile Queue Length [ft/ln]	524.52	548.40	346.80	434.76	90.58	112.01	65.25	62.36
95th-Percentile Queue Length [veh/ln]	33.59	29.62	19.98	24.23	6.52	7.95	4.70	4.49
95th-Percentile Queue Length [ft/ln]	839.86	740.42	499.50	605.74	163.04	198.79	117.44	112.24

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	497.05	62.55	62.55	60.82	27.96	27.96	62.37	62.37	75.32	55.43	55.43	56.25
Movement LOS	F	E	E	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	195.77			45.30			69.18			55.88		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	95.09											
Intersection LOS	F											
Intersection V/C	0.707											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	56.31	56.31
I_p,int, Pedestrian LOS Score for Intersection	2.373	2.718	2.262	2.429
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	754	1108	231	262
d_b, Bicycle Delay [s]	25.23	12.94	50.87	49.11
I_b,int, Bicycle LOS Score for Intersection	2.959	4.005	1.914	1.812
Bicycle LOS	C	D	A	A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	294.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.507

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
Base Volume Input [veh/h]	159	333	115	189	301	292	39	34	190	0	252	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80	0.00	17.90	100.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	333	115	189	301	292	39	34	190	0	252	24
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	93	32	53	84	81	11	9	53	0	70	7
Total Analysis Volume [veh/h]	177	370	128	210	334	324	43	38	211	0	280	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		13			14			5			5	
v_di, Inbound Pedestrian Volume crossing in		14			13			5			5	
v_co, Outbound Pedestrian Volume crossing		0			1			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	25	0	0	19	0	0	46	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	30
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.80	0.15	0.42	0.28	0.11	0.12
s, saturation flow rate [veh/h]	841	1357	1561	1031	1371	1290
c, Capacity [veh/h]	292	399	459	302	439	380
d1, Uniform Delay [s]	42.19	30.01	35.94	35.49	28.39	28.70
k, delay calibration	0.50	0.11	0.50	0.42	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	599.83	1.07	206.83	39.70	0.49	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.31	0.53	1.43	0.97	0.36	0.40
d, Delay for Lane Group [s/veh]	642.01	31.08	242.78	75.19	28.88	29.36
Lane Group LOS	F	C	F	E	C	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	56.14	4.37	37.52	10.31	3.06	2.98
50th-Percentile Queue Length [ft/ln]	1403.43	109.19	938.06	257.69	76.53	74.43
95th-Percentile Queue Length [veh/ln]	91.91	7.80	57.37	15.57	5.51	5.36
95th-Percentile Queue Length [ft/ln]	2297.73	194.88	1434.25	389.33	137.76	133.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	642.01	642.01	642.01	31.08	242.78	242.78	75.19	75.19	75.19	28.88	29.09	29.36
Movement LOS	F	F	F	C	F	F	E	E	E	C	C	C
d_A, Approach Delay [s/veh]	642.01			191.56			75.19			29.12		
Approach LOS	F			F			E			C		
d_I, Intersection Delay [s/veh]	294.37											
Intersection LOS	F											
Intersection V/C	1.507											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.56	40.56	40.56	40.56
I_p,int, Pedestrian LOS Score for Intersection	2.393	2.282	2.377	2.285
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	824	412	294	824
d_b, Bicycle Delay [s]	17.62	32.13	37.07	17.62
I_b,int, Bicycle LOS Score for Intersection	2.673	2.992	2.041	1.813
Bicycle LOS	B	C	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	47.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.410

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	48	91	163	204	327	125
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	91	163	204	327	125
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	30	53	66	106	41
Total Analysis Volume [veh/h]	62	118	212	265	425	162
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.41	0.21	0.22	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	47.20	29.80	9.73	0.00	0.00	0.00
Movement LOS	E	D	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.84	3.84	0.83	0.83	0.00	0.00
95th-Percentile Queue Length [ft/ln]	96.02	96.02	20.72	20.72	0.00	0.00
d_A, Approach Delay [s/veh]	35.79		4.32		0.00	
Approach LOS	E		A		A	
d_I, Intersection Delay [s/veh]	6.84					
Intersection LOS	E					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	18.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.052

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↰		↱		↔	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	212	42	60	103	13	103
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.50	12.50	15.60	15.60	46.80	46.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	212	42	60	103	13	103
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	12	18	30	4	30
Total Analysis Volume [veh/h]	249	49	71	121	15	121
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.19	0.00	0.00	0.00	0.05	0.15
d_M, Delay for Movement [s/veh]	8.36	0.00	0.00	0.00	18.89	10.78
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.69	0.69	0.00	0.00	0.75	0.75
95th-Percentile Queue Length [ft/ln]	17.33	17.33	0.00	0.00	18.71	18.71
d_A, Approach Delay [s/veh]	6.98		0.00		11.67	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.86					
Intersection LOS	C					

**Intersection Level Of Service Report**  
**Intersection 267: Willow Road(SR114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	0.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↓		↔↑↑		↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	0	0	0	0	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	-	-
Minimum Green [s]	0	0	0	0	0	0
Maximum Green [s]	0	0	0	0	0	0
Amber [s]	0.0	0.0	0.0	0.0	0.0	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk						
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall						
Maximum Recall						
Pedestrian Recall						
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

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**Lane Group Calculations**

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**Lane Group Results**

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**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	0.00
Movement LOS						
d_A, Approach Delay [s/veh]	0.00		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					
Intersection V/C	0.000					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	45.00	45.00	45.00
I_p,int, Pedestrian LOS Score for Intersection	2.141	2.463	2.141
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	45.00	45.00	45.00
I_b,int, Bicycle LOS Score for Intersection	1.560	1.560	1.560
Bicycle LOS	A	A	A

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**Intersection Level Of Service Report**  
**Intersection 269: O'Brien Drive/Loop Road**

Control Type:	Roundabout	Delay (sec / veh):	2.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Analysis Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		



**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	0			0			0			0		
Exiting Flow Rate [veh/h]	0			0			0			0		
Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0	0	
Adjusted Demand Flow Rate [veh/h]	0	0	0	0	0	0	0	0	0	0	0	

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.98			0.98		
Entry Flow Rate [veh/h]	0			0			0			0		
Capacity of Entry and Bypass Lanes [veh/h]	1380			1380			1380			1380		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1353			1353			1353			1353		
X, volume / capacity	0.00			0.00			0.00			0.00		

**Movement, Approach, & Intersection Results**

Lane LOS	A			A			A			A		
95th-Percentile Queue Length [veh]	0.00			0.00			0.00			0.00		
95th-Percentile Queue Length [ft]	0.00			0.00			0.00			0.00		
Approach Delay [s/veh]	2.66			2.66			2.66			2.66		
Approach LOS	A			A			A			A		
Intersection Delay [s/veh]	2.66											
Intersection LOS	A											

Vistro File: \\...\Vistro\_AllScenarios\_AM - 12.1.2021.vistro

Scenario 21 Cumulative w/Dumbarton AM (2040 vols)

Report File: \\...\Cumulative AM\_DUMB.pdf

12/9/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	1021		1472		1341	539	4373

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	42	1288	7	448	1248	338	13	4	68	348	19	0	3823

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	220	960	124	29	1031	413	609	76	229	38	21	25	3775

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	0	836	82	425	755	47	292	68	2	43	46	339	2935

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	87	569	520	508	501	104	2289

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	6	11	9	129	28	344	21	683	206	288	747	56	2528

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	829	101	1288	2933	333	416	5900

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	249	596	277	35	75	72	386	465	191	1101	2572	72	6091

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	99	820	359	190	1255	45	47	56	48	56	422	349	3746

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	235	1304	1205	31	86	95	2956

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1395	828	42	1173	237	230	3905

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	160	1806	351	40	1335	7	79	135	445	298	167	221	5044

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1402	1215	655	429	60	3826

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	22	911	7	36	931	108	67	13	32	59	12	359	2557

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	37	783	7	4	878	186	275	6	64	1	2	6	2249

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	7	686	151	52	905	0	21	98	11	150	95	93	2269

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	27	295	153	374	135	445	130	456	170	343	331	20	2879

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road and US 101 NB Ramps	1802		906		771	1250	4729

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	493	10	52	171	31	37	41	22	22	55	131	1078

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	162	27	1345	10	30	7	8	464	296	2095	757	34	5235

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	1357	623	1313	905	1062	394	5654

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1674	748	1914	424	386	789	5935

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	308	292	1210	744	625	1963	5142

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	437	93	1762	469	160	2354	5275

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	66	51	1101	396	247	2478	4339

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	395	365	10	388	327	21	1506

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	48		955	234	86	2766	4089

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	255	380	196	766	263	423	90	10	111	42	24	84	2644

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	159	333	115	189	301	292	39	34	190	0	252	24	1928

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	48	91	163	204	327	125	958

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	212	42	60	103	13	103	533



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Scenario 21 Cumulative w/Dumbarton AM (2040 vols)

Report File: \\...\Cumulative AM\_DUMB.pdf

12/9/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	1021		1472		1341	539	4373
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>1021</b>		<b>1472</b>		<b>1341</b>	<b>539</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	42	1288	7	448	1248	338	13	4	68	348	19	0	3823
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>42</b>	<b>1288</b>	<b>7</b>	<b>448</b>	<b>1248</b>	<b>338</b>	<b>13</b>	<b>4</b>	<b>68</b>	<b>348</b>	<b>19</b>	<b>0</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	220	960	124	29	1031	413	609	76	229	38	21	25	3775
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>220</b>	<b>960</b>	<b>124</b>	<b>29</b>	<b>1031</b>	<b>413</b>	<b>609</b>	<b>76</b>	<b>229</b>	<b>38</b>	<b>21</b>	<b>25</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	Final Base	0	836	82	425	755	47	292	68	2	43	46	339	2935
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>0</b>	<b>836</b>	<b>82</b>	<b>425</b>	<b>755</b>	<b>47</b>	<b>292</b>	<b>68</b>	<b>2</b>	<b>43</b>	<b>46</b>	<b>339</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	87	569	520	508	501	104	2289
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>87</b>	<b>569</b>	<b>520</b>	<b>508</b>	<b>501</b>	<b>104</b>	<b>2289</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	Final Base	6	11	9	129	28	344	21	683	206	288	747	56	2528
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>6</b>	<b>11</b>	<b>9</b>	<b>129</b>	<b>28</b>	<b>344</b>	<b>21</b>	<b>683</b>	<b>206</b>	<b>288</b>	<b>747</b>	<b>56</b>	<b>2528</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	829	101	1288	2933	333	416	5900
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>829</b>	<b>101</b>	<b>1288</b>	<b>2933</b>	<b>333</b>	<b>416</b>	<b>5900</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	249	596	277	35	75	72	386	465	191	1101	2572	72	6091
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>249</b>	<b>596</b>	<b>277</b>	<b>35</b>	<b>75</b>	<b>72</b>	<b>386</b>	<b>465</b>	<b>191</b>	<b>1101</b>	<b>2572</b>	<b>72</b>	<b>6091</b>



ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	99	820	359	190	1255	45	47	56	48	56	422	349	3746
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>99</b>	<b>820</b>	<b>359</b>	<b>190</b>	<b>1255</b>	<b>45</b>	<b>47</b>	<b>56</b>	<b>48</b>	<b>56</b>	<b>422</b>	<b>349</b>	<b>3746</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	235	1304	1205	31	86	95	2956
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>235</b>	<b>1304</b>	<b>1205</b>	<b>31</b>	<b>86</b>	<b>95</b>	<b>2956</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1395	828	42	1173	237	230	3905
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1395</b>	<b>828</b>	<b>42</b>	<b>1173</b>	<b>237</b>	<b>230</b>	<b>3905</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	160	1806	351	40	1335	7	79	135	445	298	167	221	5044
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>160</b>	<b>1806</b>	<b>351</b>	<b>40</b>	<b>1335</b>	<b>7</b>	<b>79</b>	<b>135</b>	<b>445</b>	<b>298</b>	<b>167</b>	<b>221</b>	<b>5044</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1402	1215	655	429	60	3826
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1402</b>	<b>1215</b>	<b>655</b>	<b>429</b>	<b>60</b>	<b>3826</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	22	911	7	36	931	108	67	13	32	59	12	359	2557
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>911</b>	<b>7</b>	<b>36</b>	<b>931</b>	<b>108</b>	<b>67</b>	<b>13</b>	<b>32</b>	<b>59</b>	<b>12</b>	<b>359</b>	<b>2557</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	37	783	7	4	878	186	275	6	64	1	2	6	2249
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>37</b>	<b>783</b>	<b>7</b>	<b>4</b>	<b>878</b>	<b>186</b>	<b>275</b>	<b>6</b>	<b>64</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>2249</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	7	686	151	52	905	0	21	98	11	150	95	93	2269
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>7</b>	<b>686</b>	<b>151</b>	<b>52</b>	<b>905</b>	<b>0</b>	<b>21</b>	<b>98</b>	<b>11</b>	<b>150</b>	<b>95</b>	<b>93</b>	<b>2269</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
25	Middlefield Rd- Willow Rd	Final Base	27	295	153	374	135	445	130	456	170	343	331	20	2879	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>27</b>	<b>295</b>	<b>153</b>	<b>374</b>	<b>135</b>	<b>445</b>	<b>130</b>	<b>456</b>	<b>170</b>	<b>343</b>	<b>331</b>	<b>20</b>	<b>2879</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road and US 101 NB Ramps	Final Base	1802		906		771	1250	4729
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1802</b>		<b>906</b>		<b>771</b>	<b>1250</b>	<b>4729</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
131	Chilco Street/Hamilton Avenue	Final Base	13	493	10	52	171	31	37	41	22	22	55	131	1078	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>493</b>	<b>10</b>	<b>52</b>	<b>171</b>	<b>31</b>	<b>37</b>	<b>41</b>	<b>22</b>	<b>22</b>	<b>55</b>	<b>131</b>	<b>1078</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
163	Bayfront Expy/Marsh Rd	Final Base	162	27	1345	10	30	7	8	464	296	2095	757	34	5235	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>162</b>	<b>27</b>	<b>1345</b>	<b>10</b>	<b>30</b>	<b>7</b>	<b>8</b>	<b>464</b>	<b>296</b>	<b>2095</b>	<b>757</b>	<b>34</b>	<b>5235</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1357	623	1313	905	1062	394	5654
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1357</b>	<b>623</b>	<b>1313</b>	<b>905</b>	<b>1062</b>	<b>394</b>	<b>5654</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1674	748	1914	424	386	789	5935
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1674</b>	<b>748</b>	<b>1914</b>	<b>424</b>	<b>386</b>	<b>789</b>	<b>5935</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	308	292	1210	744	625	1963	5142
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>308</b>	<b>292</b>	<b>1210</b>	<b>744</b>	<b>625</b>	<b>1963</b>	<b>5142</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	437	93	1762	469	160	2354	5275
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>437</b>	<b>93</b>	<b>1762</b>	<b>469</b>	<b>160</b>	<b>2354</b>	<b>5275</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	Final Base	66	51	1101	396	247	2478	4339
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>66</b>	<b>51</b>	<b>1101</b>	<b>396</b>	<b>247</b>	<b>2478</b>	<b>4339</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	395	365	10	388	327	21	1506
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>395</b>	<b>365</b>	<b>10</b>	<b>388</b>	<b>327</b>	<b>21</b>	<b>1506</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	48	955	234	86	2766	4089	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>48</b>	<b>955</b>	<b>234</b>	<b>86</b>	<b>2766</b>	<b>4089</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	255	380	196	766	263	423	90	10	111	42	24	84	2644
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>255</b>	<b>380</b>	<b>196</b>	<b>766</b>	<b>263</b>	<b>423</b>	<b>90</b>	<b>10</b>	<b>111</b>	<b>42</b>	<b>24</b>	<b>84</b>	<b>2644</b>





## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	516	254	208	100
2	501	246	202	97
3	490	241	198	95
4	459	226	185	89
5	408	201	164	79
6	402	198	162	78
7	397	196	160	77
8	361	178	146	70
9	356	175	144	69
10	351	173	141	68
11	304	150	123	59
12	284	140	114	55
13	279	137	112	54
14	206	102	83	40
15	206	102	83	40
16	144	71	58	28
17	83	41	33	16
18	83	41	33	16
19	46	23	19	9
20	26	13	10	5
21	15	8	6	3
22	5	3	2	1
23	5	3	2	1
24	5	3	2	1



## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	770	1	208	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	747	1	202	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
3	1	731	1	198	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	685	1	185	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	1	609	1	164	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	600	1	162	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	593	1	160	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
8	1	539	1	146	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
9	1	531	1	144	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
10	1	524	1	141	No	Yes	Yes	Yes	No	No	No	Yes	No	No
11	1	454	1	123	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	424	1	114	No	No	Yes	Yes	No	No	No	Yes	No	No
13	1	416	1	112	No	No	Yes	Yes	No	No	No	No	No	No
14	1	308	1	83	No	No	No	No	No	No	No	No	No	No
15	1	308	1	83	No	No	No	No	No	No	No	No	No	No
16	1	215	1	58	No	No	No	No	No	No	No	No	No	No
17	1	124	1	33	No	No	No	No	No	No	No	No	No	No
18	1	124	1	33	No	No	No	No	No	No	No	No	No	No
19	1	69	1	19	No	No	No	No	No	No	No	No	No	No
20	1	39	1	10	No	No	No	No	No	No	No	No	No	No
21	1	23	1	6	No	No	No	No	No	No	No	No	No	No
22	1	8	1	2	No	No	No	No	No	No	No	No	No	No
23	1	8	1	2	No	No	No	No	No	No	No	No	No	No
24	1	8	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	13	1	6	9	12	4	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.8	12.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:47	0:20
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	208	100
High Minor Volume Condition Met	Yes	Yes
Total Entering Volume on All Approaches During Same Hour	1078	1078
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	398	760	348
2	386	737	338
3	378	722	331
4	354	676	310
5	314	600	275
6	310	593	271
7	306	585	268
8	279	532	244
9	275	524	240
10	271	517	237
11	235	448	205
12	219	418	191
13	215	410	188
14	159	304	139
15	159	304	139
16	111	213	97
17	64	122	56
18	64	122	56
19	36	68	31
20	20	38	17
21	12	23	10
22	4	8	3
23	4	8	3
24	4	8	3

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1158	1	348	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1123	1	338	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1100	1	331	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1030	1	310	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	914	1	275	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	903	1	271	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	891	1	268	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	811	1	244	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	799	1	240	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	788	1	237	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	683	1	205	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	637	1	191	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
13	1	625	1	188	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
14	1	463	1	139	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	463	1	139	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	324	1	97	No	No	No	Yes	No	No	No	No	No	No
17	1	186	1	56	No	No	No	No	No	No	No	No	No	No
18	1	186	1	56	No	No	No	No	No	No	No	No	No	No
19	1	104	1	31	No	No	No	No	No	No	No	No	No	No
20	1	58	1	17	No	No	No	No	No	No	No	No	No	No
21	1	35	1	10	No	No	No	No	No	No	No	No	No	No
22	1	12	1	3	No	No	No	No	No	No	No	No	No	No
23	1	12	1	3	No	No	No	No	No	No	No	No	No	No
24	1	12	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	11	4

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	29.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	2:49
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	348
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1506
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	452	367	139
2	438	356	135
3	429	349	132
4	402	327	124
5	357	290	110
6	353	286	108
7	348	283	107
8	316	257	97
9	312	253	96
10	307	250	95
11	267	217	82
12	249	202	76
13	244	198	75
14	181	147	56
15	181	147	56
16	127	103	39
17	72	59	22
18	72	59	22
19	41	33	13
20	23	18	7
21	14	11	4
22	5	4	1
23	5	4	1
24	5	4	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	819	1	139	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2	1	794	1	135	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
3	1	778	1	132	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
4	1	729	1	124	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
5	1	647	1	110	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	639	1	108	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	631	1	107	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	573	1	97	No	No	No	Yes	No	No	Yes	Yes	No	No
9	1	565	1	96	No	No	No	Yes	No	No	Yes	Yes	No	No
10	1	557	1	95	No	No	No	Yes	No	No	Yes	Yes	No	No
11	1	484	1	82	No	No	No	No	No	No	No	Yes	No	No
12	1	451	1	76	No	No	No	No	No	No	No	Yes	No	No
13	1	442	1	75	No	No	No	No	No	No	No	Yes	No	No
14	1	328	1	56	No	No	No	No	No	No	No	No	No	No
15	1	328	1	56	No	No	No	No	No	No	No	No	No	No
16	1	230	1	39	No	No	No	No	No	No	No	No	No	No
17	1	131	1	22	No	No	No	No	No	No	No	No	No	No
18	1	131	1	22	No	No	No	No	No	No	No	No	No	No
19	1	74	1	13	No	No	No	No	No	No	No	No	No	No
20	1	41	1	7	No	No	No	No	No	No	No	No	No	No
21	1	25	1	4	No	No	No	No	No	No	No	No	No	No
22	1	9	1	1	No	No	No	No	No	No	No	No	No	No
23	1	9	1	1	No	No	No	No	No	No	No	No	No	No
24	1	9	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	4	7	10	3	7	10	13	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	35.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	1:22
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	139
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	958
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 265: Adam Court/Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	254	163	116
2	246	158	113
3	241	155	110
4	226	145	103
5	201	129	92
6	198	127	90
7	196	126	89
8	178	114	81
9	175	112	80
10	173	111	79
11	150	96	68
12	140	90	64
13	137	88	63
14	102	65	46
15	102	65	46
16	71	46	32
17	41	26	19
18	41	26	19
19	23	15	10
20	13	8	6
21	8	5	3
22	3	2	1
23	3	2	1
24	3	2	1

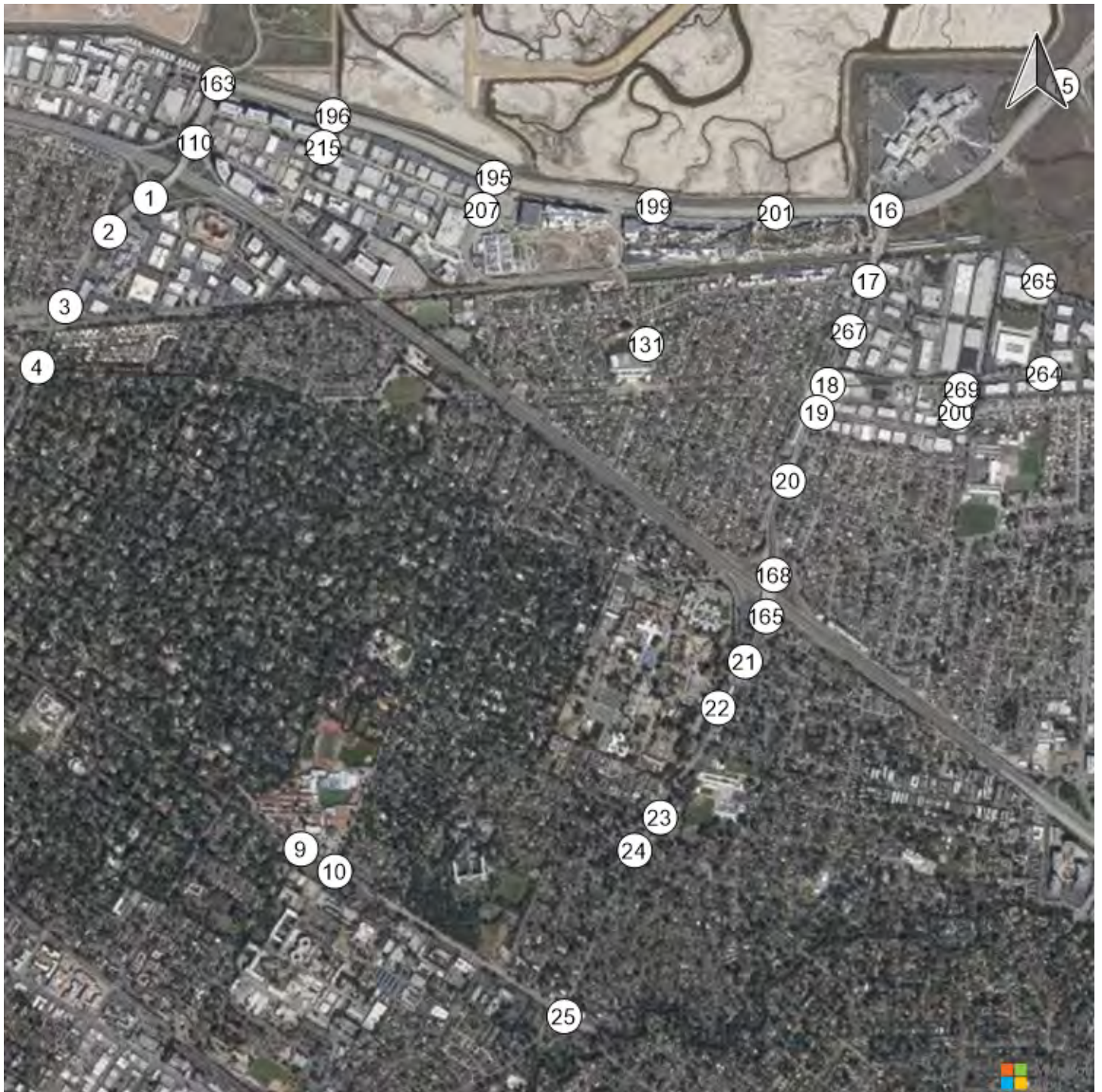
## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	417	1	116	No	No	Yes	Yes	No	No	No	No	No	No
2	1	404	1	113	No	No	Yes	Yes	No	No	No	No	No	No
3	1	396	1	110	No	No	Yes	Yes	No	No	No	No	No	No
4	1	371	1	103	No	No	No	Yes	No	No	No	No	No	No
5	1	330	1	92	No	No	No	Yes	No	No	No	No	No	No
6	1	325	1	90	No	No	No	Yes	No	No	No	No	No	No
7	1	322	1	89	No	No	No	Yes	No	No	No	No	No	No
8	1	292	1	81	No	No	No	No	No	No	No	No	No	No
9	1	287	1	80	No	No	No	No	No	No	No	No	No	No
10	1	284	1	79	No	No	No	No	No	No	No	No	No	No
11	1	246	1	68	No	No	No	No	No	No	No	No	No	No
12	1	230	1	64	No	No	No	No	No	No	No	No	No	No
13	1	225	1	63	No	No	No	No	No	No	No	No	No	No
14	1	167	1	46	No	No	No	No	No	No	No	No	No	No
15	1	167	1	46	No	No	No	No	No	No	No	No	No	No
16	1	117	1	32	No	No	No	No	No	No	No	No	No	No
17	1	67	1	19	No	No	No	No	No	No	No	No	No	No
18	1	67	1	19	No	No	No	No	No	No	No	No	No	No
19	1	38	1	10	No	No	No	No	No	No	No	No	No	No
20	1	21	1	6	No	No	No	No	No	No	No	No	No	No
21	1	13	1	3	No	No	No	No	No	No	No	No	No	No
22	1	5	1	1	No	No	No	No	No	No	No	No	No	No
23	1	5	1	1	No	No	No	No	No	No	No	No	No	No
24	1	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	7	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:22
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	116
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	533
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections



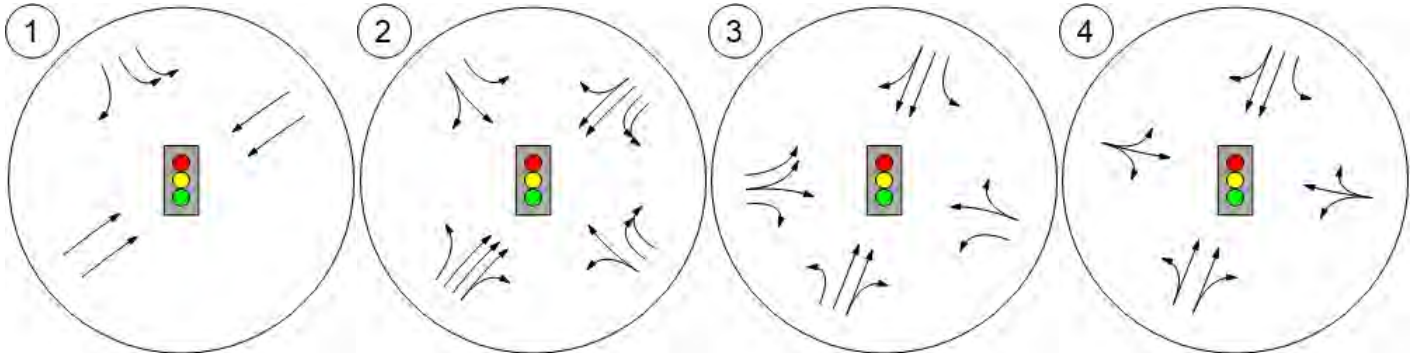


Lane Configuration and Traffic Control

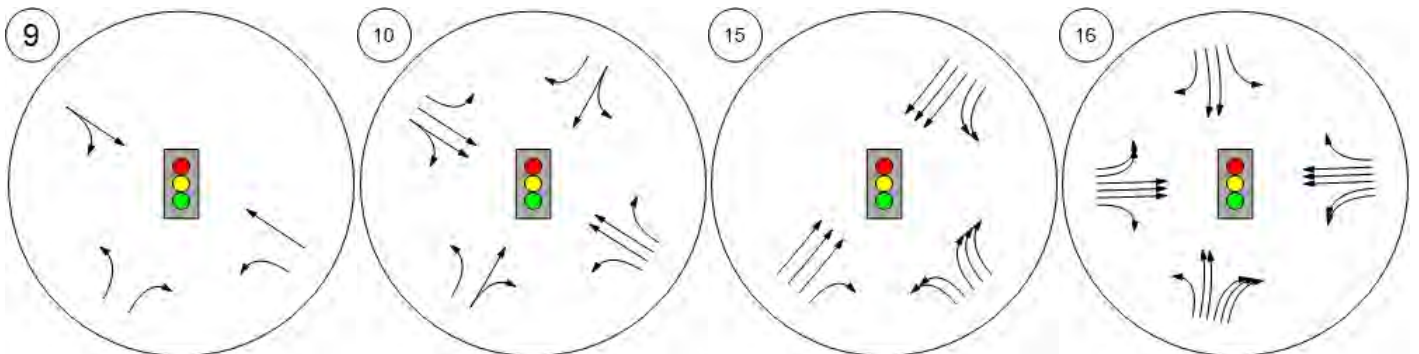


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



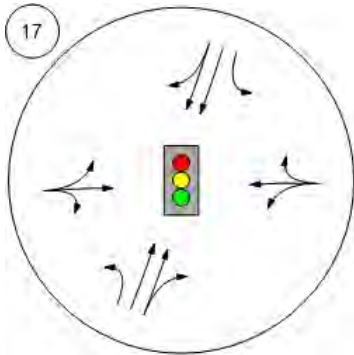
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



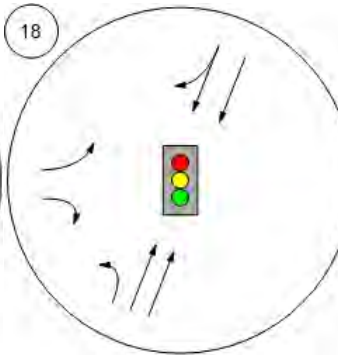
Lane Configuration and Traffic Control



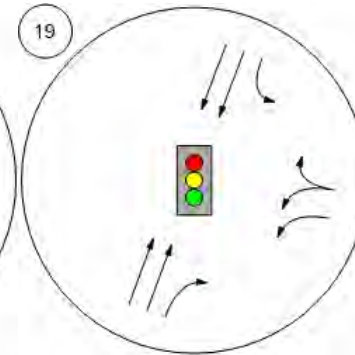
Willow Rd (SR 114)/Hamilton



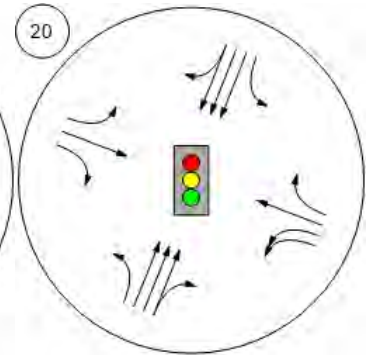
Willow Rd (SR 114)/Ivy Dr



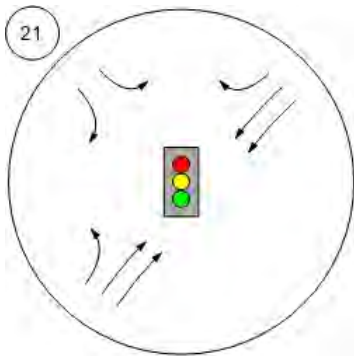
Willow Rd (SR 114)/O'Brien



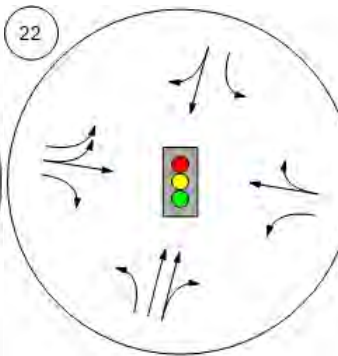
Willow Rd (SR 114)/Newbrid



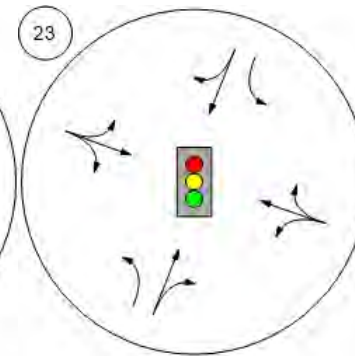
Willow Rd/Bay Rd



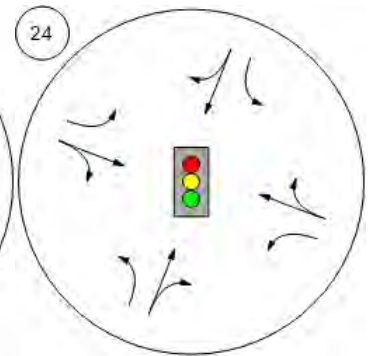
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



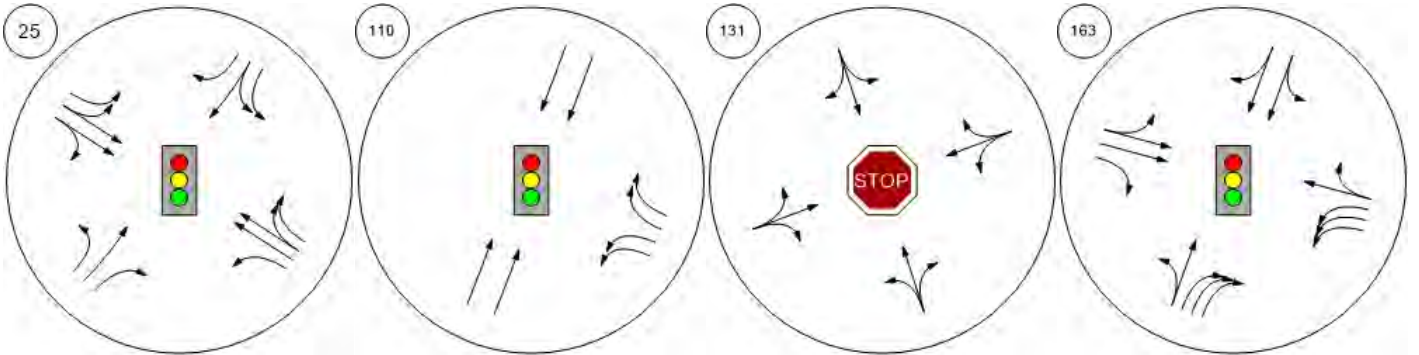
Willow Rd/Gilbert Ave



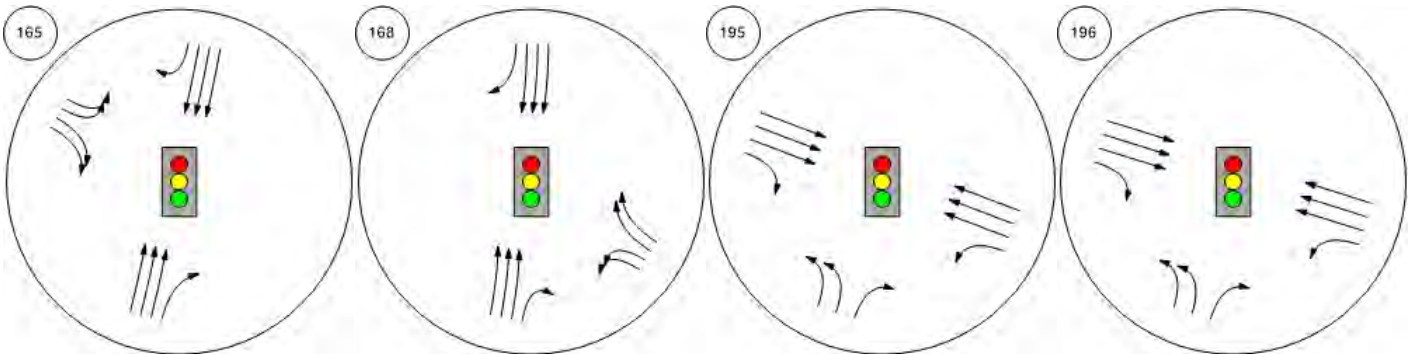
Lane Configuration and Traffic Control



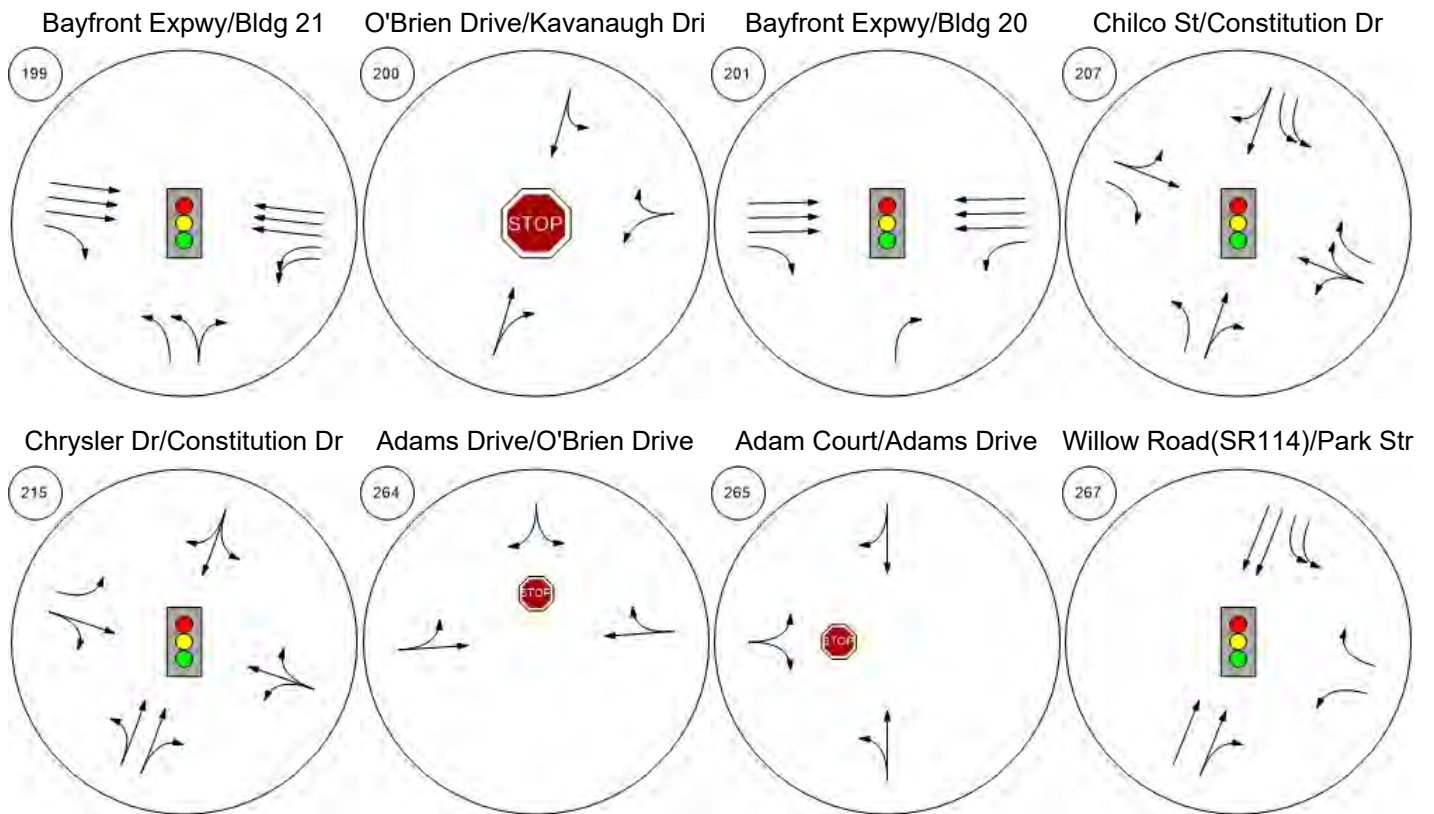
Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



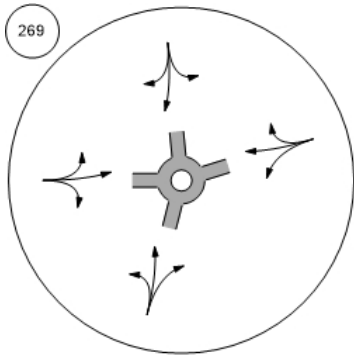
Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



O'Brien Drive/Loop Road

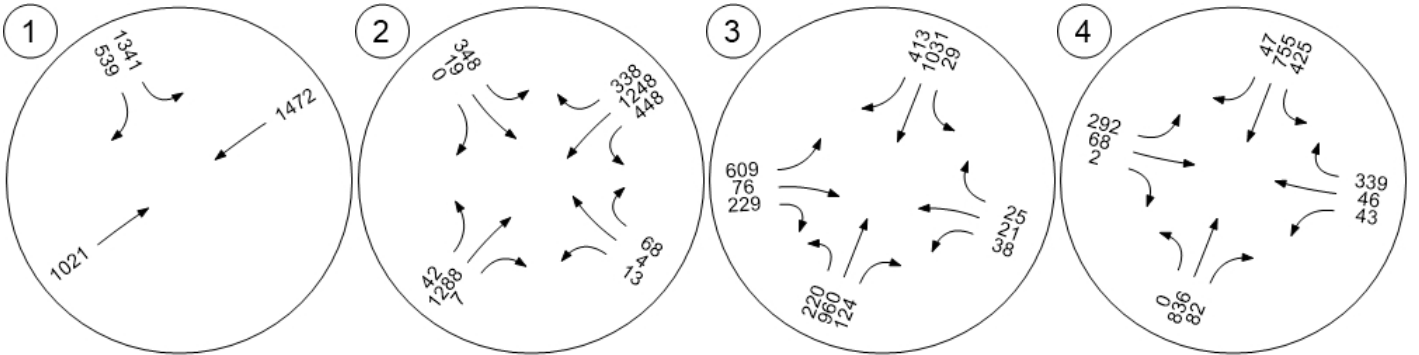


Traffic Volume - Base Volume

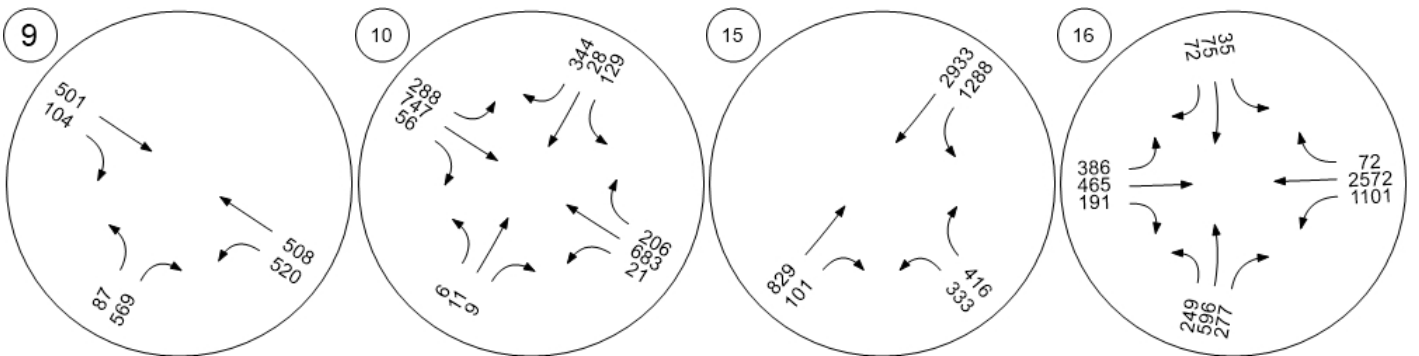


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



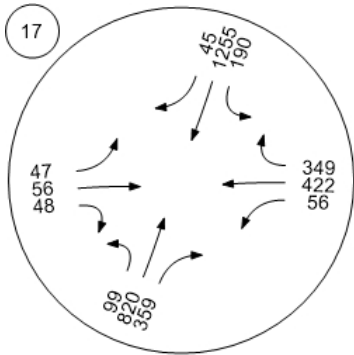
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



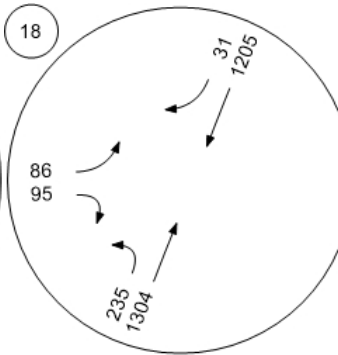
Traffic Volume - Base Volume



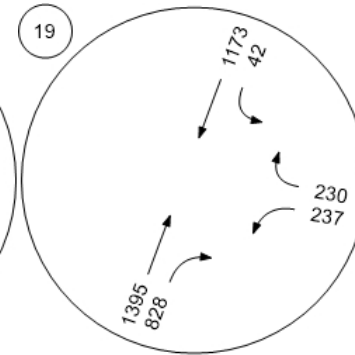
Willow Rd (SR 114)/Hamilton



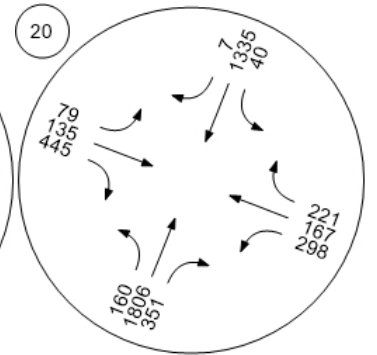
Willow Rd (SR 114)/Ivy Dr



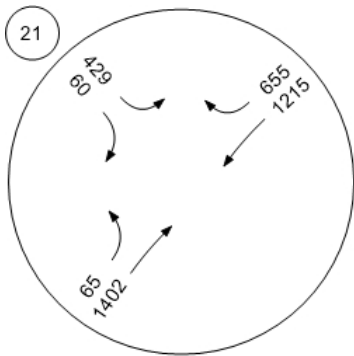
Willow Rd (SR 114)/O'Brien



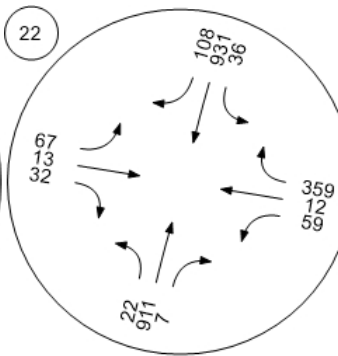
Willow Rd (SR 114)/Newbrid



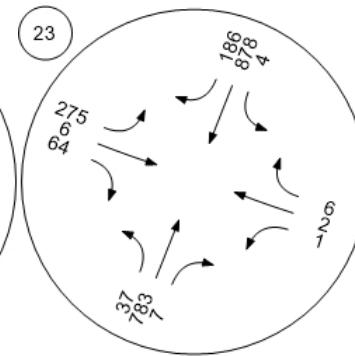
Willow Rd/Bay Rd



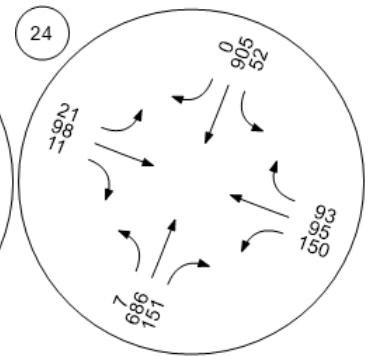
Willow Rd/Durham St-VA Me



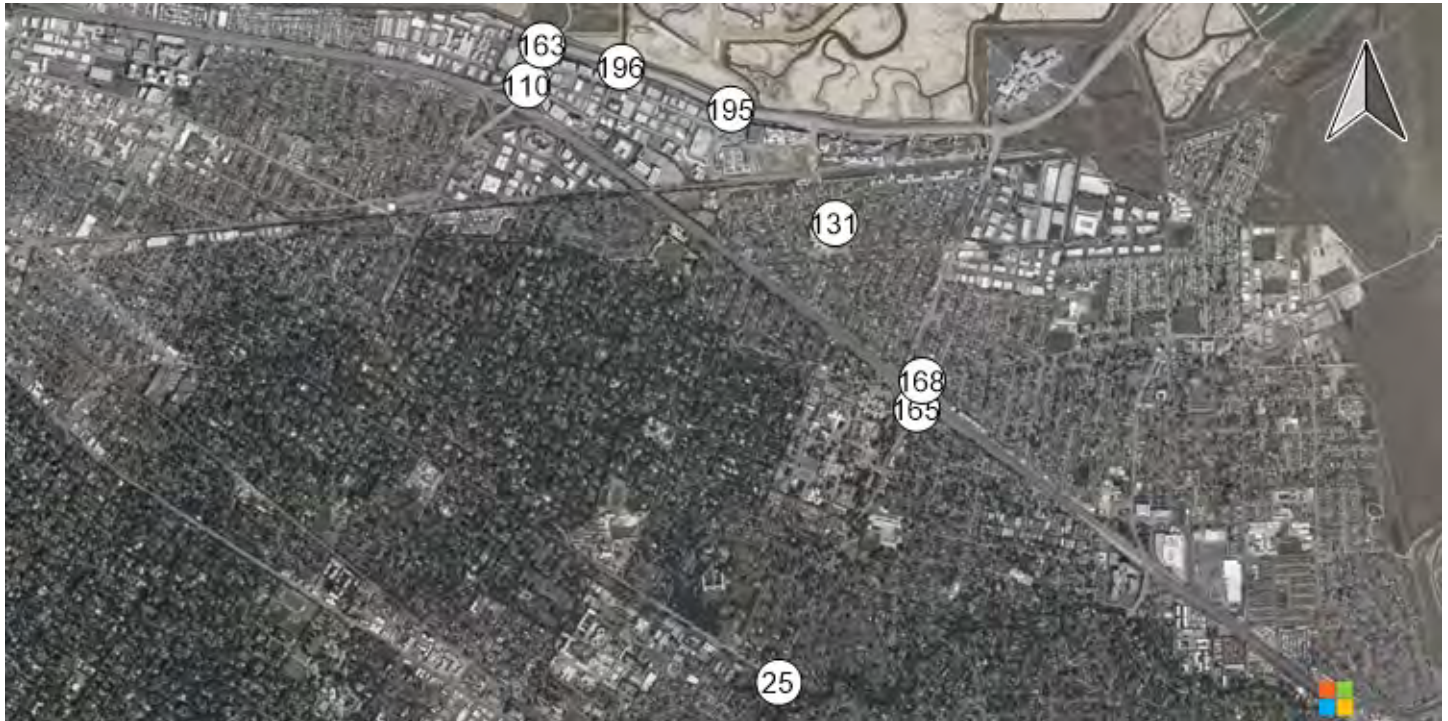
Willow Rd/Coleman Ave



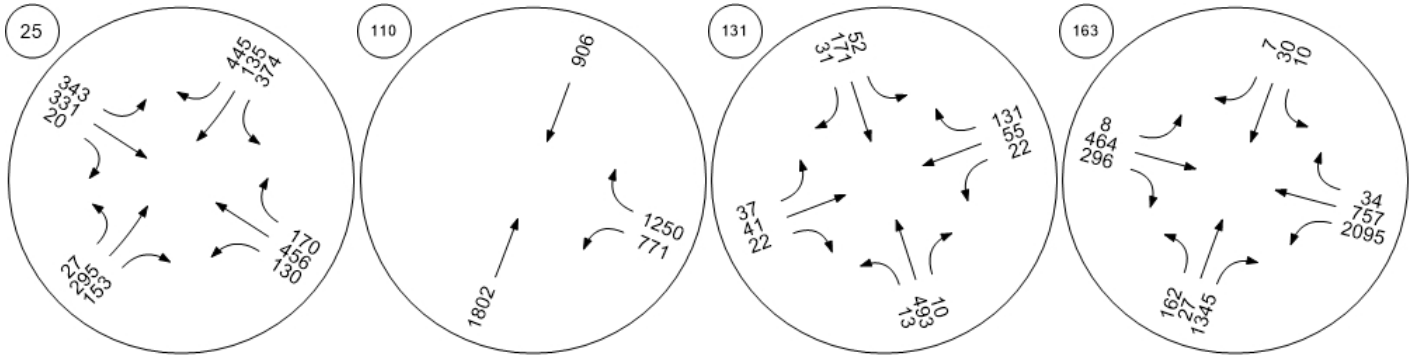
Willow Rd/Gilbert Ave



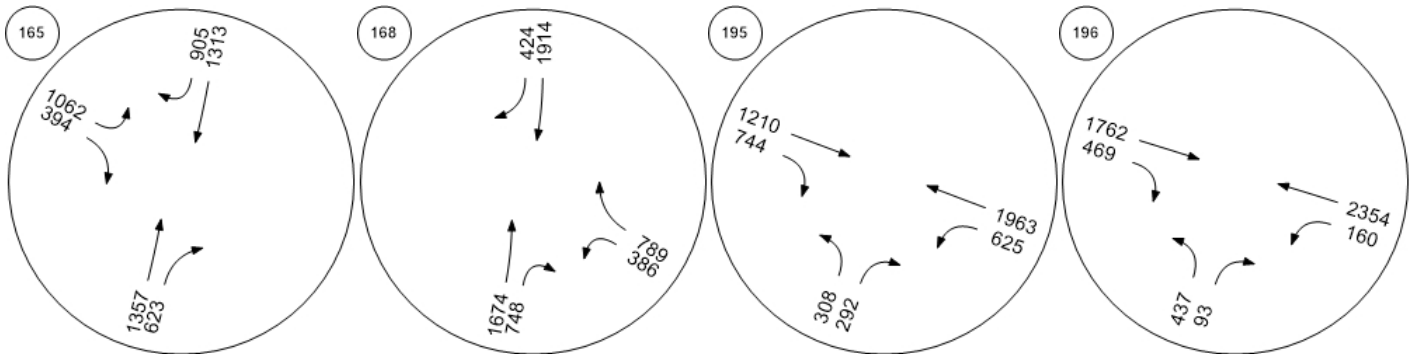
Traffic Volume - Base Volume



Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd

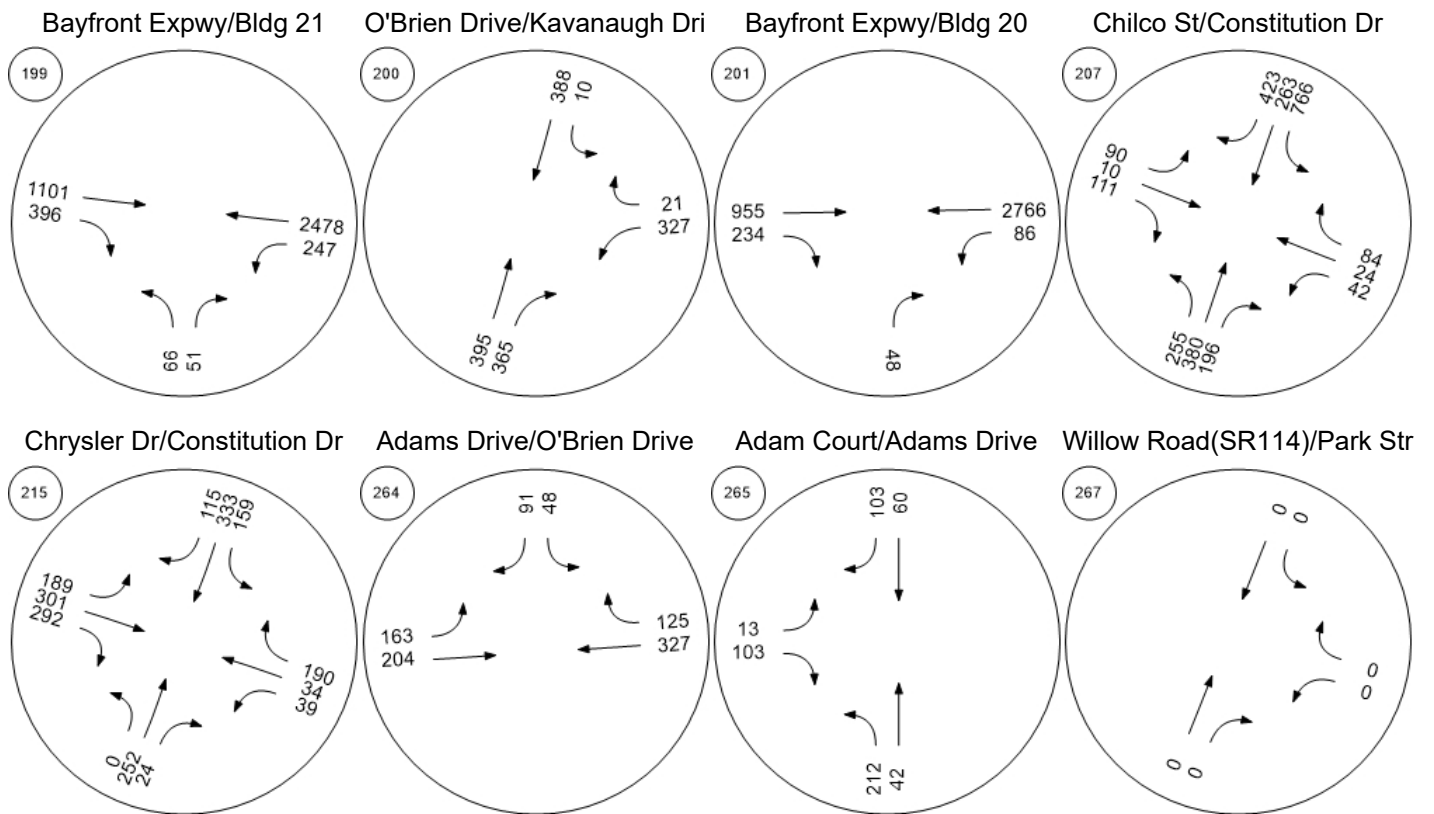


Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive





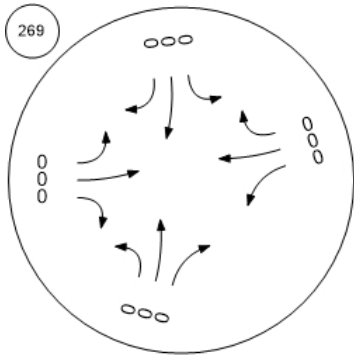
Traffic Volume - Base Volume



Traffic Volume - Base Volume



O'Brien Drive/Loop Road

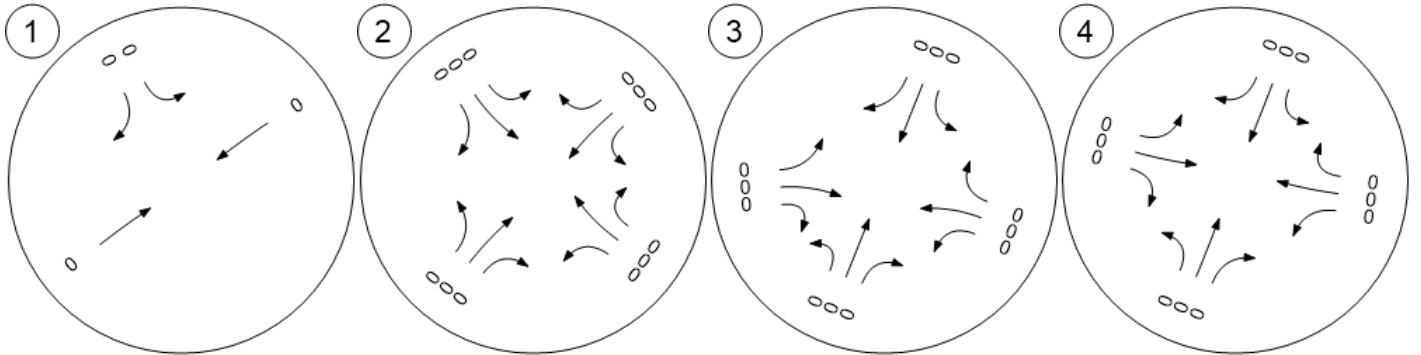


Traffic Volume - In-Process Volume

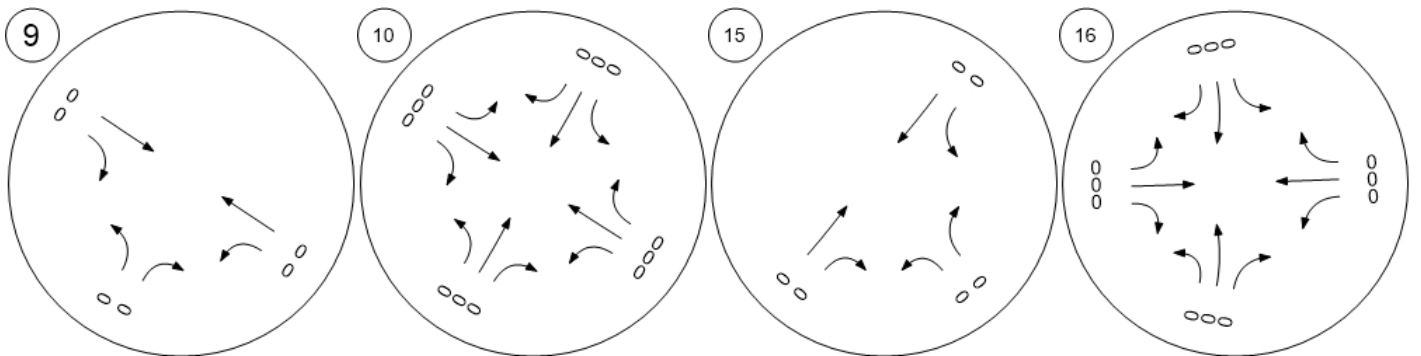


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



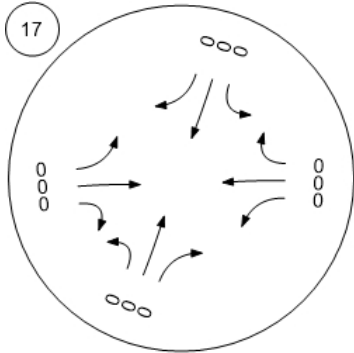
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



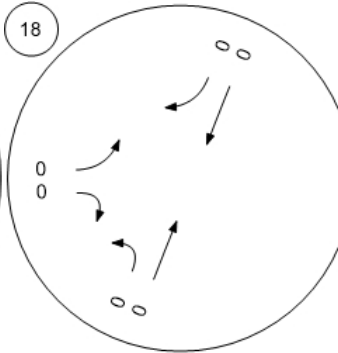
Traffic Volume - In-Process Volume



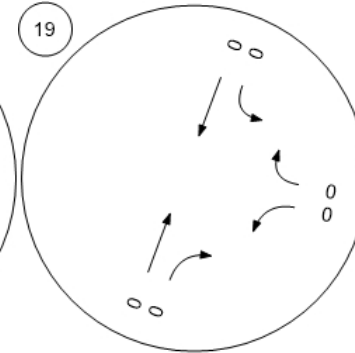
Willow Rd (SR 114)/Hamilton



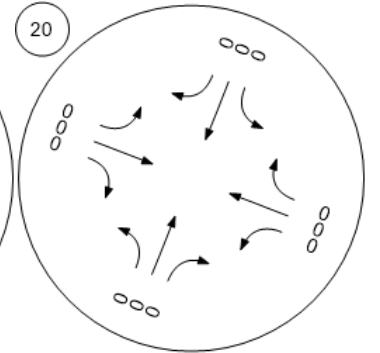
Willow Rd (SR 114)/Ivy Dr



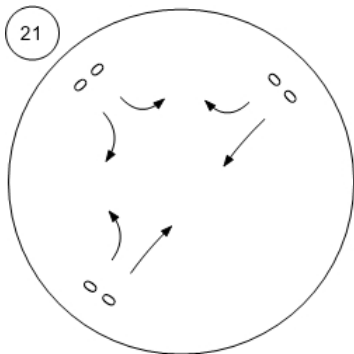
Willow Rd (SR 114)/O'Brien



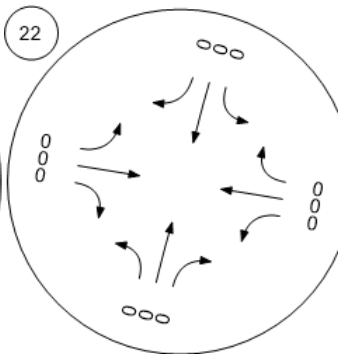
Willow Rd (SR 114)/Newbrid



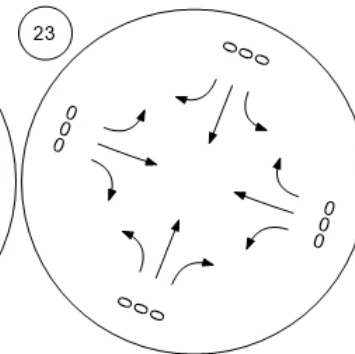
Willow Rd/Bay Rd



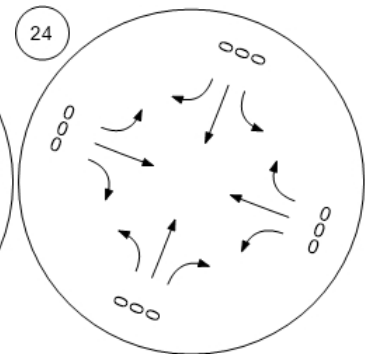
Willow Rd/Durham St-VA Me



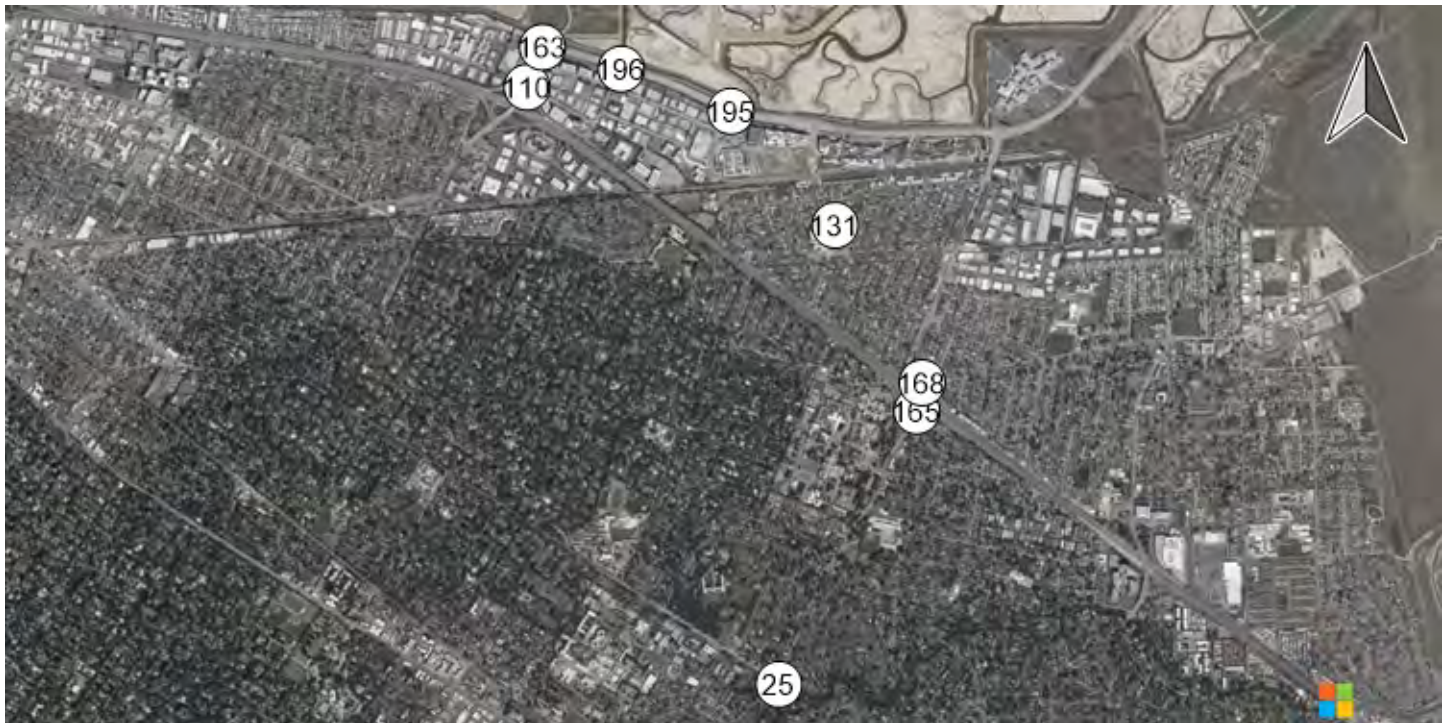
Willow Rd/Coleman Ave



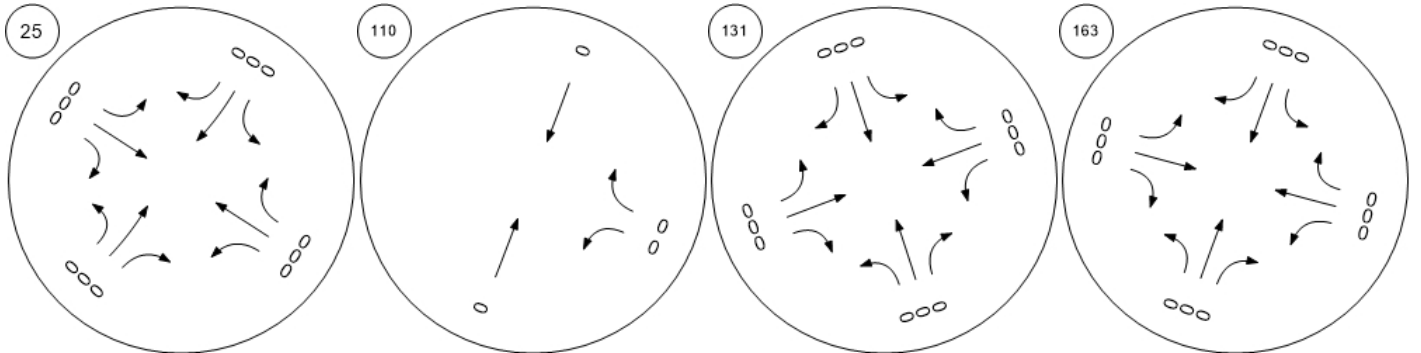
Willow Rd/Gilbert Ave



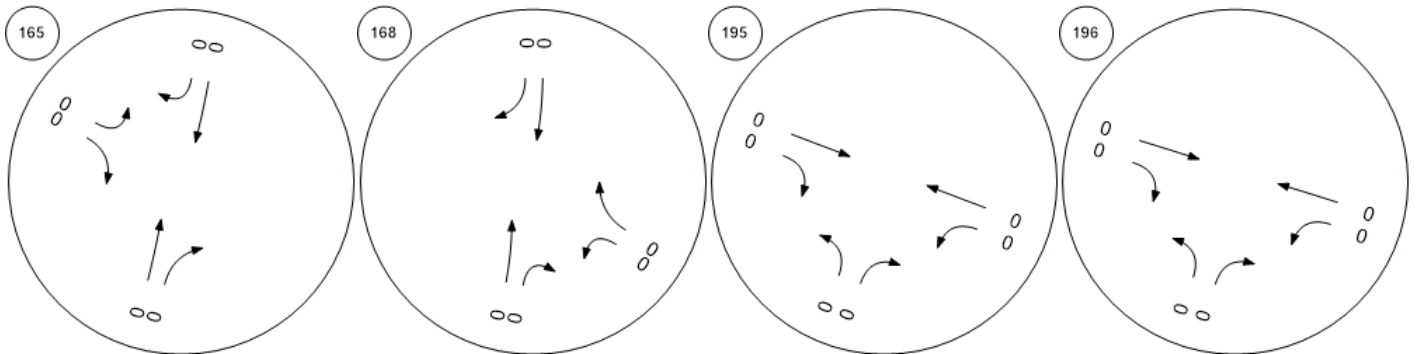
Traffic Volume - In-Process Volume



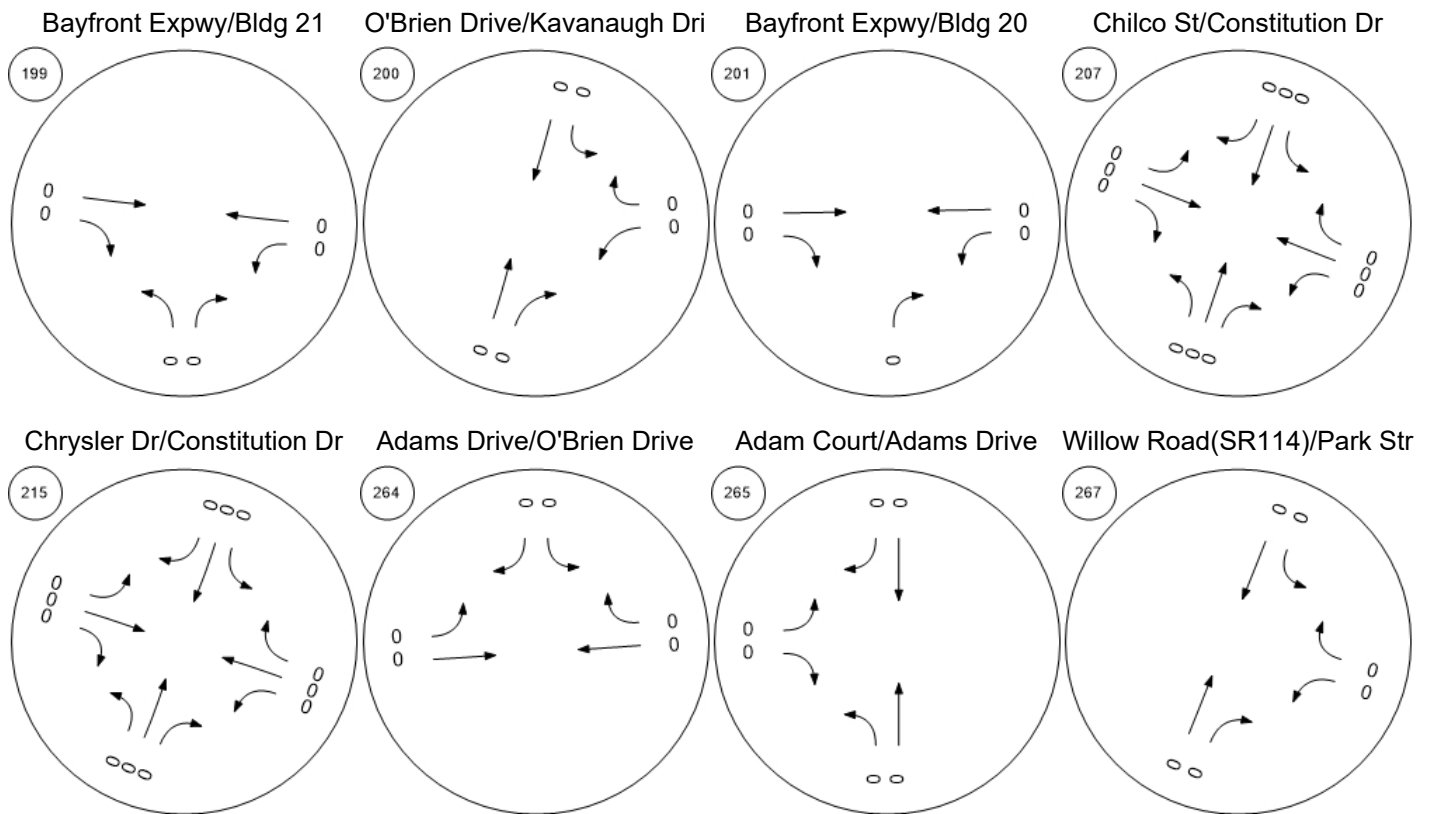
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



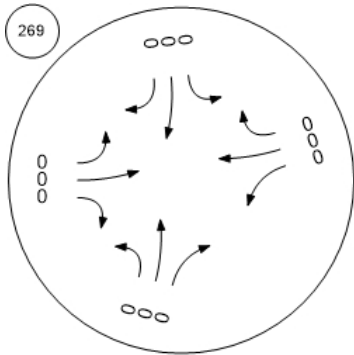
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

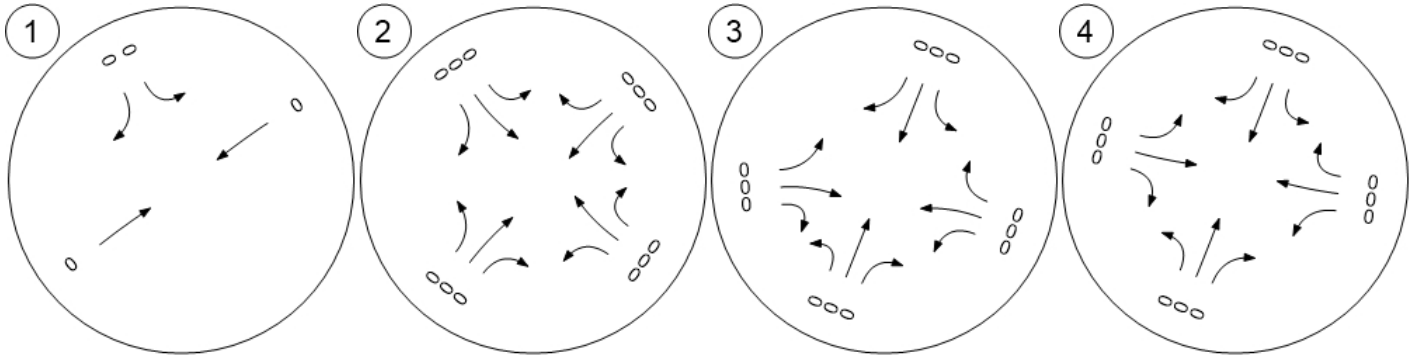


Traffic Volume - Net New Site Trips

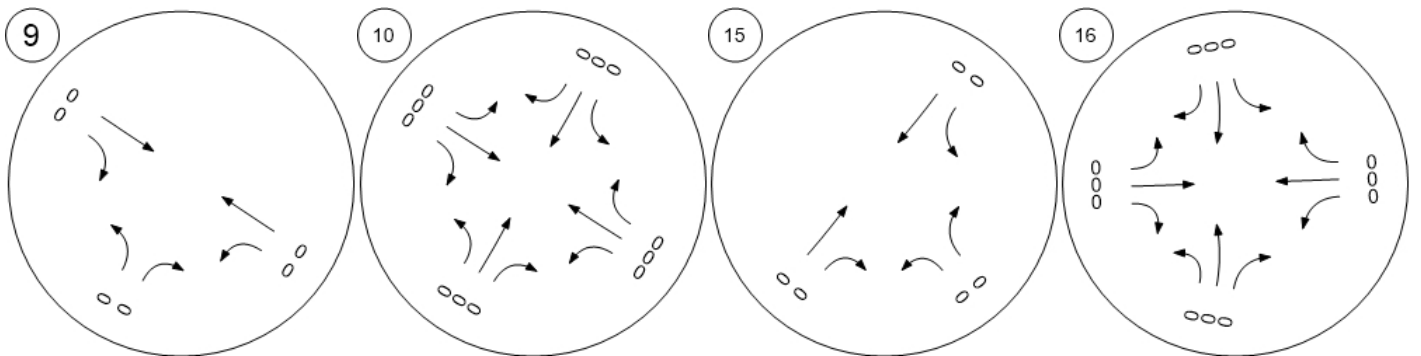


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow

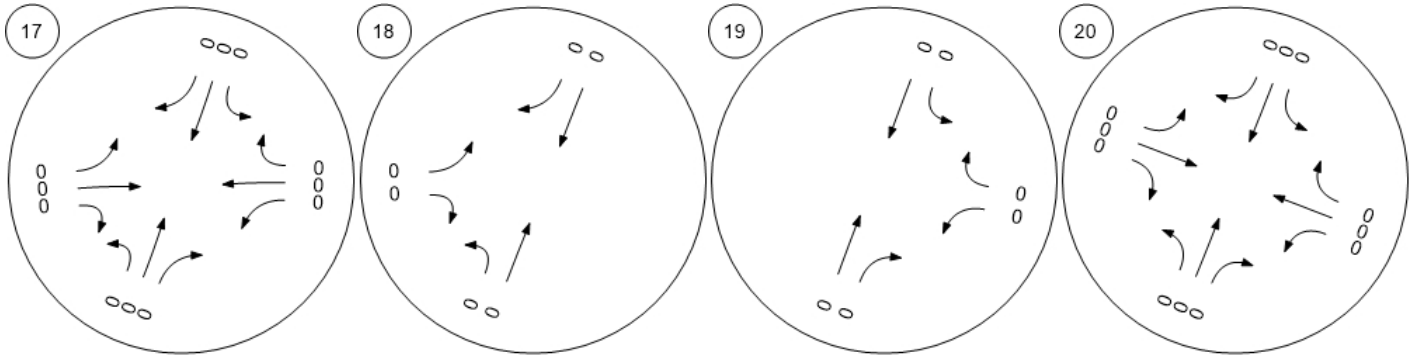




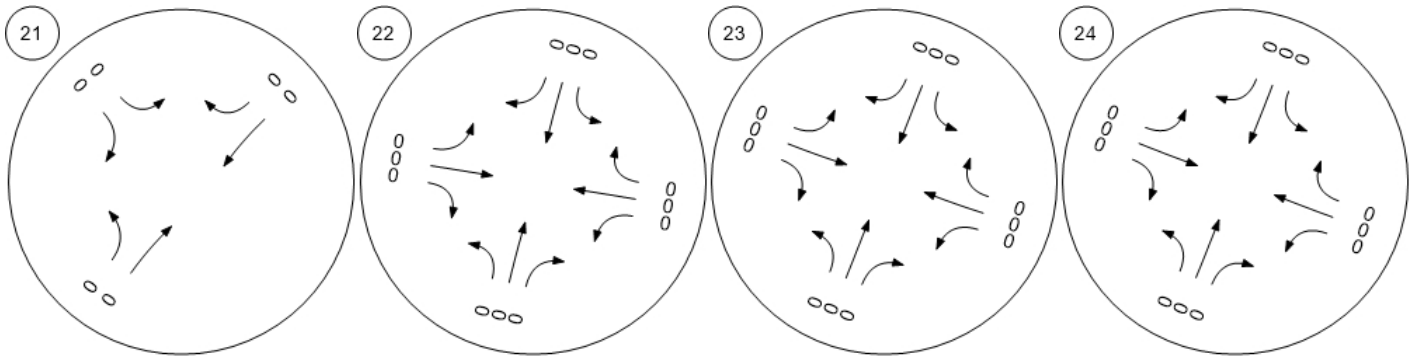
Traffic Volume - Net New Site Trips



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



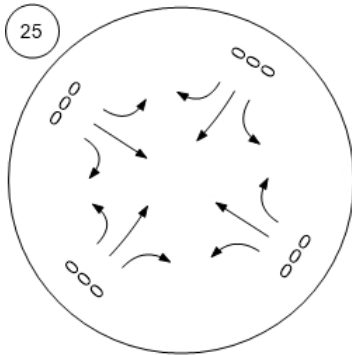
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



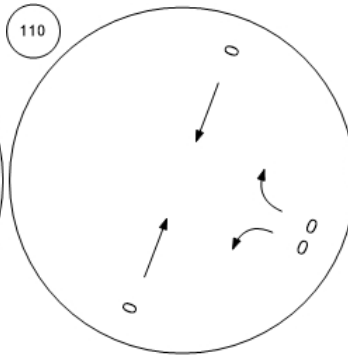
Traffic Volume - Net New Site Trips



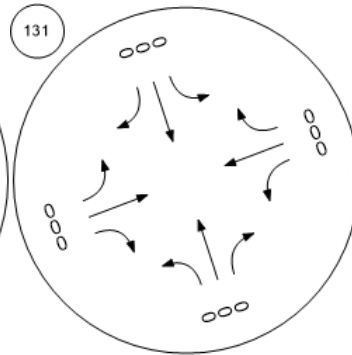
Middlefield Rd-Willow Rd



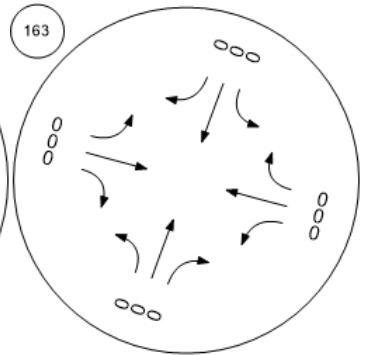
Marsh Road and US 101 NB



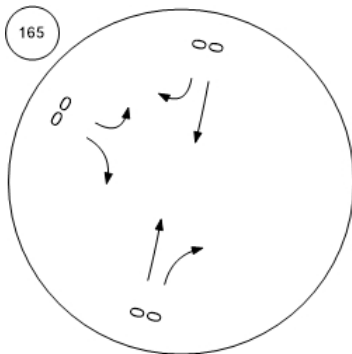
Chilco Street/Hamilton Avenue



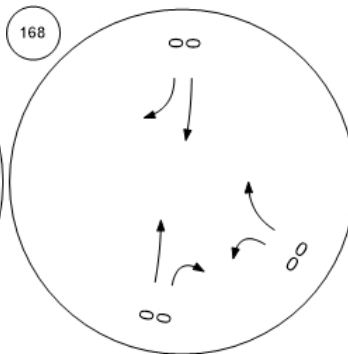
Bayfront Expy/Marsh Rd



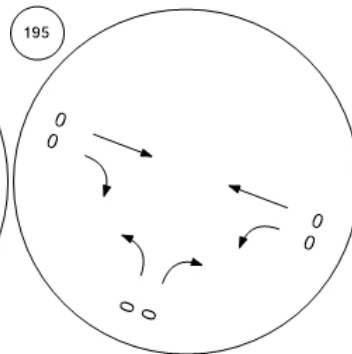
Willow Rd/US-101 SB Ramps



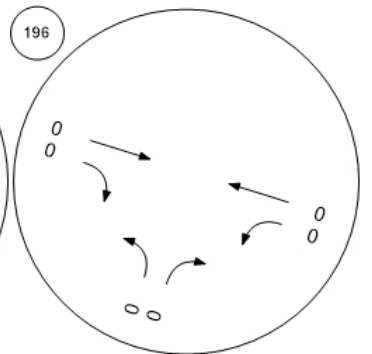
Willow Rd/US-101 NB Ramp



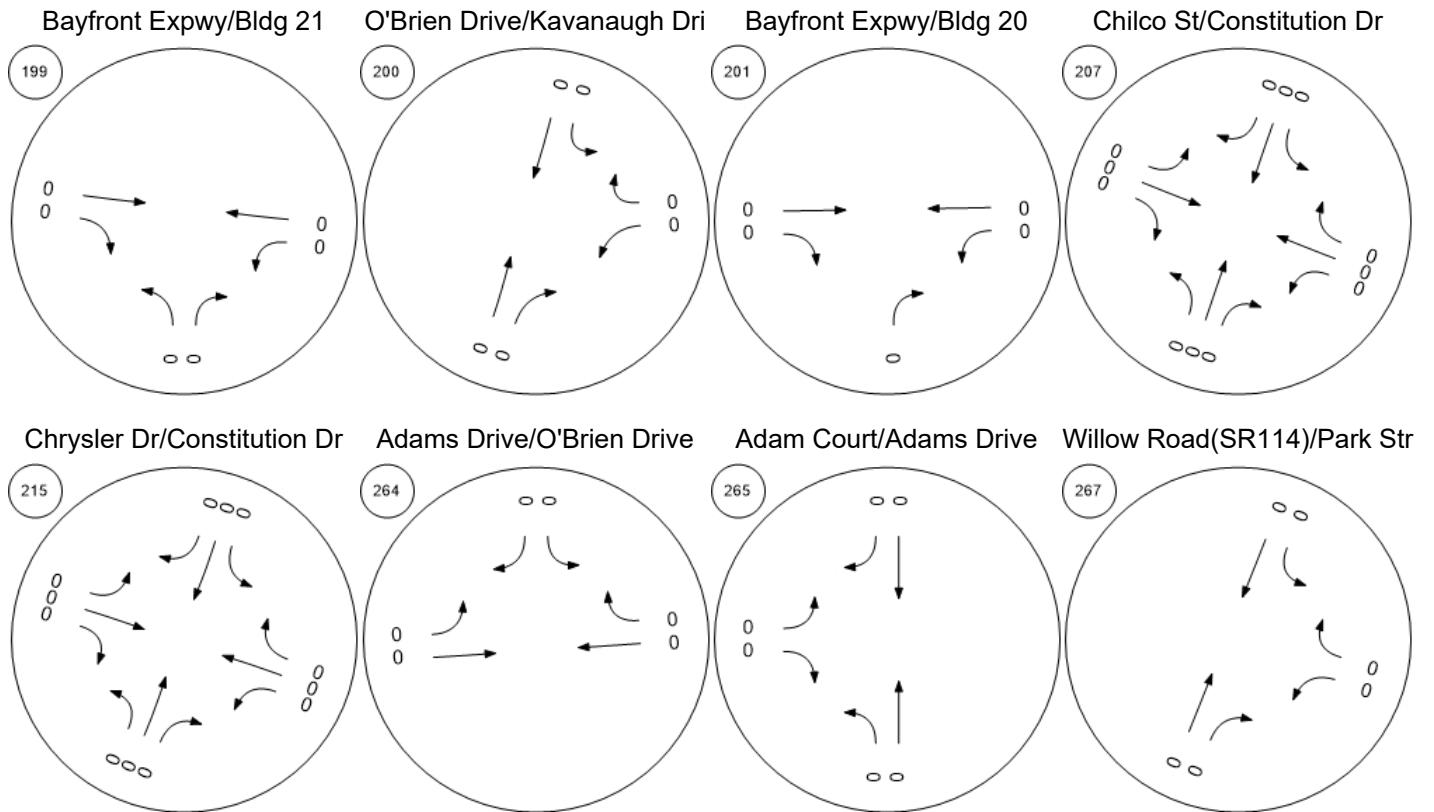
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



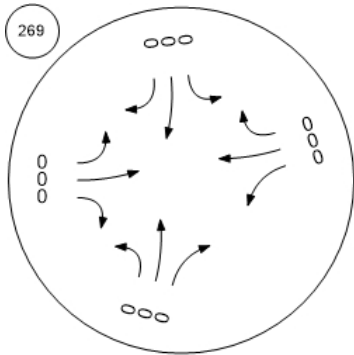
Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road

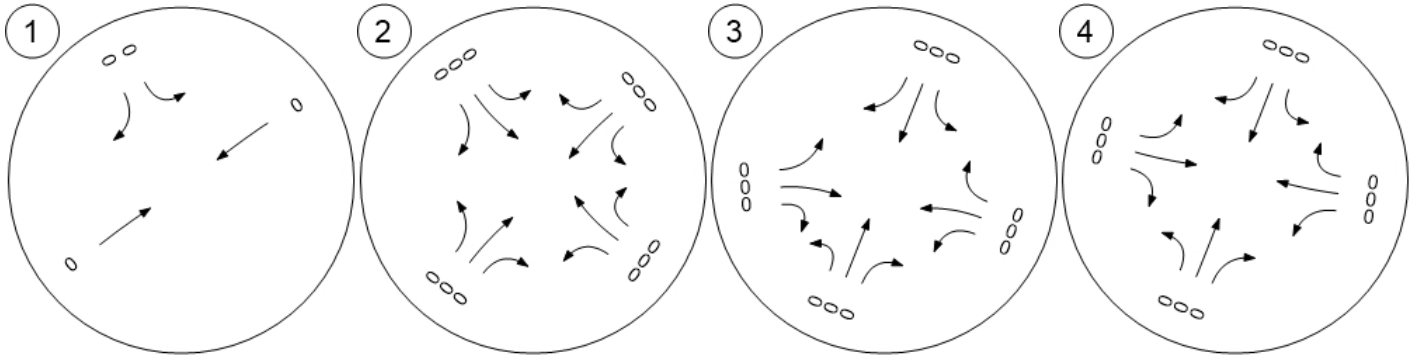


Traffic Volume - Other Volume

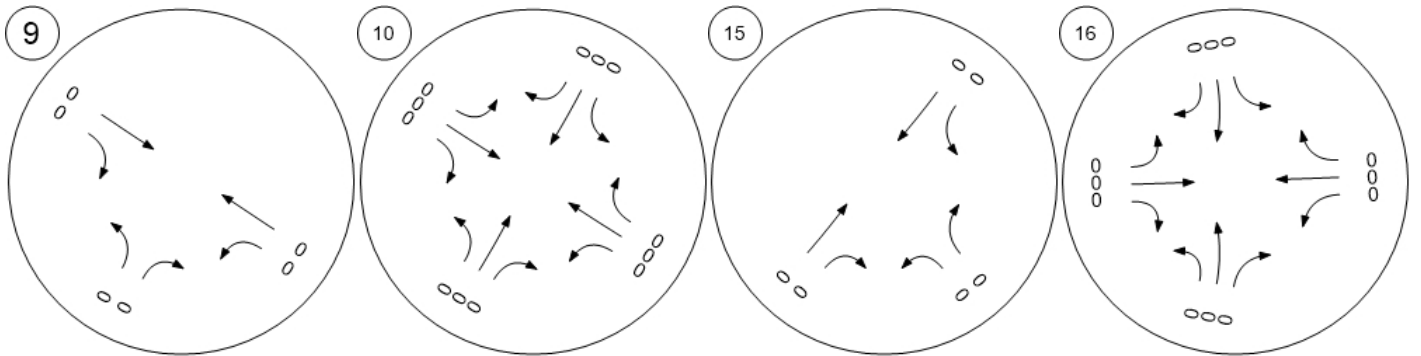


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



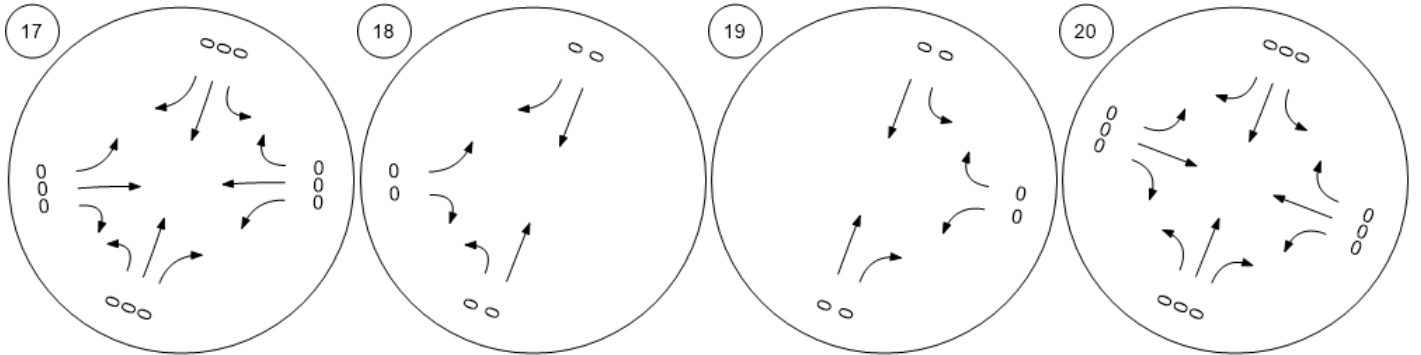
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



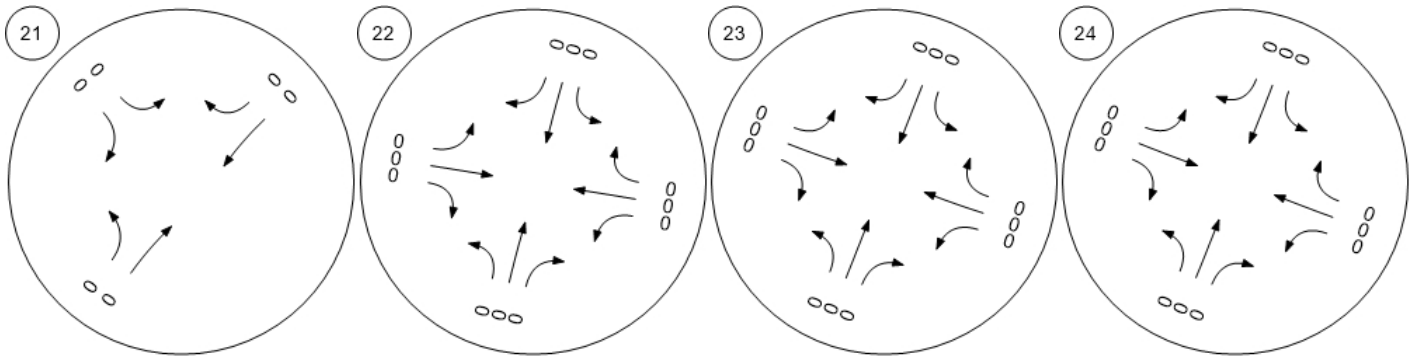
Traffic Volume - Other Volume



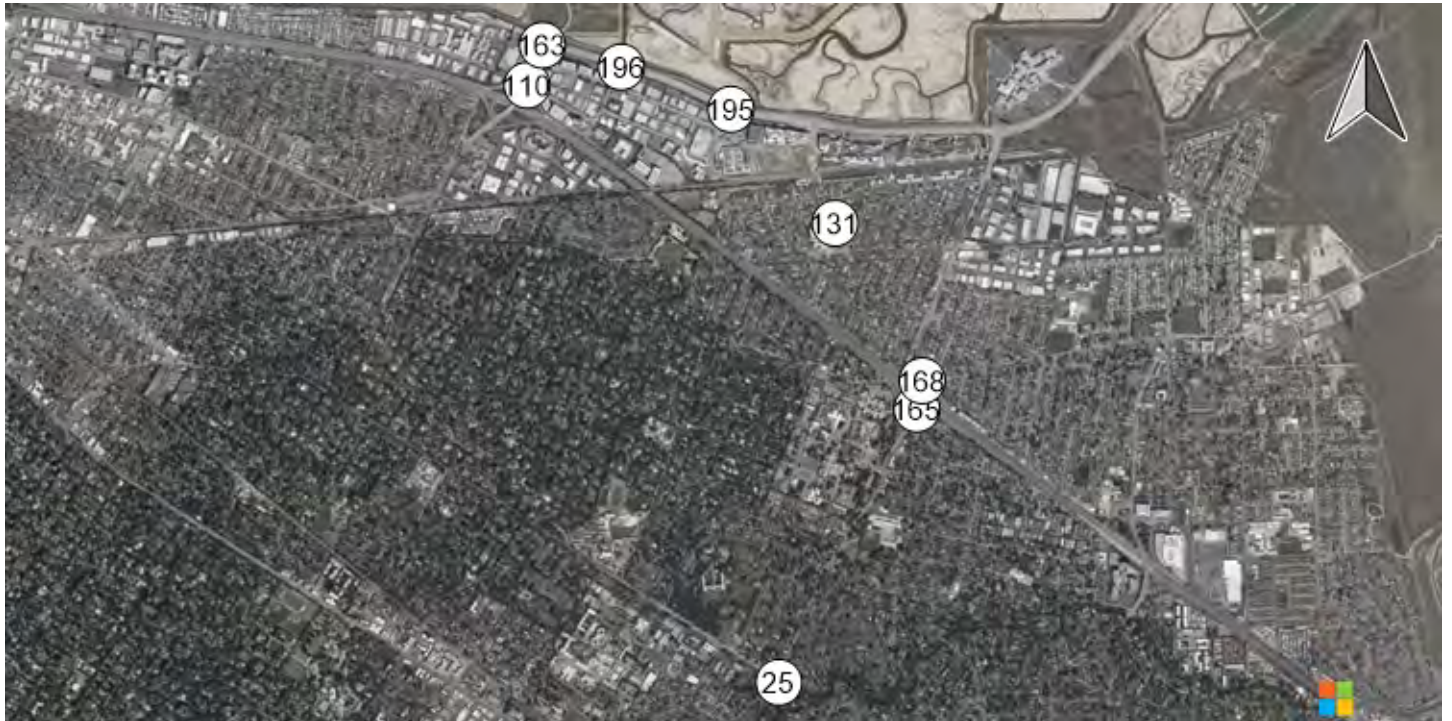
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



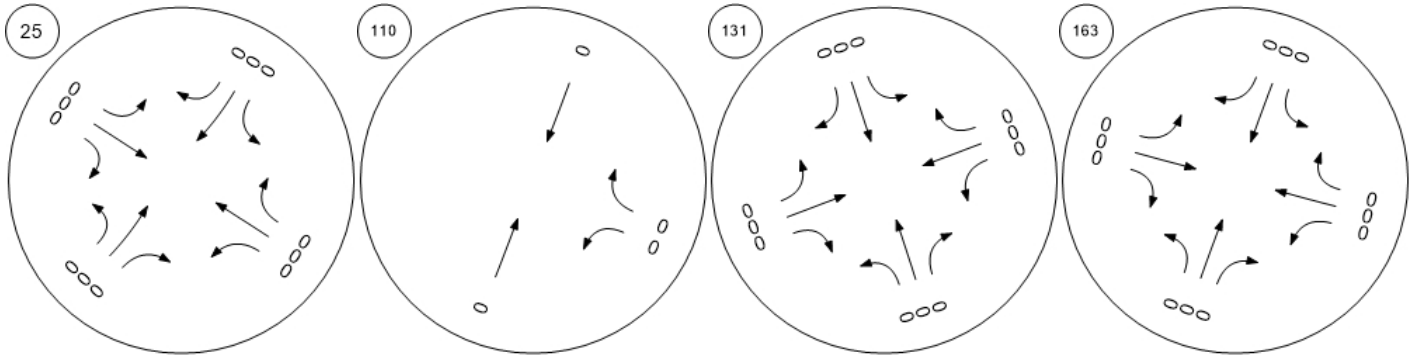
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



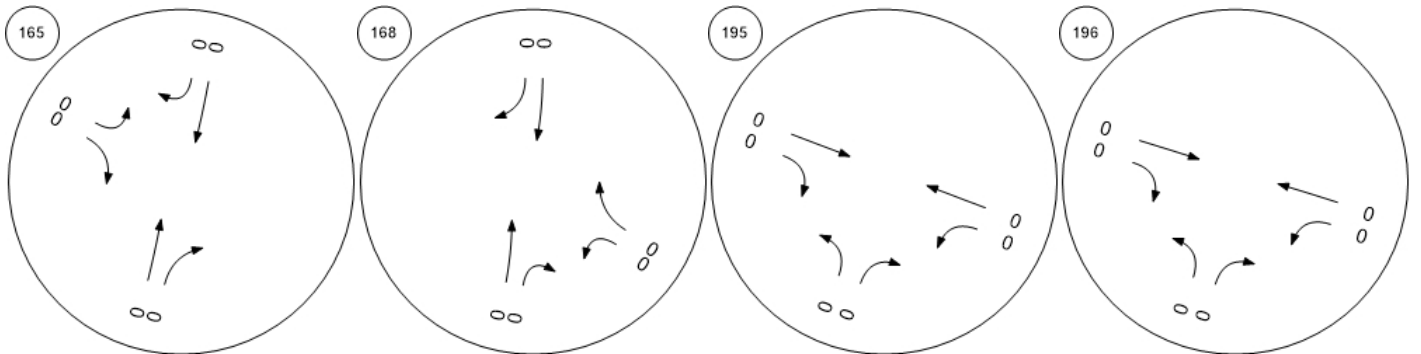
Traffic Volume - Other Volume



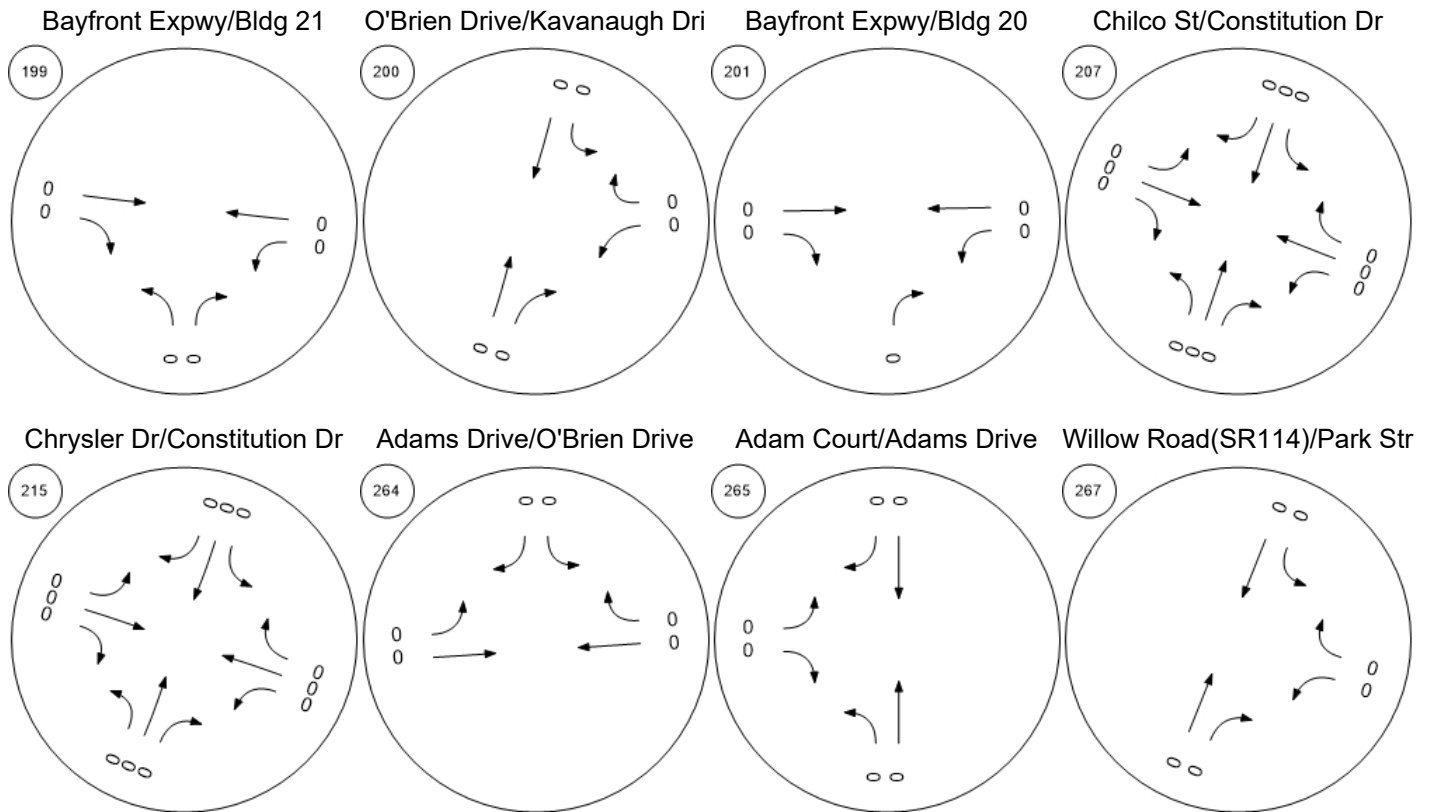
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



Traffic Volume - Other Volume

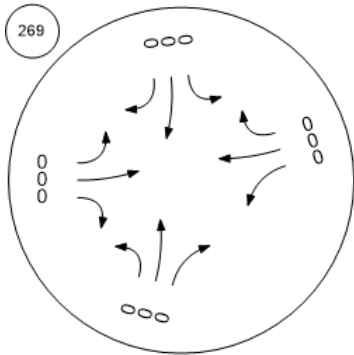




Traffic Volume - Other Volume



O'Brien Drive/Loop Road

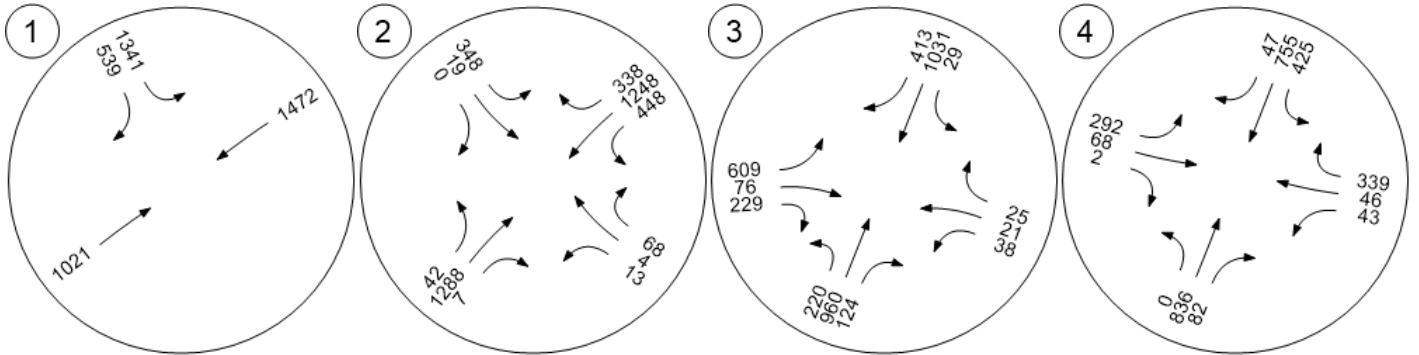


Traffic Volume - Future Total Volume

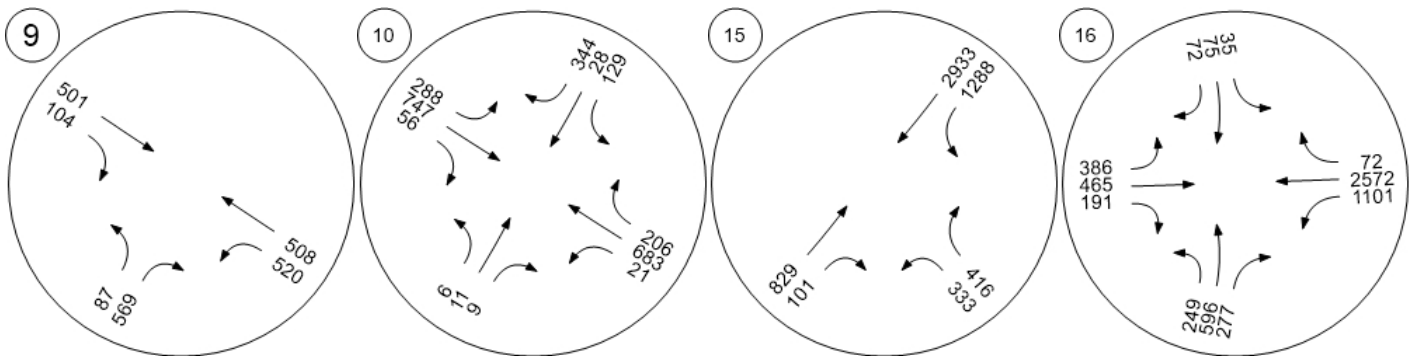


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



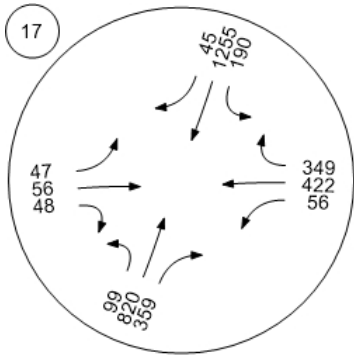
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



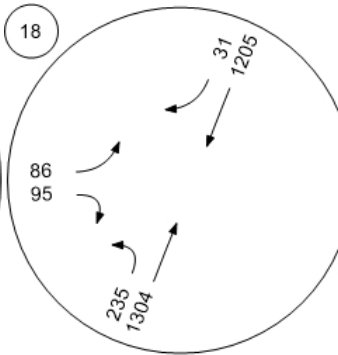
Traffic Volume - Future Total Volume



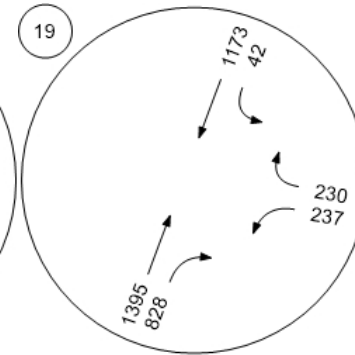
Willow Rd (SR 114)/Hamilton



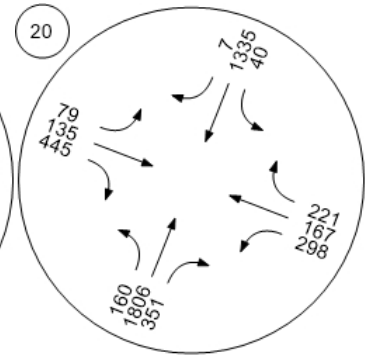
Willow Rd (SR 114)/Ivy Dr



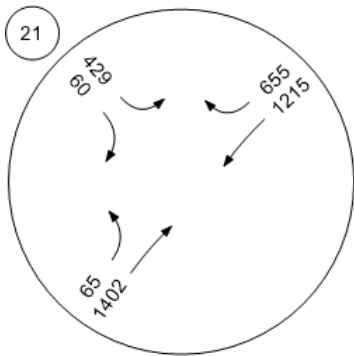
Willow Rd (SR 114)/O'Brien



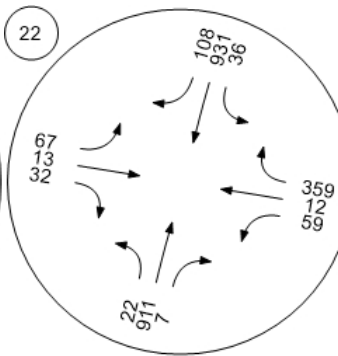
Willow Rd (SR 114)/Newbrid



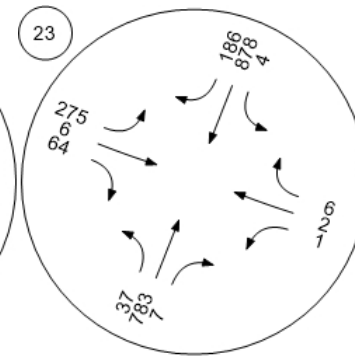
Willow Rd/Bay Rd



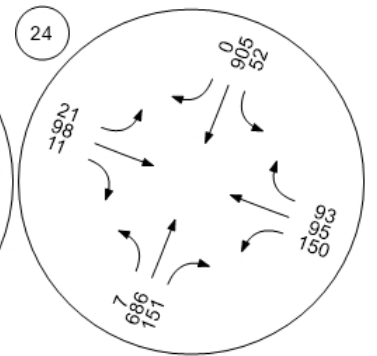
Willow Rd/Durham St-VA Me



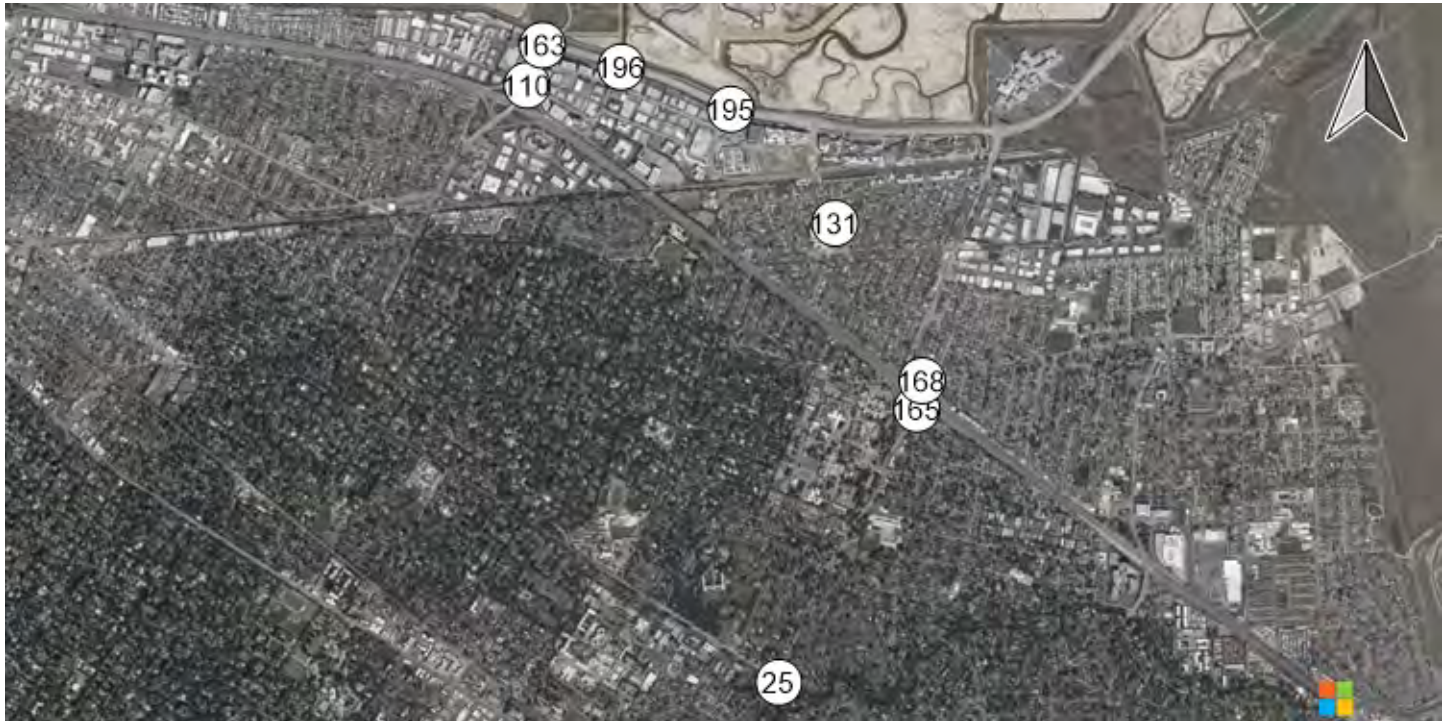
Willow Rd/Coleman Ave



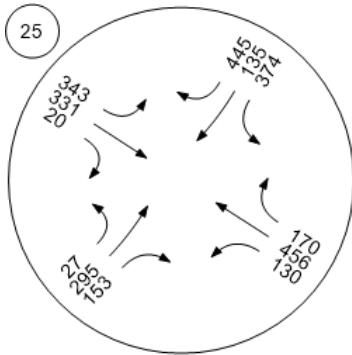
Willow Rd/Gilbert Ave



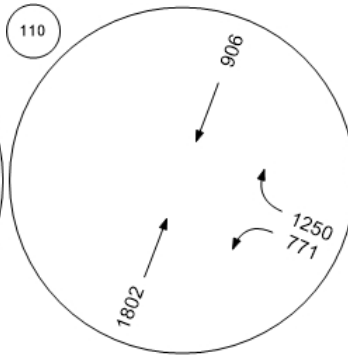
Traffic Volume - Future Total Volume



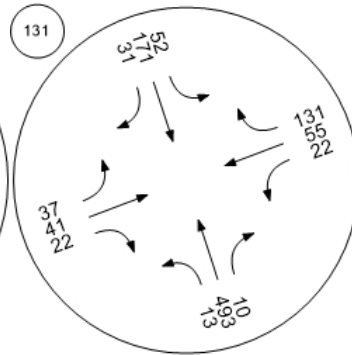
Middlefield Rd-Willow Rd



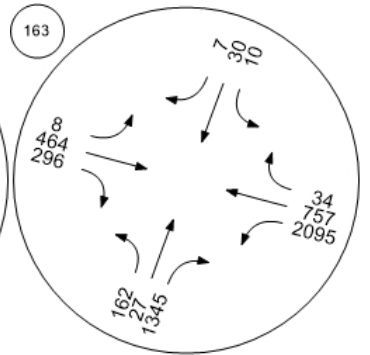
Marsh Road and US 101 NB



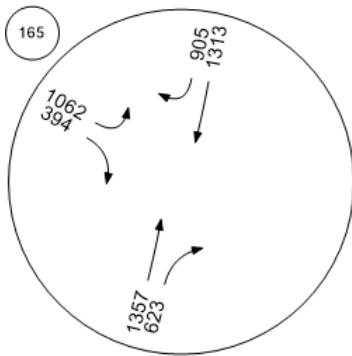
Chilco Street/Hamilton Avenue



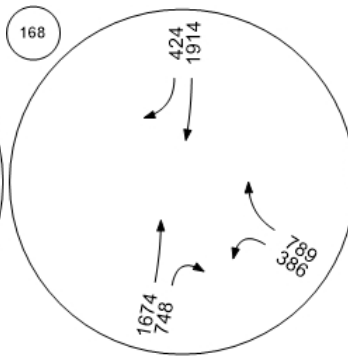
Bayfront Expy/Marsh Rd



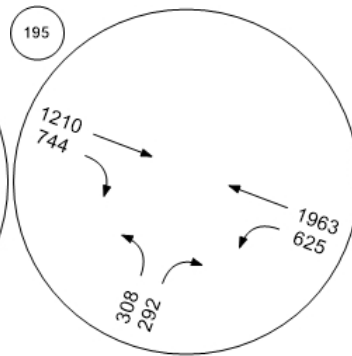
Willow Rd/US-101 SB Ramps



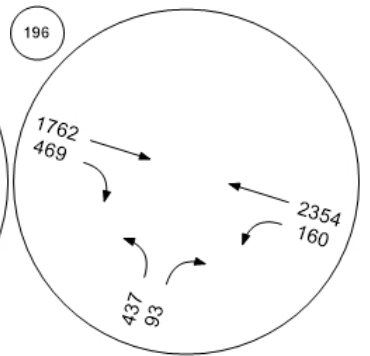
Willow Rd/US-101 NB Ramp



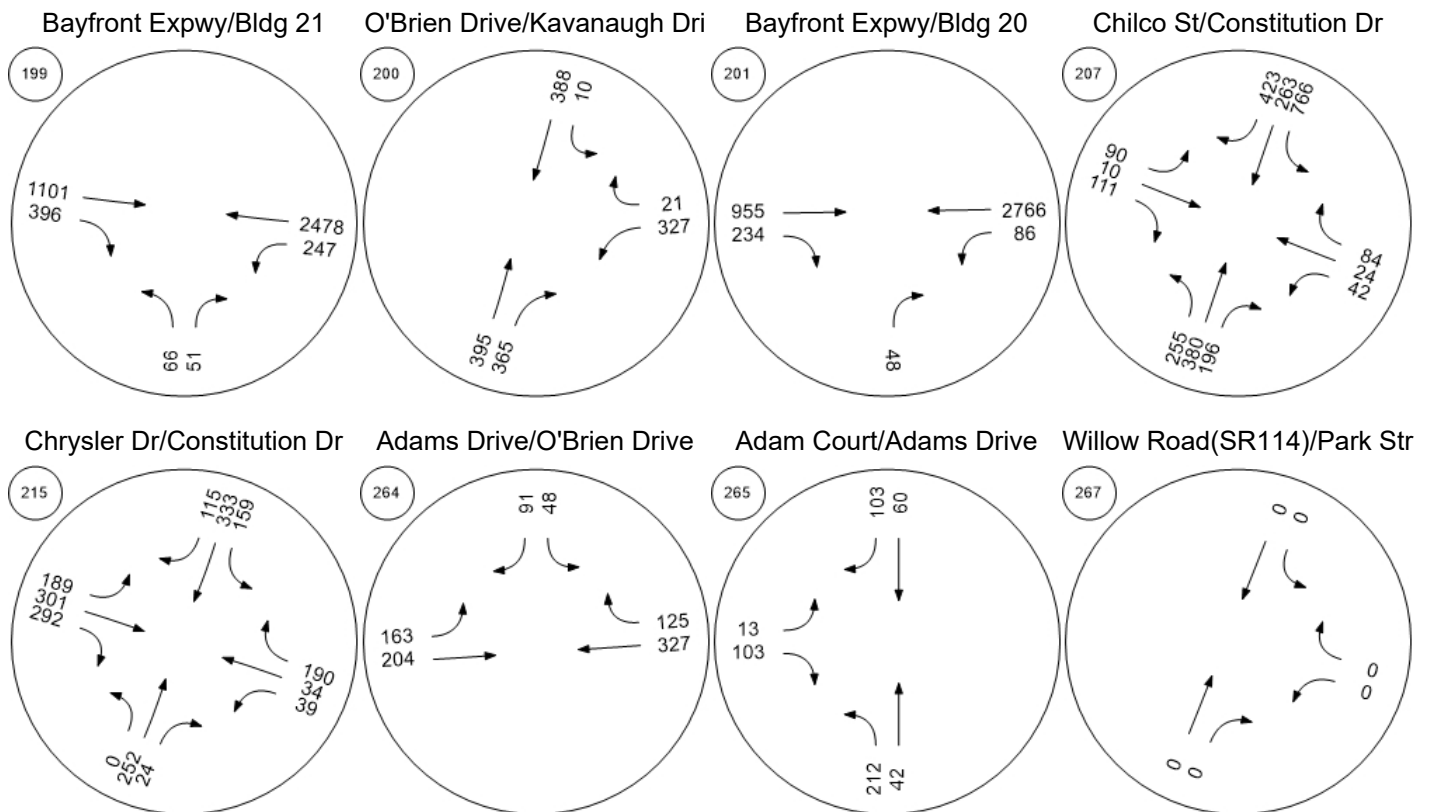
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



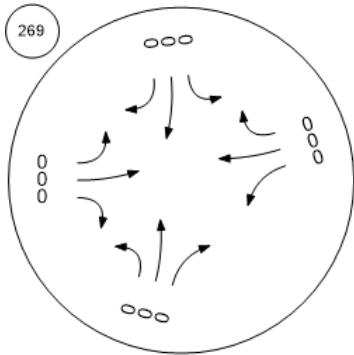
Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road

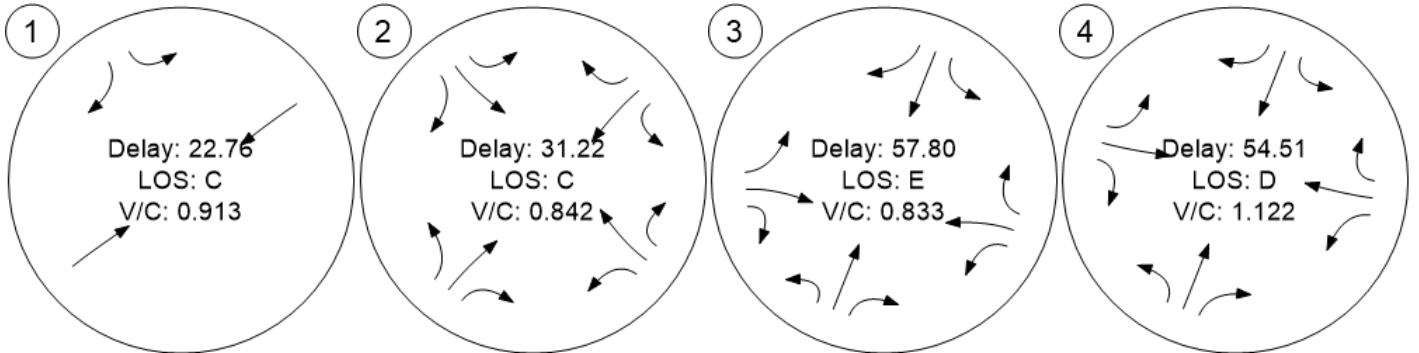


Traffic Conditions

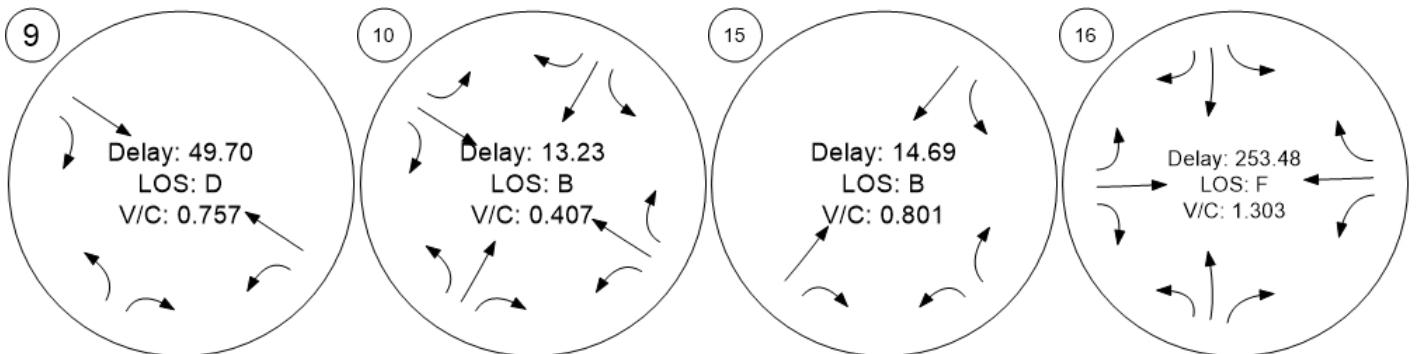


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



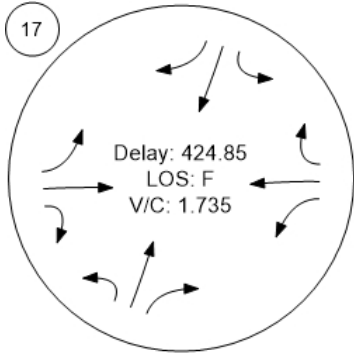
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



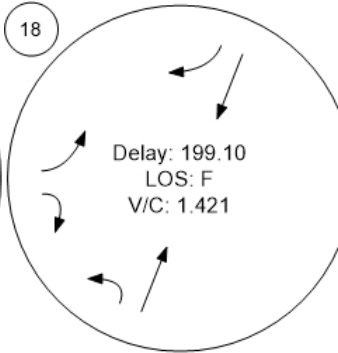
Traffic Conditions



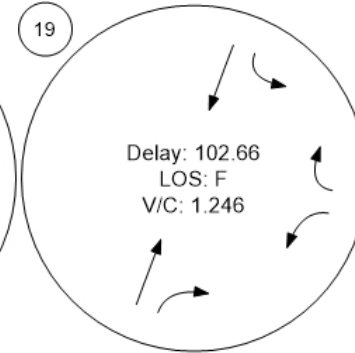
Willow Rd (SR 114)/Hamilton



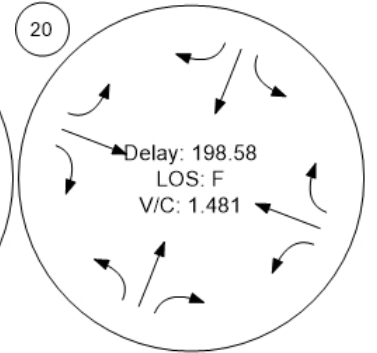
Willow Rd (SR 114)/Ivy Dr



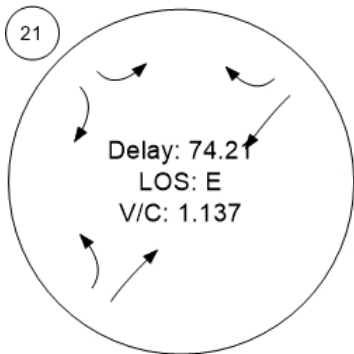
Willow Rd (SR 114)/O'Brien



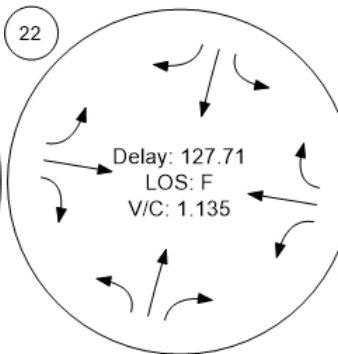
Willow Rd (SR 114)/Newbrid



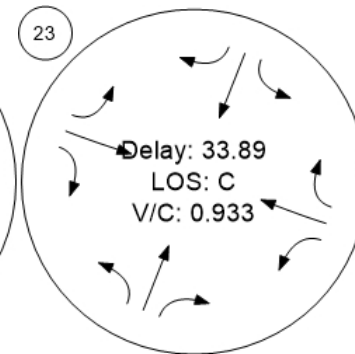
Willow Rd/Bay Rd



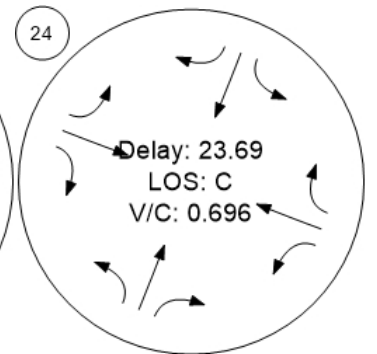
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave

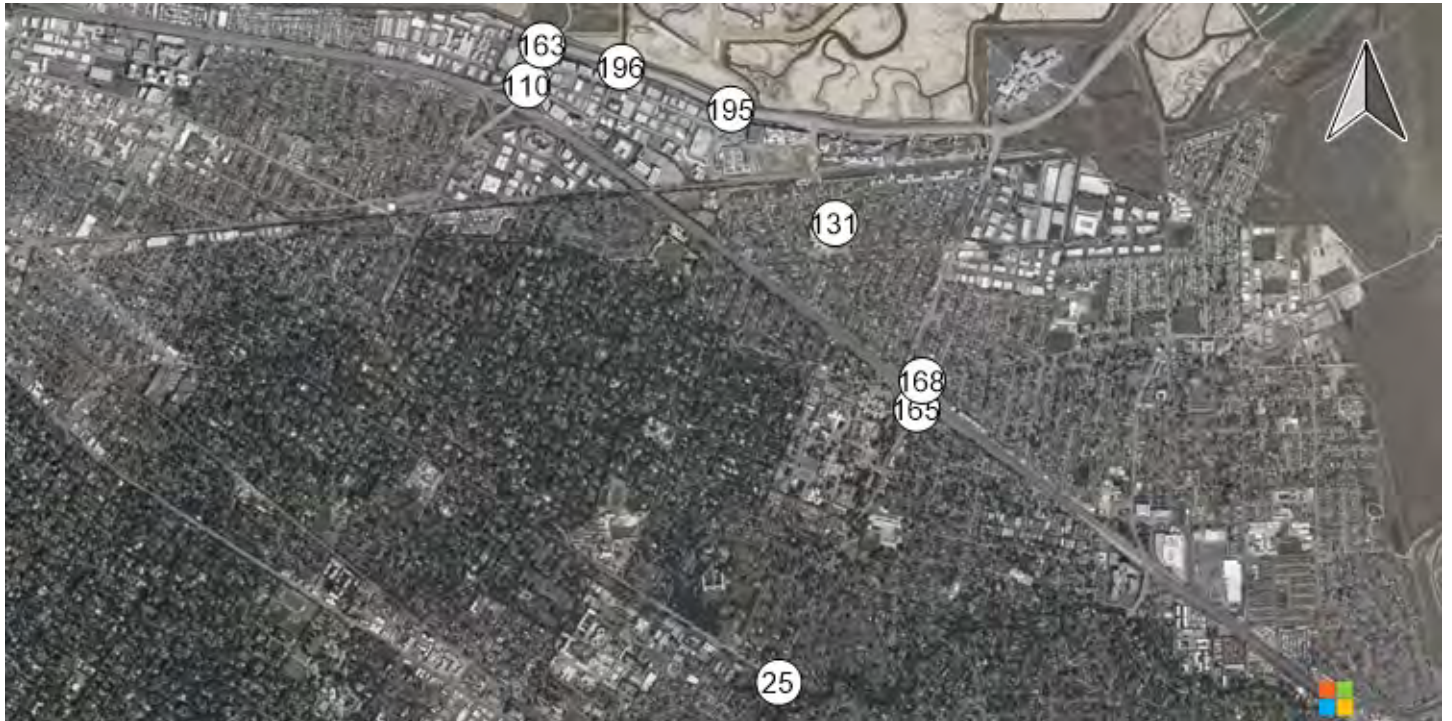


Willow Rd/Gilbert Ave





Traffic Conditions

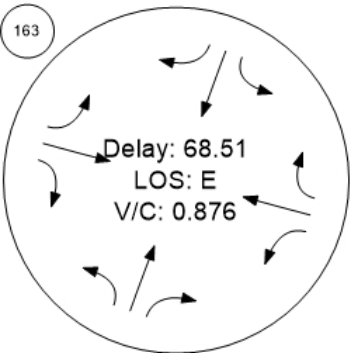
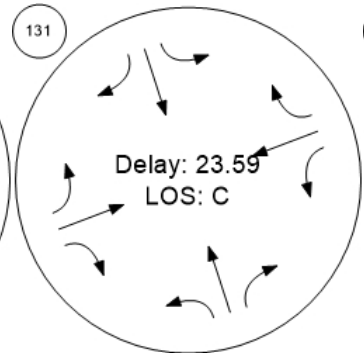
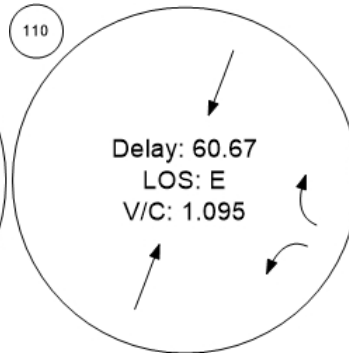
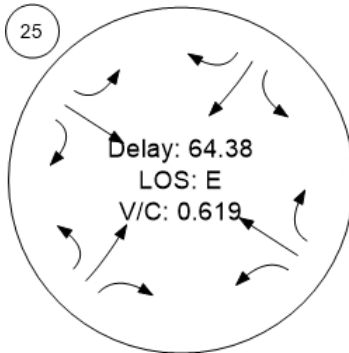


Middlefield Rd-Willow Rd

Marsh Road and US 101 NB

Chilco Street/Hamilton Avenue

Bayfront Expy/Marsh Rd

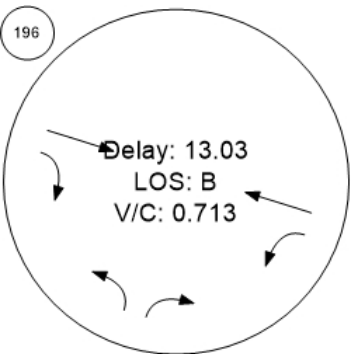
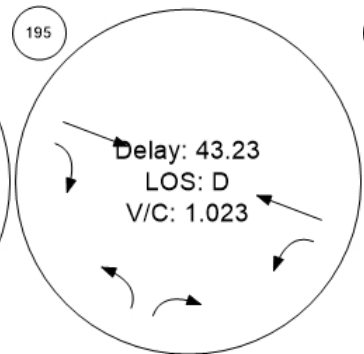
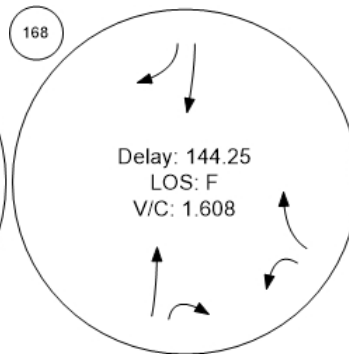
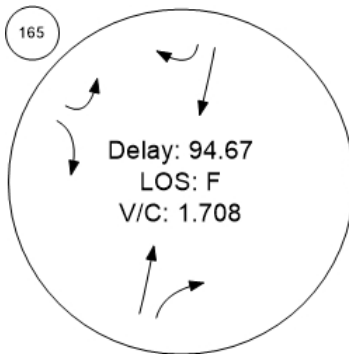


Willow Rd/US-101 SB Ramps

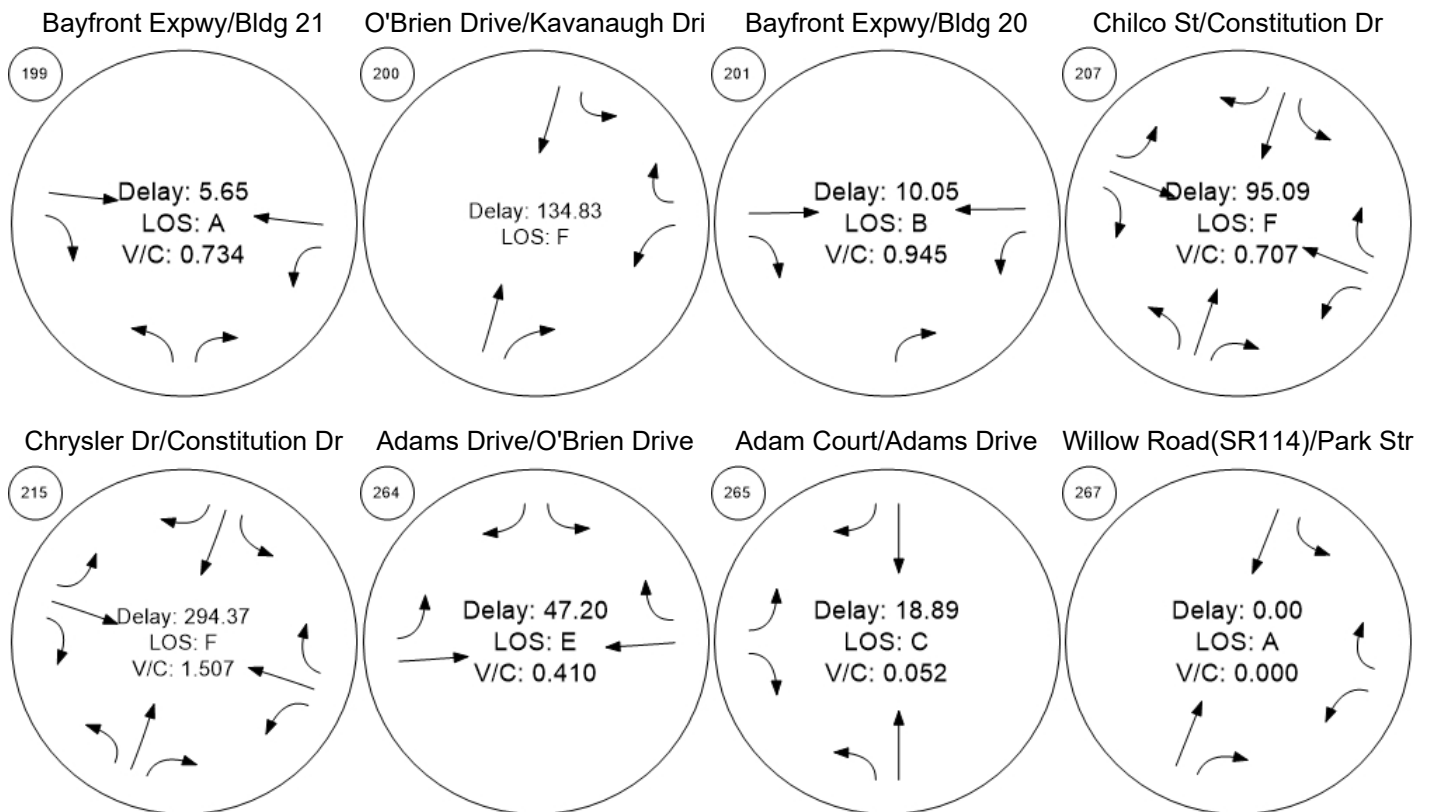
Willow Rd/US-101 NB Ramp

Bayfront Expy/Chilco St

Bayfront Expy/Chrysler Drive



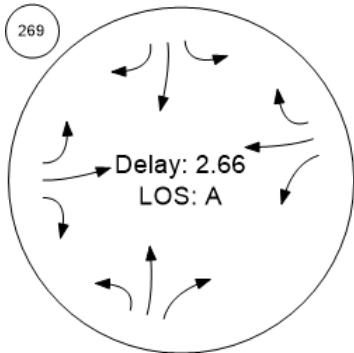
Traffic Conditions



Traffic Conditions

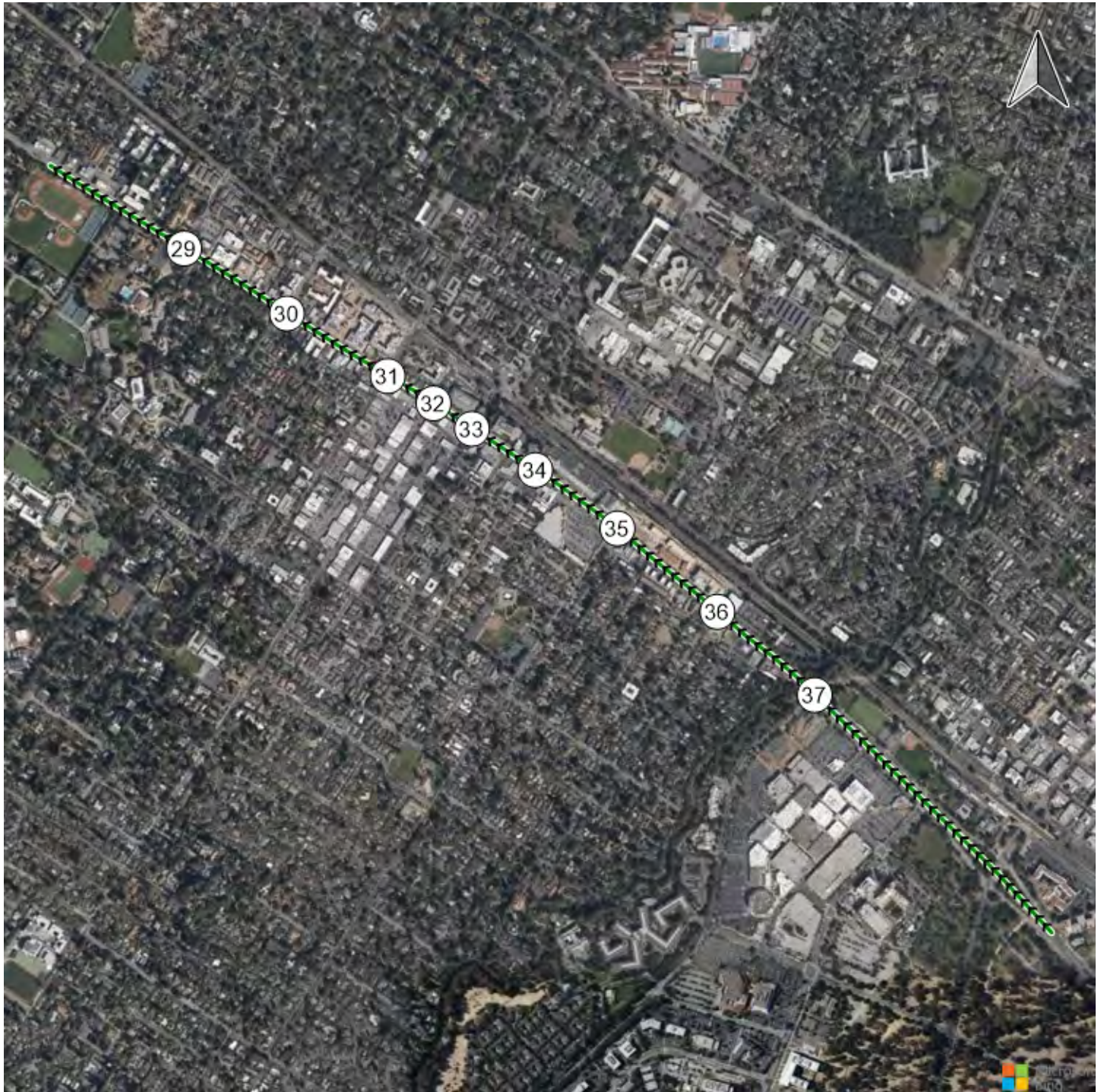


O'Brien Drive/Loop Road



Time Space Diagram - Flowing Off

Route 1: ECR NB



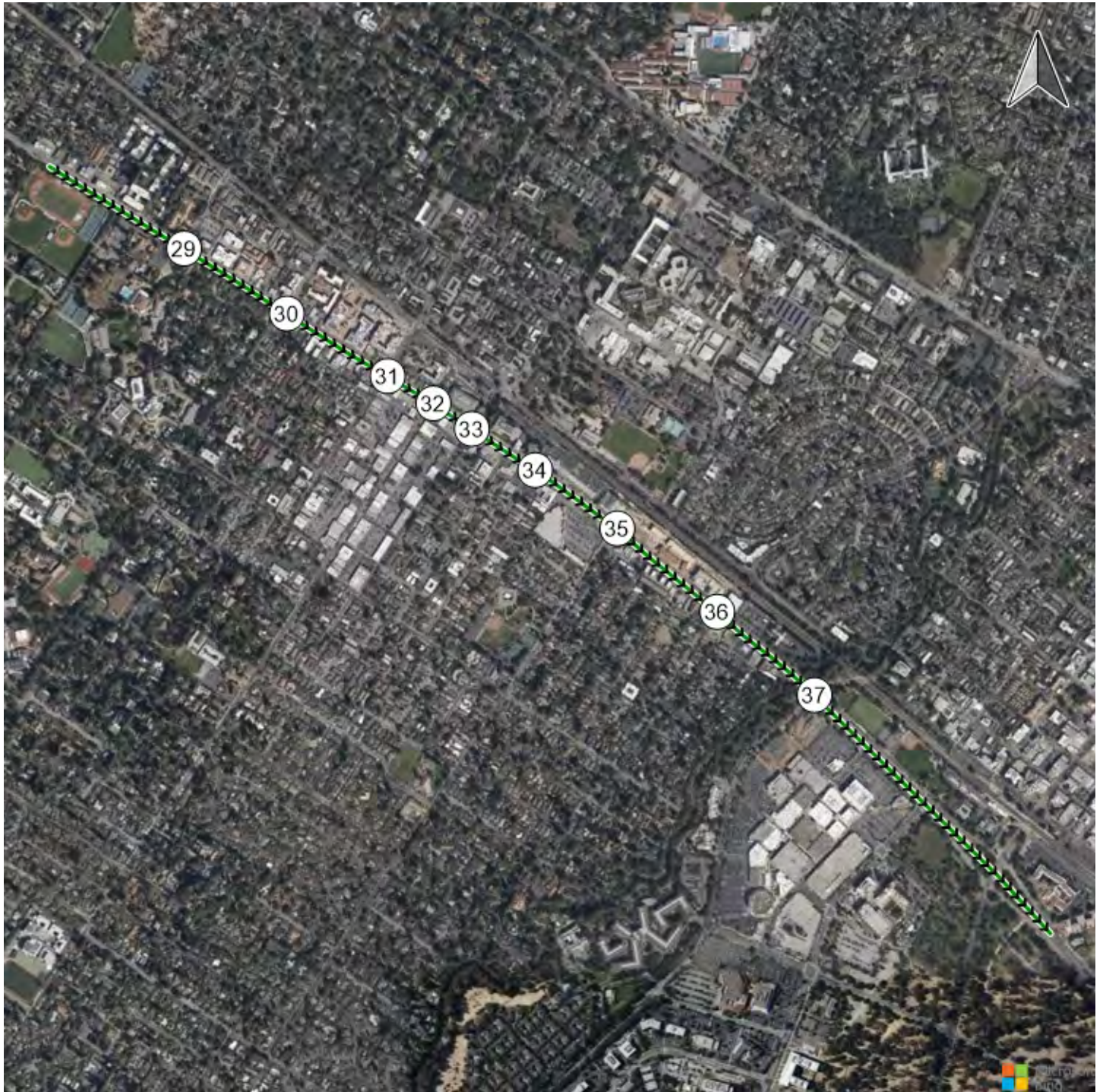
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Version 2021 (SP 0-4)

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Route 1: ECR NB

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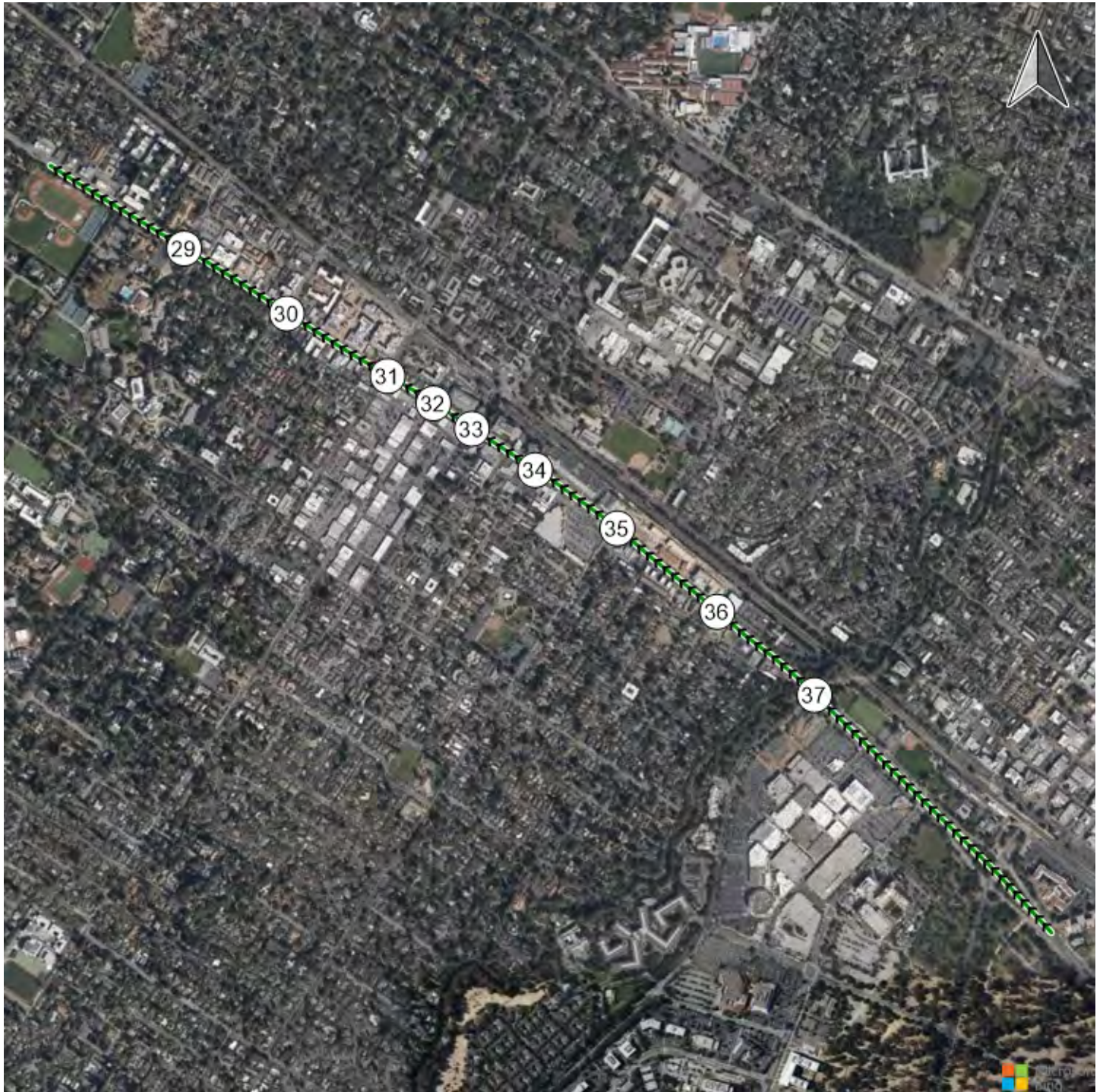
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB





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Version 2021 (SP 0-4)

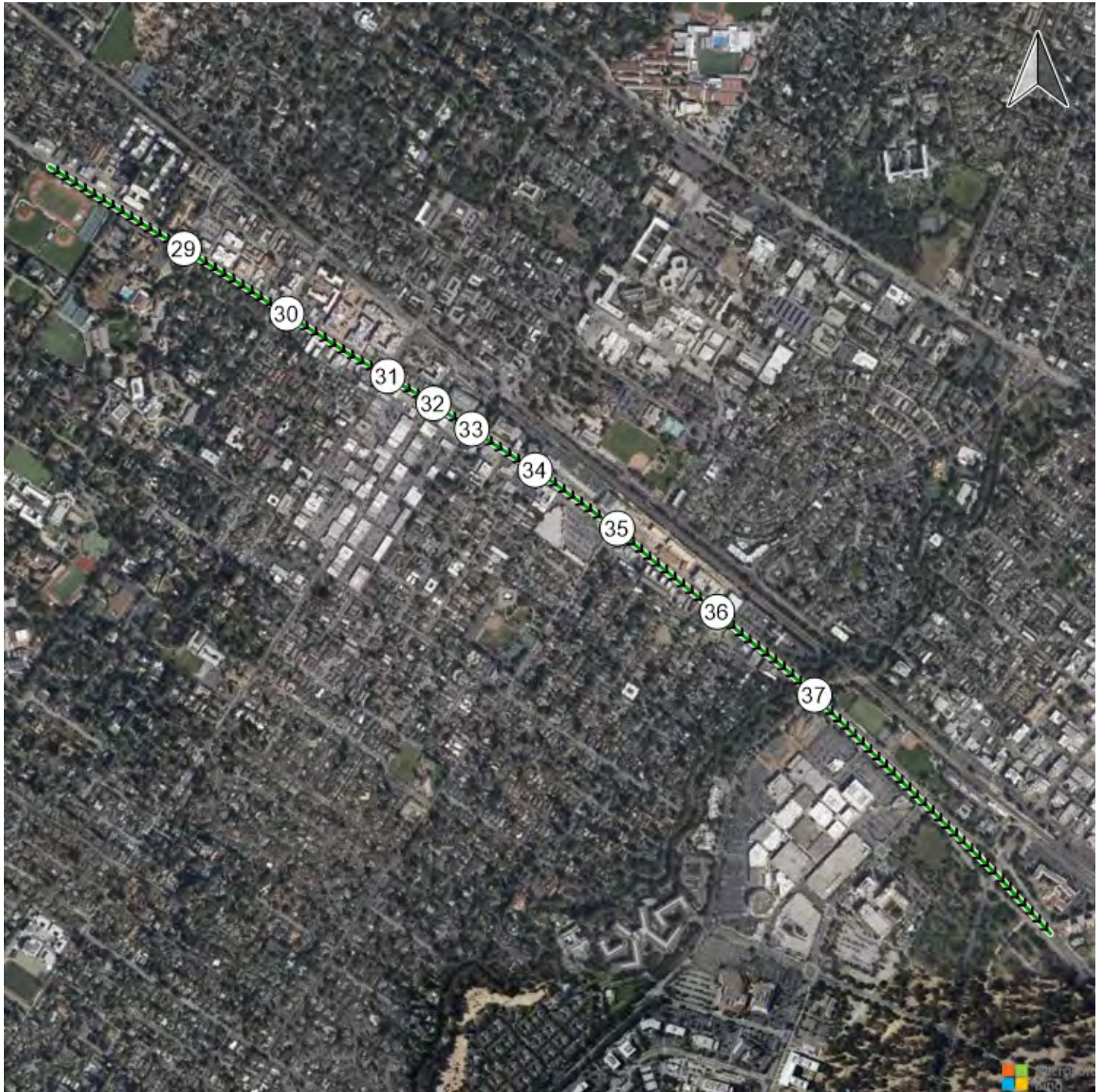
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



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Version 2021 (SP 0-4)

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Route 2: ECR SB

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Vistro File: \\...\Vistro\_AllScenarios\_PM - 12.1.2021.vistro

Scenario 21 Cumulative w/dumbarton PM (2040 vols)

Report File: \\...\Cumulative PM\_DUMB.pdf

12/9/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Left	0.800	19.2	B
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.586	17.8	B
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.840	51.5	D
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.876	47.9	D
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NEB Left	2.287	20.3	C
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 6th Edition	NEB Left	0.532	21.0	C
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NEB Thru	1.158	137.3	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	SB Thru	1.432	280.9	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	WB Right	2.135	535.8	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	SB Right	1.231	122.0	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	WB Right	2.367	445.4	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.603	270.7	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.406	227.4	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.276	221.9	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.693	13.1	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.563	14.1	B
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.713	42.5	D
110	Marsh Road/101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	0.994	22.9	C

131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	SB Thru	1.460	145.6	F
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	WB Left	1.066	63.2	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	2.089	163.0	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.264	237.6	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.114	68.3	E
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	NB Left	0.975	38.3	D
199	Bafront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.940	36.3	D
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	1.504	157.8	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.888	18.6	B
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	WB Right	1.085	251.9	F
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	WB Right	1.375	143.1	F
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	1.521	393.2	F
265	Adam Court/ Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.086	15.8	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↵↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	959	1145	279	1338	444
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	959	1145	279	1338	444
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	245	292	70	341	113
Total Analysis Volume [veh/h]	0	979	1168	279	1365	453
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	7	0	5	0
Pedestrian Clearance [s]	0	0	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.24	0.33	0.40	0.28
s, saturation flow rate [veh/h]	4000	3540	3414	1609
c, Capacity [veh/h]	2122	1785	1411	665
d1, Uniform Delay [s]	11.66	14.65	22.92	19.15
k, delay calibration	0.50	0.50	0.04	0.23
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.72	1.89	2.59	2.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.46	0.65	0.97	0.68
d, Delay for Lane Group [s/veh]	12.38	16.54	25.51	21.73
Lane Group LOS	B	B	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.95	7.34	12.06	6.88
50th-Percentile Queue Length [ft/ln]	123.73	183.60	301.38	172.00
95th-Percentile Queue Length [veh/ln]	8.60	11.79	17.75	11.18
95th-Percentile Queue Length [ft/ln]	214.94	294.70	443.73	279.55

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.38	16.54	0.00	25.51	21.73
Movement LOS		B	B		C	C
d_A, Approach Delay [s/veh]	12.38		16.54		24.57	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	19.19					
Intersection LOS	B					
Intersection V/C	0.800					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	29.73
I_p,int, Pedestrian LOS Score for Intersection	2.866	0.000	2.524
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.81	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.367	2.523	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	49	1326	7	75	1031	249	15	6	412	303	6	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	3.70	0.00	1.70	1.30	7.70	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	326	0	0	0
Total Hourly Volume [veh/h]	49	1326	7	75	1031	249	15	6	86	303	6	4
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	345	2	20	268	65	4	2	22	79	2	1
Total Analysis Volume [veh/h]	51	1381	7	78	1074	259	16	6	90	316	6	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	1			0			0			1		
v_di, Inbound Pedestrian Volume crossing in	1			0			0			1		
v_co, Outbound Pedestrian Volume crossing	0			0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	0			1			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	51	0	12	48	0	0	41	0	0	36	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	99	99	98	98	98	9	9	18	18
g / C, Green / Cycle	0.05	0.71	0.71	0.70	0.70	0.70	0.06	0.06	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.26	0.09	0.36	0.37	0.01	0.03	0.09	0.09
s, saturation flow rate [veh/h]	1761	3549	1859	899	1877	1737	1833	2820	1791	1697
c, Capacity [veh/h]	90	2520	1320	650	1315	1217	114	176	231	219
d1, Uniform Delay [s]	64.84	7.91	7.91	8.27	9.87	10.01	62.26	63.54	58.56	58.56
k, delay calibration	0.08	0.50	0.50	0.14	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	0.40	0.77	0.10	1.48	1.67	0.60	1.72	3.22	3.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.36	0.36	0.12	0.52	0.53	0.19	0.51	0.73	0.73
d, Delay for Lane Group [s/veh]	68.92	8.31	8.68	8.38	11.35	11.68	62.86	65.25	61.78	61.95
Lane Group LOS	E	A	A	A	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.88	5.14	5.52	0.38	9.73	9.39	0.77	1.61	5.97	5.67
50th-Percentile Queue Length [ft/ln]	46.90	128.46	137.94	9.58	243.30	234.66	19.29	40.32	149.17	141.66
95th-Percentile Queue Length [veh/ln]	3.38	8.86	9.37	0.69	14.85	14.41	1.39	2.90	9.97	9.57
95th-Percentile Queue Length [ft/ln]	84.42	221.40	234.25	17.24	371.20	360.27	34.73	72.58	249.32	239.26

**Movement, Approach, & Intersection Results**

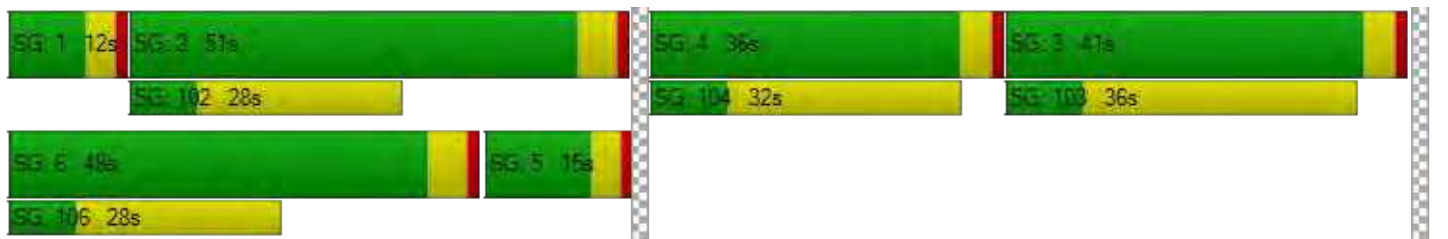
d_M, Delay for Movement [s/veh]	68.92	8.44	8.68	8.38	11.47	11.68	62.86	62.86	65.25	61.86	61.95	61.95
Movement LOS	E	A	A	A	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	10.58			11.34			64.78			61.86		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	17.84											
Intersection LOS	B											
Intersection V/C	0.586											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	58.49	58.49	59.41	59.41
I_p,int, Pedestrian LOS Score for Intersection	2.954	3.187	2.944	2.135
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	657	615	526	454
d_b, Bicycle Delay [s]	31.53	33.60	38.01	41.79
I_b,int, Bicycle LOS Score for Intersection	2.351	2.724	2.282	2.098
Bicycle LOS	B	B	B	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	51.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.840

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	290	675	54	13	989	354	451	34	234	127	85	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	174	0	0	0
Total Hourly Volume [veh/h]	290	675	54	13	989	354	451	34	60	127	85	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	181	15	3	266	95	121	9	16	34	23	11
Total Analysis Volume [veh/h]	312	726	58	14	1063	381	485	37	65	137	91	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			1			1			1		
v_di, Inbound Pedestrian Volume crossing in	1			1			2			1		
v_co, Outbound Pedestrian Volume crossing	0			3			3			1		
v_ci, Inbound Pedestrian Volume crossing mi	1			3			3			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			2			3			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	55	55	12	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	87	87	4	71	71	25	25	25	16	16
g / C, Green / Cycle	0.14	0.62	0.62	0.03	0.51	0.51	0.18	0.18	0.18	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.22	0.01	0.40	0.42	0.15	0.15	0.04	0.08	0.08
s, saturation flow rate [veh/h]	1771	1852	1797	1714	1867	1675	1774	1822	1572	1751	1786
c, Capacity [veh/h]	252	1154	1120	45	946	849	319	328	283	199	203
d1, Uniform Delay [s]	59.92	12.65	12.67	66.82	28.37	29.13	54.97	54.96	48.97	59.55	59.34
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	135.69	0.82	0.85	1.45	6.69	8.78	3.62	3.52	0.30	3.13	2.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.24	0.34	0.35	0.31	0.79	0.82	0.81	0.81	0.23	0.69	0.66
d, Delay for Lane Group [s/veh]	195.61	13.47	13.51	68.27	35.06	37.91	58.59	58.49	49.27	62.68	62.05
Lane Group LOS	F	B	B	E	D	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	18.40	6.11	5.97	0.51	21.82	21.28	9.11	9.35	2.00	4.89	4.75
50th-Percentile Queue Length [ft/ln]	459.92	152.83	149.32	12.71	545.55	531.96	227.85	233.71	50.02	122.35	118.86
95th-Percentile Queue Length [veh/ln]	27.89	10.17	9.98	0.91	29.48	28.84	14.06	14.36	3.60	8.52	8.33
95th-Percentile Queue Length [ft/ln]	697.37	254.20	249.52	22.87	737.07	721.09	351.62	359.06	90.04	213.06	208.26

**Movement, Approach, & Intersection Results**

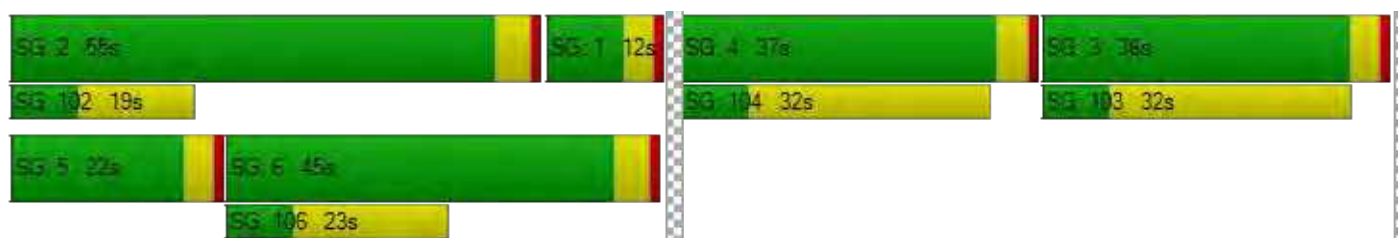
d_M, Delay for Movement [s/veh]	195.61	13.49	13.51	68.27	35.91	37.91	58.54	58.49	49.27	62.68	62.05	62.05
Movement LOS	F	B	B	E	D	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	65.34			36.74			57.51			62.37		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	51.54											
Intersection LOS	D											
Intersection V/C	0.840											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0		11.0	
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	59.37		59.37		59.37		59.37	
I_p,int, Pedestrian LOS Score for Intersection	2.955		3.056		2.713		2.064	
Crosswalk LOS	C		C		B		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	721		578		458		469	
d_b, Bicycle Delay [s]	28.63		35.41		41.66		41.01	
I_b,int, Bicycle LOS Score for Intersection	2.464		2.762		2.815		2.007	
Bicycle LOS	B		C		C		B	

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	47.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	745	61	416	703	68	77	26	2	65	61	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	745	61	416	703	68	77	26	2	65	61	339
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	209	17	117	197	19	22	7	1	18	17	95
Total Analysis Volume [veh/h]	2	837	69	467	790	76	87	29	2	73	69	381
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			6			0			6	
v_di, Inbound Pedestrian Volume crossing in		0			6			0			6	
v_co, Outbound Pedestrian Volume crossing		0			3			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			1			5			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	29	29
g / C, Green / Cycle	0.34	0.34	0.20	0.58	0.58	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.26	0.23	0.24	0.19	0.31
s, saturation flow rate [veh/h]	1859	1644	1795	1885	1818	608	1673
c, Capacity [veh/h]	677	559	361	1090	1051	300	661
d1, Uniform Delay [s]	23.56	23.62	32.07	9.31	9.33	19.88	23.34
k, delay calibration	0.50	0.50	0.24	0.50	0.50	0.24	0.41
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.23	9.56	142.67	1.11	1.17	1.86	7.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.71	0.76	1.29	0.40	0.41	0.39	0.79
d, Delay for Lane Group [s/veh]	29.78	33.18	174.74	10.41	10.50	21.75	31.16
Lane Group LOS	C	C	F	B	B	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.67	8.16	20.92	3.92	3.84	1.86	9.88
50th-Percentile Queue Length [ft/ln]	216.70	203.93	523.02	98.07	96.10	46.39	247.04
95th-Percentile Queue Length [veh/ln]	13.50	12.84	32.13	7.06	6.92	3.34	15.04
95th-Percentile Queue Length [ft/ln]	337.41	321.03	803.19	176.53	172.97	83.51	375.92



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.78	31.24	33.18	174.74	10.45	10.50	21.75	21.75	21.75	31.16	31.16	31.16
Movement LOS	C	C	C	F	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	31.38			68.01			21.75			31.16		
Approach LOS	C			E			C			C		
d_I, Intersection Delay [s/veh]	47.89											
Intersection LOS	D											
Intersection V/C	0.876											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			29.82			29.82			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			3.017			1.819			0.000		
Crosswalk LOS	F			C			A			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	596			1071			681			681		
d_b, Bicycle Delay [s]	19.74			8.66			17.46			17.43		
I_b,int, Bicycle LOS Score for Intersection	2.309			2.659			1.754			2.423		
Bicycle LOS	B			B			A			B		

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.287

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	137	543	481	634	475	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.10	1.30	0.60	1.40	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	137	0	481	634	475	104
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	0	124	163	122	27
Total Analysis Volume [veh/h]	141	0	496	654	490	107
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing in	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	58.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	5	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.0	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	83	83	83	83	83
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	12	12	27	64	38
g / C, Green / Cycle	0.15	0.15	0.32	0.77	0.45
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.28	0.35	0.33
s, saturation flow rate [veh/h]	1781	1588	1791	1891	1806
c, Capacity [veh/h]	267	239	582	1457	818
d1, Uniform Delay [s]	32.56	0.00	26.18	3.35	18.57
k, delay calibration	0.08	0.08	0.23	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.20	0.00	7.45	0.22	5.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.53	0.00	0.85	0.45	0.73
d, Delay for Lane Group [s/veh]	33.76	0.00	33.64	3.57	24.25
Lane Group LOS	C	A	C	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.64	0.00	9.74	2.26	9.73
50th-Percentile Queue Length [ft/ln]	66.11	0.00	243.60	56.47	243.33
95th-Percentile Queue Length [veh/ln]	4.76	0.00	14.86	4.07	14.85
95th-Percentile Queue Length [ft/ln]	119.00	0.00	371.59	101.64	371.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.76	0.00	33.64	3.57	24.25	24.25
Movement LOS	C	A	C	A	C	C
d_A, Approach Delay [s/veh]	33.76		16.54		24.25	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	20.26					
Intersection LOS	C					
Intersection V/C	2.287					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.17	31.17	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.925	2.877	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1105	1578	734
d_b, Bicycle Delay [s]	8.34	1.87	16.69
I_b,int, Bicycle LOS Score for Intersection	1.560	3.457	2.545
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringwood Ave**

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	34	32	32	214	0	287	2	767	135	326	718	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	0.00	0.00	0.00	0.00	2.20	0.00	1.70	0.00	2.10	1.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	8	0	0	57	0	0	0
Total Hourly Volume [veh/h]	34	32	32	214	0	279	2	767	78	326	718	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	8	8	56	0	73	1	202	21	86	189	1
Total Analysis Volume [veh/h]	36	34	34	225	0	294	2	807	82	343	756	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing in	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	58.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.0	2.9	3.0	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	34	34	34	34	82	65	65	80	75	75
g / C, Green / Cycle	0.28	0.28	0.28	0.28	0.69	0.55	0.55	0.66	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.20	0.19	0.00	0.23	0.05	0.39	0.20	0.20
s, saturation flow rate [veh/h]	1421	1719	1128	1540	748	3569	1559	882	1873	1871
c, Capacity [veh/h]	156	481	376	431	535	1946	850	584	1179	1177
d1, Uniform Delay [s]	53.51	32.37	42.15	38.16	7.30	16.03	13.07	10.60	10.33	10.34
k, delay calibration	0.10	0.10	0.25	0.23	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.13	3.49	3.93	0.00	0.65	0.23	4.28	0.72	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.23	0.14	0.60	0.68	0.00	0.41	0.10	0.59	0.32	0.32
d, Delay for Lane Group [s/veh]	54.22	32.50	45.64	42.09	7.31	16.68	13.29	14.89	11.06	11.06
Lane Group LOS	D	C	D	D	A	B	B	B	B	B
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.09	1.54	6.47	8.09	0.02	6.46	1.09	4.12	4.63	4.63
50th-Percentile Queue Length [ft/ln]	27.21	38.58	161.82	202.14	0.41	161.38	27.34	103.08	115.86	115.77
95th-Percentile Queue Length [veh/ln]	1.96	2.78	10.65	12.75	0.03	10.62	1.97	7.42	8.17	8.16
95th-Percentile Queue Length [ft/ln]	48.99	69.44	266.13	318.73	0.75	265.55	49.21	185.55	204.13	204.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	54.22	32.50	32.50	45.64	45.64	42.09	7.31	16.68	13.29	14.89	11.06	11.06
Movement LOS	D	C	C	D	D	D	A	B	B	B	B	B
d_A, Approach Delay [s/veh]	40.02			43.63			16.35			12.25		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	20.98											
Intersection LOS	C											
Intersection V/C	0.532											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	1.979			2.568			3.240			2.876		
Crosswalk LOS	A			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	513			513			757			507		
d_b, Bicycle Delay [s]	33.24			33.50			23.40			33.69		
I_b,int, Bicycle LOS Score for Intersection	1.731			2.429			2.342			2.468		
Bicycle LOS	A			B			B			B		

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	137.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.158

**Intersection Setup**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3669	20	389	970	68	1940
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	16.10	4.90	3.80	9.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3669	20	389	970	68	1940
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	936	5	99	247	17	495
Total Analysis Volume [veh/h]	3744	20	397	990	69	1980
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	90	140	50	140	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	5.8	1.5	5.8	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	158	158	158	158	158	158
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	7.80	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	5.80	2.00	0.00
g_i, Effective Green Time [s]	90	90	40	132	15	59
g / C, Green / Cycle	0.57	0.57	0.25	0.83	0.09	0.37
(v / s)_i Volume / Saturation Flow Rate	0.74	0.01	0.12	0.20	0.02	0.47
s, saturation flow rate [veh/h]	5077	1398	3378	5020	3264	4237
c, Capacity [veh/h]	2883	794	853	4171	309	1577
d1, Uniform Delay [s]	34.25	15.02	50.19	2.82	66.37	49.75
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	135.10	0.02	0.15	0.04	0.13	115.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.30	0.03	0.47	0.24	0.22	1.26
d, Delay for Lane Group [s/veh]	169.36	15.03	50.34	2.86	66.50	165.08
Lane Group LOS	F	B	D	A	E	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	69.40	0.31	6.52	1.42	1.30	37.39
50th-Percentile Queue Length [ft/ln]	1734.89	7.69	162.93	35.52	32.51	934.71
95th-Percentile Queue Length [veh/ln]	100.55	0.55	10.70	2.56	2.34	54.70
95th-Percentile Queue Length [ft/ln]	2513.82	13.84	267.60	63.94	58.52	1367.62

**Movement, Approach, & Intersection Results**

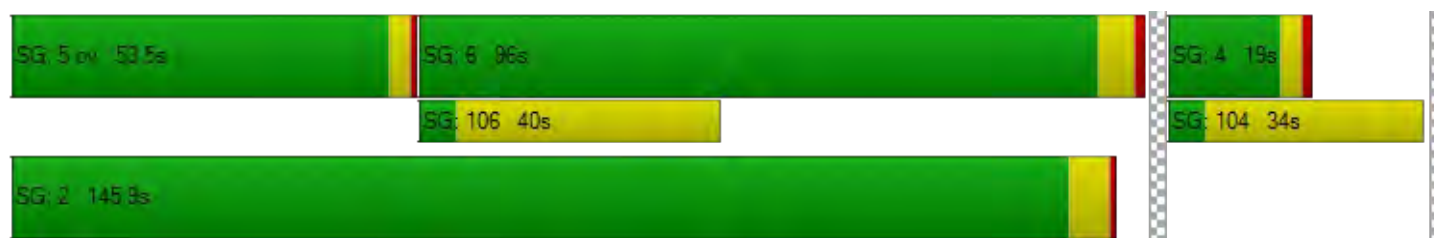
d_M, Delay for Movement [s/veh]	169.36	15.03	50.34	2.86	66.50	165.08
Movement LOS	F	B	D	A	E	F
d_A, Approach Delay [s/veh]	168.54		16.45		161.76	
Approach LOS	F		B		F	
d_I, Intersection Delay [s/veh]	137.31					
Intersection LOS	F					
Intersection V/C	1.158					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	70.48	0.00	70.48
I_p,int, Pedestrian LOS Score for Intersection	3.853	0.000	3.104
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	530	555	189
d_b, Bicycle Delay [s]	42.79	41.35	64.93
I_b,int, Bicycle LOS Score for Intersection	3.630	2.322	1.670
Bicycle LOS	D	B	A

**Sequence**

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	280.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.432

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	213	95	1112	159	332	146	76	2469	301	559	827	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	70	0	0	45	0	0	1
Total Hourly Volume [veh/h]	213	95	1112	159	332	76	76	2469	256	559	827	33
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	24	287	41	86	20	20	636	66	144	213	9
Total Analysis Volume [veh/h]	220	98	1146	164	342	78	78	2545	264	576	853	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			11			11			0	
v_di, Inbound Pedestrian Volume crossing in		0			11			11			0	
v_co, Outbound Pedestrian Volume crossing		8			0			8			0	
v_ci, Inbound Pedestrian Volume crossing mi		8			0			8			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			3			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.0	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	0	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	2.5	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	4.50	4.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	2.50	2.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	15	14	41	9	9	9	67	40	40	67	58	58
g / C, Green / Cycle	0.14	0.13	0.39	0.09	0.09	0.09	0.64	0.38	0.38	0.64	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.13	0.07	0.28	0.09	0.21	0.05	0.08	0.83	0.30	0.41	0.17	0.02
s, saturation flow rate [veh/h]	1749	1479	4141	1748	1606	1443	967	3084	889	1392	4959	1615
c, Capacity [veh/h]	254	195	1597	149	137	123	626	1171	337	927	2722	887
d1, Uniform Delay [s]	44.05	42.54	27.38	48.21	48.21	46.36	7.90	32.70	28.86	24.22	12.95	10.95
k, delay calibration	0.16	0.11	0.15	0.36	0.48	0.11	0.11	0.23	0.27	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.96	1.99	0.88	91.19	693.19	5.28	0.09	529.65	9.59	0.69	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.87	0.50	0.72	1.10	2.49	0.63	0.12	2.17	0.78	0.62	0.31	0.04
d, Delay for Lane Group [s/veh]	56.02	44.53	28.25	139.40	741.40	51.65	7.99	562.36	38.46	24.90	13.02	10.97
Lane Group LOS	E	D	C	F	F	D	A	F	D	C	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	6.30	1.21	7.84	7.75	15.02	2.17	0.33	67.00	6.63	2.79	3.55	0.36
50th-Percentile Queue Length [ft/ln]	157.42	30.29	195.88	193.68	375.48	54.37	8.18	1674.97	165.63	69.83	88.87	9.05
95th-Percentile Queue Length [veh/ln]	10.41	2.18	12.43	12.73	25.66	3.91	0.59	110.17	10.85	5.03	6.40	0.65
95th-Percentile Queue Length [ft/ln]	260.30	54.52	310.65	318.23	641.39	97.86	14.73	2754.34	271.16	125.70	159.97	16.30

**Movement, Approach, & Intersection Results**

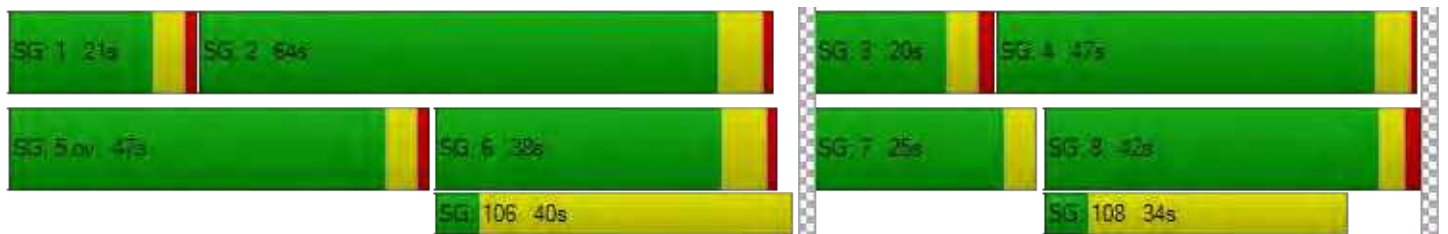
d_M, Delay for Movement [s/veh]	56.02	44.53	28.25	139.40	741.40	51.65	7.99	562.36	38.46	24.90	13.02	10.97
Movement LOS	E	D	C	F	F	D	A	F	D	C	B	B
d_A, Approach Delay [s/veh]	33.51			480.22			499.47			17.65		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	280.92											
Intersection LOS	F											
Intersection V/C	1.432											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.03	0.00	44.03	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.466	0.000	3.255	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	809	712	608	1102
d_b, Bicycle Delay [s]	18.67	21.85	25.50	10.62
I_b,int, Bicycle LOS Score for Intersection	2.767	2.099	3.172	2.365
Bicycle LOS	C	B	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	535.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.135

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	43	1065	287	138	994	54	123	196	35	193	194	264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.50	33.30	7.70	3.50	0.00	0.60	26.70	5.10	0.70	5.90	1.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	43	1065	287	138	994	54	123	196	35	193	194	264
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	303	82	39	282	15	35	56	10	55	55	75
Total Analysis Volume [veh/h]	49	1210	326	157	1130	61	140	223	40	219	220	300
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			86			11			85	
v_di, Inbound Pedestrian Volume crossing in		11			85			12			86	
v_co, Outbound Pedestrian Volume crossing		13			14			14			13	
v_ci, Inbound Pedestrian Volume crossing mi		13			14			14			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			18			7			15	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	20	77	74	17	74	77	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	0.00
g_i, Effective Green Time [s]	90	73	73	90	83	83	33	33
g / C, Green / Cycle	0.69	0.56	0.56	0.69	0.64	0.64	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.09	0.95	1.00	0.40	0.73	0.73	0.90	1.26
s, saturation flow rate [veh/h]	545	826	752	395	826	806	447	587
c, Capacity [veh/h]	164	464	422	161	526	514	150	173
d1, Uniform Delay [s]	33.67	28.46	28.46	42.72	23.56	23.56	53.59	45.14
k, delay calibration	0.22	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.09	320.93	360.13	64.53	83.84	88.20	775.75	1489.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	1.69	1.78	0.97	1.14	1.15	2.68	4.28
d, Delay for Lane Group [s/veh]	35.76	349.39	388.60	107.24	107.39	111.76	829.35	1534.49
Lane Group LOS	D	F	F	F	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.49	54.57	54.21	4.51	27.06	27.03	37.40	76.77
50th-Percentile Queue Length [ft/ln]	12.16	1364.25	1355.32	112.85	676.61	675.77	934.88	1919.16
95th-Percentile Queue Length [veh/ln]	0.88	89.53	90.19	8.00	39.44	39.64	62.91	124.08
95th-Percentile Queue Length [ft/ln]	21.90	2238.36	2254.79	199.96	986.01	991.09	1572.73	3102.06

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	35.76	363.15	388.60	107.24	109.44	111.76	829.35	829.35	829.35	1534.49	1534.49	1534.49
Movement LOS	D	F	F	F	F	F	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	358.26			109.29			829.35			1534.49		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	535.80											
Intersection LOS	F											
Intersection V/C	2.135											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.41	54.41
I_p,int, Pedestrian LOS Score for Intersection	3.360	3.158	2.076	2.448
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1124	1078	505	508
d_b, Bicycle Delay [s]	12.47	13.93	36.42	36.41
I_b,int, Bicycle LOS Score for Intersection	2.867	2.672	2.225	2.779
Bicycle LOS	C	B	B	C

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	122.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.231

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↵		↵		↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	175	933	1212	84	85	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	3.30	2.80	0.00	0.00	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	933	1212	84	85	114
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	251	326	23	23	31
Total Analysis Volume [veh/h]	188	1003	1303	90	91	123
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing in	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	24	106	90	90	24	24
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	21	103	79	79	20	20
g / C, Green / Cycle	0.16	0.79	0.61	0.61	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.15	0.64	0.84	0.86	0.09	0.14
s, saturation flow rate [veh/h]	1270	1576	831	809	1021	897
c, Capacity [veh/h]	203	1251	508	494	155	136
d1, Uniform Delay [s]	53.74	7.58	25.27	25.27	51.22	53.86
k, delay calibration	0.38	0.50	0.50	0.50	0.04	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	38.76	5.47	179.63	196.00	1.30	20.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.92	0.80	1.37	1.41	0.59	0.90
d, Delay for Lane Group [s/veh]	92.50	13.05	204.90	221.27	52.52	74.54
Lane Group LOS	F	B	F	F	D	E
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	8.14	6.62	39.33	40.53	2.82	4.72
50th-Percentile Queue Length [ft/ln]	203.44	165.47	983.14	1013.31	70.58	117.92
95th-Percentile Queue Length [veh/ln]	12.82	10.84	61.46	63.98	5.08	8.28
95th-Percentile Queue Length [ft/ln]	320.40	270.95	1536.43	1599.45	127.05	206.97

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	92.50	13.05	212.52	221.27	52.52	74.54
Movement LOS	F	B	F	F	D	E
d_A, Approach Delay [s/veh]	25.59		213.08		65.18	
Approach LOS	C		F		E	
d_I, Intersection Delay [s/veh]	121.96					
Intersection LOS	F					
Intersection V/C	1.231					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	2.999	2.958	2.118
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.00	7.44	45.70
I_b,int, Bicycle LOS Score for Intersection	2.542	2.709	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	445.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.367

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	



**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1000	649	57	1178	274	421
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	6.50	2.80	2.70	1.80	6.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1000	649	57	1178	274	421
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	269	174	15	317	74	113
Total Analysis Volume [veh/h]	1075	698	61	1267	295	453
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	16.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	84	84	13	100	23	23
g / C, Green / Cycle	0.65	0.65	0.10	0.77	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.83	1.29	0.09	0.99	0.46	0.82
s, saturation flow rate [veh/h]	1293	540	643	1286	648	555
c, Capacity [veh/h]	838	350	63	989	114	97
d1, Uniform Delay [s]	22.83	21.66	58.46	15.00	53.56	53.56
k, delay calibration	0.50	0.50	0.10	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	136.04	456.86	43.45	134.38	742.76	1666.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.28	1.99	0.97	1.28	2.60	4.65
d, Delay for Lane Group [s/veh]	158.87	478.52	101.91	149.37	796.32	1720.02
Lane Group LOS	F	F	F	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	27.00	53.29	2.73	29.15	27.16	48.26
50th-Percentile Queue Length [ft/ln]	674.98	1332.32	68.17	728.81	678.96	1206.38
95th-Percentile Queue Length [veh/ln]	42.34	92.19	4.91	45.78	45.61	77.99
95th-Percentile Queue Length [ft/ln]	1058.46	2304.76	122.71	1144.45	1140.29	1949.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	158.87	478.52	101.91	149.37	796.32	1720.02
Movement LOS	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	284.71		147.19		1355.72	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	445.40					
Intersection LOS	F					
Intersection V/C	2.367					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.448
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.14	3.46	44.22
I_b,int, Bicycle LOS Score for Intersection	3.022	2.655	2.794
Bicycle LOS	C	B	C

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	270.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.603

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐			⇐			⇐ ⇐			⇐ ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	410	1313	270	78	1282	27	50	223	574	399	362	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	410	1313	270	78	1282	27	50	223	399	399	362	11
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	361	74	21	352	7	14	61	110	110	99	3
Total Analysis Volume [veh/h]	451	1443	297	86	1409	30	55	245	438	438	398	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	55	55	8	50	50	36	36	36	16	16	16
g / C, Green / Cycle	0.10	0.43	0.43	0.06	0.39	0.39	0.27	0.27	0.27	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.35	0.47	0.48	0.09	0.51	0.51	0.03	0.25	0.28	0.13	0.31	0.01
s, saturation flow rate [veh/h]	1273	2481	1191	952	1853	960	1810	965	1548	3409	1303	1416
c, Capacity [veh/h]	127	1056	507	59	718	372	496	265	425	420	160	174
d1, Uniform Delay [s]	58.50	37.32	37.32	61.00	39.82	39.82	35.31	45.89	46.51	57.00	57.00	50.36
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.04	0.32	0.41	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1164.26	60.85	81.09	223.20	153.48	163.32	0.04	29.04	47.73	26.02	685.03	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	3.54	1.10	1.13	1.47	1.32	1.32	0.11	0.93	1.03	1.04	2.48	0.07
d, Delay for Lane Group [s/veh]	1222.76	98.17	118.41	284.20	193.31	203.14	35.35	74.92	94.24	83.02	742.03	50.42
Lane Group LOS	F	F	F	F	F	F	D	E	F	F	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	45.28	24.96	26.81	5.58	26.71	28.69	1.33	9.78	19.06	8.40	35.78	0.35
50th-Percentile Queue Length [ft/ln]	1131.92	623.91	670.34	139.60	667.87	717.30	33.16	244.61	476.60	210.02	894.54	8.77
95th-Percentile Queue Length [veh/ln]	70.53	35.54	38.45	10.05	41.42	44.23	2.39	14.91	26.74	13.39	57.08	0.63
95th-Percentile Queue Length [ft/ln]	1763.30	888.57	961.20	251.29	1035.49	1105.70	59.69	372.86	668.56	334.85	1426.90	15.79



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	1222.76	102.05	118.41	284.20	196.53	203.14	35.35	74.92	94.24	83.02	742.03	50.42
Movement LOS	F	F	F	F	F	F	D	E	F	F	F	D
d_A, Approach Delay [s/veh]	334.96			201.61			83.44			391.86		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	270.69											
Intersection LOS	F											
Intersection V/C	1.603											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.477	2.970	2.834	2.783
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.31	21.11	38.54	50.14
I_b,int, Bicycle LOS Score for Intersection	2.765	2.398	3.066	3.033
Bicycle LOS	C	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	227.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.406

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	40	1329	804	270	341	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	40	1329	804	47	341	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	343	207	12	88	0
Total Analysis Volume [veh/h]	41	1370	829	48	352	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	3	42	36	36	36	36
g / C, Green / Cycle	0.03	0.48	0.41	0.41	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.02	0.82	0.49	0.03	0.41	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	1574	850	1596
c, Capacity [veh/h]	54	805	690	645	348	654
d1, Uniform Delay [s]	42.28	22.85	25.92	15.77	25.92	0.00
k, delay calibration	0.04	0.44	0.19	0.15	0.46	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.54	320.27	96.10	0.07	48.58	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	1.70	1.20	0.07	1.01	0.00
d, Delay for Lane Group [s/veh]	49.82	343.12	122.02	15.84	74.50	0.00
Lane Group LOS	D	F	F	B	F	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.99	43.41	15.80	0.57	11.49	0.00
50th-Percentile Queue Length [ft/ln]	24.65	1085.27	395.03	14.25	287.35	0.00
95th-Percentile Queue Length [veh/ln]	1.77	71.57	24.96	1.03	17.17	0.00
95th-Percentile Queue Length [ft/ln]	44.37	1789.22	623.94	25.66	429.23	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	49.82	343.12	122.02	15.84	74.50	0.00
Movement LOS	D	F	F	B	F	A
d_A, Approach Delay [s/veh]	334.60		116.21		74.50	
Approach LOS	F		F		E	
d_I, Intersection Delay [s/veh]	227.37					
Intersection LOS	F					
Intersection V/C	1.406					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	33.58
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.236
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	820	820	820
d_b, Bicycle Delay [s]	15.35	15.32	15.30
I_b,int, Bicycle LOS Score for Intersection	2.724	2.467	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	221.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.276

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	9	1053	4	29	540	18	142	31	39	21	8	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	2.10	0.00	0.00	2.60	27.60	4.30	0.00	17.90	0.00	0.00	6.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	0
Total Hourly Volume [veh/h]	9	1053	4	29	540	18	142	31	21	21	8	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	293	1	8	150	5	39	9	6	6	2	13
Total Analysis Volume [veh/h]	10	1170	4	32	600	20	158	34	23	23	9	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing in	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	153	153	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	1	100	100	4	102	13	13	13	19	19
g / C, Green / Cycle	0.01	0.65	0.65	0.02	0.67	0.08	0.08	0.08	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.92	0.92	0.02	1.04	0.05	0.05	0.05	0.01	0.11
s, saturation flow rate [veh/h]	1095	688	589	1810	593	1748	1840	444	1810	555
c, Capacity [veh/h]	10	449	384	43	395	144	151	37	225	69
d1, Uniform Delay [s]	75.91	26.66	26.66	74.41	25.58	68.22	68.20	67.79	59.52	66.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	119.64	196.85	199.11	22.85	267.57	4.90	4.60	16.41	0.20	30.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	1.41	1.41	0.75	1.57	0.65	0.65	0.63	0.10	0.88
d, Delay for Lane Group [s/veh]	195.55	223.51	225.77	97.26	293.15	73.12	72.80	84.21	59.71	96.54
Lane Group LOS	F	F	F	F	F	E	E	F	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.74	40.19	34.63	1.54	43.03	3.87	4.04	1.06	0.82	2.96
50th-Percentile Queue Length [ft/ln]	18.58	1004.71	865.80	38.44	1075.87	96.74	100.99	26.55	20.46	73.93
95th-Percentile Queue Length [veh/ln]	1.34	63.76	55.65	2.77	71.06	6.97	7.27	1.91	1.47	5.32
95th-Percentile Queue Length [ft/ln]	33.45	1593.98	1391.14	69.19	1776.53	174.14	181.79	47.79	36.83	133.08

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	195.55	224.55	225.77	97.26	293.15	293.15	72.99	72.80	84.21	59.71	96.54	96.54
Movement LOS	F	F	F	F	F	F	E	E	F	E	F	F
d_A, Approach Delay [s/veh]	224.31			283.54			74.16			86.46		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	221.85											
Intersection LOS	F											
Intersection V/C	1.276											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.98	65.98	65.98	65.98
I_p,int, Pedestrian LOS Score for Intersection	2.532	2.753	2.204	2.007
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	261	261	392	392
d_b, Bicycle Delay [s]	57.98	58.15	49.55	49.55
I_b,int, Bicycle LOS Score for Intersection	2.536	2.635	1.944	1.698
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.693

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue					
Base Volume Input [veh/h]	22	693	5	2	691	112	146	2	48	15	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.10	0.00	0.00	3.70	2.40	3.90	0.00	3.20	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	693	5	2	691	112	146	2	48	15	4	6
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	190	1	1	190	31	40	1	13	4	1	2
Total Analysis Volume [veh/h]	24	762	5	2	759	123	160	2	53	16	4	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		19			15			19			15	
v_di, Inbound Pedestrian Volume crossing in		19			15			19			15	
v_co, Outbound Pedestrian Volume crossing		10			8			8			11	
v_ci, Inbound Pedestrian Volume crossing mi		11			8			8			10	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		8			4			4			4	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	73	73	73	73	19	19
g / C, Green / Cycle	0.73	0.73	0.73	0.73	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.04	0.41	0.00	0.49	0.15	0.02
s, saturation flow rate [veh/h]	639	1851	712	1790	1412	1536
c, Capacity [veh/h]	357	1355	440	1310	325	343
d1, Uniform Delay [s]	15.96	6.13	11.73	7.07	38.63	33.61
k, delay calibration	0.50	0.50	0.50	0.50	0.17	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	1.72	0.02	2.78	3.63	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.07	0.57	0.00	0.67	0.66	0.08
d, Delay for Lane Group [s/veh]	16.33	7.85	11.75	9.85	42.26	33.70
Lane Group LOS	B	A	B	A	D	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.35	6.90	0.02	8.91	5.31	0.56
50th-Percentile Queue Length [ft/ln]	8.83	172.47	0.59	222.86	132.77	13.91
95th-Percentile Queue Length [veh/ln]	0.64	11.21	0.04	13.81	9.09	1.00
95th-Percentile Queue Length [ft/ln]	15.90	280.16	1.05	345.28	227.26	25.03

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.33	7.85	7.85	11.75	9.85	9.85	42.26	42.26	42.26	33.70	33.70	33.70
Movement LOS	B	A	A	B	A	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	8.11			9.85			42.26			33.70		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	13.10											
Intersection LOS	B											
Intersection V/C	0.693											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.57			39.57			39.57			39.57		
I_p,int, Pedestrian LOS Score for Intersection	2.406			2.762			1.932			1.737		
Crosswalk LOS	B			C			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1379			1379			458			458		
d_b, Bicycle Delay [s]	4.84			4.83			29.75			29.75		
I_b,int, Bicycle LOS Score for Intersection	2.865			3.018			1.914			1.604		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	14.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	656	123	54	705	10	38	123	5	85	53	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	2.70	0.00	3.30	2.00	10.10	0.00	2.30	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	656	123	54	705	10	38	123	5	85	53	58
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	171	32	14	184	3	10	32	1	22	14	15
Total Analysis Volume [veh/h]	3	683	128	56	734	10	40	128	5	89	55	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing in	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	74	74	74	74	18	18	18	18
g / C, Green / Cycle	0.74	0.74	0.74	0.74	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.08	0.40	0.03	0.07	0.07	0.07
s, saturation flow rate [veh/h]	727	1794	683	1854	1258	1855	1272	1682
c, Capacity [veh/h]	468	1322	417	1366	196	336	194	305
d1, Uniform Delay [s]	10.40	6.32	13.35	5.78	41.94	36.11	43.97	35.99
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	2.14	0.67	1.56	0.51	0.76	1.70	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.61	0.13	0.54	0.20	0.40	0.46	0.38
d, Delay for Lane Group [s/veh]	10.42	8.45	14.02	7.34	42.45	36.87	45.67	36.76
Lane Group LOS	B	A	B	A	D	D	D	D
Critical Lane Group	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.03	7.68	0.75	6.38	0.95	2.95	2.24	2.54
50th-Percentile Queue Length [ft/ln]	0.83	192.08	18.87	159.62	23.79	73.68	56.00	63.59
95th-Percentile Queue Length [veh/ln]	0.06	12.23	1.36	10.53	1.71	5.30	4.03	4.58
95th-Percentile Queue Length [ft/ln]	1.50	305.72	33.97	263.22	42.82	132.62	100.80	114.46

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	10.42	8.45	8.45	14.02	7.34	7.34	42.45	36.87	36.87	45.67	36.76	36.76
Movement LOS	B	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	8.46			7.81			38.16			40.65		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	14.08											
Intersection LOS	B											
Intersection V/C	0.563											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.60			39.60			39.60			39.60		
I_p,int, Pedestrian LOS Score for Intersection	2.516			2.514			2.015			2.164		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.87			4.86			29.79			29.82		
I_b,int, Bicycle LOS Score for Intersection	2.903			2.880			1.845			1.896		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	42.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.713

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	30	286	263	372	125	301	134	483	184	277	681	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	1.10	0.00	1.70	0.00	2.40	1.10	0.50	2.30	6.40	0.00	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	120	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	30	286	143	372	125	0	134	483	184	277	681	22
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	75	38	98	33	0	35	127	48	73	179	6
Total Analysis Volume [veh/h]	32	301	151	392	132	0	141	508	194	292	717	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			6			12			6	
v_di, Inbound Pedestrian Volume crossing in		12			6			12			6	
v_co, Outbound Pedestrian Volume crossing		5			5			4			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			4			5			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		50			19			4			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	20	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	20	20	20	20	20	20	18	18	18	18	25	25	25
g / C, Green / Cycle	0.20	0.20	0.20	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.10	0.14	0.14	0.00	0.08	0.13	0.14	0.13	0.17	0.22	0.19
s, saturation flow rate [veh/h]	1778	1883	1452	1785	1853	1584	1794	1892	1892	1541	1718	1900	1699
c, Capacity [veh/h]	349	370	285	344	357	305	325	343	343	279	428	474	423
d1, Uniform Delay [s]	33.48	39.13	36.27	38.78	38.78	0.00	37.05	39.26	39.59	38.89	34.57	36.57	35.64
k, delay calibration	0.11	0.29	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.13	0.24	0.19
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	10.84	1.52	3.27	3.15	0.00	0.91	2.86	3.49	3.10	2.32	10.02	5.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.09	0.81	0.53	0.75	0.75	0.00	0.43	0.72	0.76	0.69	0.68	0.86	0.78
d, Delay for Lane Group [s/veh]	33.59	49.97	37.79	42.05	41.93	0.00	37.96	42.13	43.09	42.00	36.90	46.59	41.15
Lane Group LOS	C	D	D	D	D	A	D	D	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.66	8.20	3.42	6.36	6.59	0.00	3.18	6.03	6.45	4.71	6.72	10.86	8.17
50th-Percentile Queue Length [ft/ln]	16.39	205.03	85.41	159.06	164.79	0.00	79.47	150.6	161.3	117.8	167.96	271.59	204.37
95th-Percentile Queue Length [veh/ln]	1.18	12.90	6.15	10.50	10.80	0.00	5.72	10.05	10.62	8.27	10.97	16.27	12.86
95th-Percentile Queue Length [ft/ln]	29.50	322.45	153.73	262.47	270.06	0.00	143.0	251.2	265.5	206.8	274.23	406.72	321.59

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.59	49.97	37.79	42.01	41.93	0.00	37.96	42.62	42.00	36.90	44.25	41.15
Movement LOS	C	D	D	D	D	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	45.08			41.99			41.70			42.10		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.46											
Intersection LOS	D											
Intersection V/C	0.713											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.51	39.51	39.51	39.51
I_p,int, Pedestrian LOS Score for Intersection	2.526	4.265	4.404	2.806
Crosswalk LOS	B	E	E	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	565	813	537	675
d_b, Bicycle Delay [s]	26.83	18.07	27.22	22.45
I_b,int, Bicycle LOS Score for Intersection	2.556	4.074	3.080	2.411
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road/101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	22.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.994

**Intersection Setup**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	1961	0	0	1461	570	869
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1961	0	0	1461	570	869
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	495	0	0	369	144	219
Total Analysis Volume [veh/h]	1981	0	0	1476	576	878
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	0	5	0
Pedestrian Clearance [s]	12	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.57	0.42	0.17	0.34
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2070	2094	1183	907
d1, Uniform Delay [s]	15.28	11.36	20.28	25.47
k, delay calibration	0.50	0.50	0.04	0.06
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.95	2.02	0.12	5.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	0.70	0.49	0.97
d, Delay for Lane Group [s/veh]	27.23	13.38	20.40	30.73
Lane Group LOS	C	B	C	C
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	17.50	8.38	4.02	8.33
50th-Percentile Queue Length [ft/ln]	437.40	209.38	100.62	208.24
95th-Percentile Queue Length [veh/ln]	24.36	13.12	7.24	13.06
95th-Percentile Queue Length [ft/ln]	608.89	328.03	181.11	326.57

**Movement, Approach, & Intersection Results**

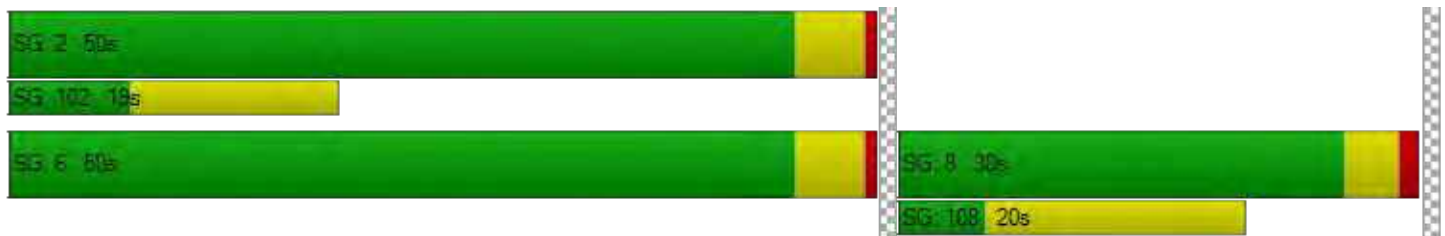
d_M, Delay for Movement [s/veh]	27.23	0.00	0.00	13.38	20.40	30.73
Movement LOS	C			B	C	C
d_A, Approach Delay [s/veh]	27.23		13.38		26.63	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	22.89					
Intersection LOS	C					
Intersection V/C	0.994					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.46	29.71
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.183	2.479
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	646
d_b, Bicycle Delay [s]	7.45	7.47	18.31
I_b,int, Bicycle LOS Score for Intersection	3.194	2.777	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	145.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.460

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	22	285	18	143	696	36	21	132	21	7	18	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	285	18	143	696	36	21	132	21	7	18	47
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	77	5	39	188	10	6	37	6	2	5	13
Total Analysis Volume [veh/h]	24	308	19	155	753	39	24	149	24	8	20	51
Pedestrian Volume [ped/h]	3			4			2			5		



**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	609	947	533	523
Degree of Utilization, x	0.58	1.46	0.37	0.15

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	3.67	45.17	1.69	0.53
95th-Percentile Queue Length [ft]	91.79	1129.25	42.26	13.20
Approach Delay [s/veh]	16.67	231.97	13.66	11.09
Approach LOS	C	F	B	B
Intersection Delay [s/veh]	145.55			
Intersection LOS	F			

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**Intersection Level Of Service Report  
Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	63.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.066

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	197	40	1766	12	31	5	9	752	236	2552	778	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	197	40	1766	12	31	5	9	752	236	2552	778	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	10	460	3	8	1	2	196	61	665	203	4
Total Analysis Volume [veh/h]	205	42	1840	13	32	5	9	783	246	2658	810	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			4			4			0	
v_di, Inbound Pedestrian Volume crossing in		0			4			4			0	
v_co, Outbound Pedestrian Volume crossing		0			13			0			13	
v_ci, Inbound Pedestrian Volume crossing mi		0			13			0			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			13			8			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	6	4	6	4	1	4	1	2	8
Auxiliary Signal Groups			2,3									
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	10	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	10	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	58	11	11	25	32	25	32	59	32	59	58	0
Vehicle Extension [s]	4.5	2.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0	4.5	0.0
Walk [s]	5	0	0	10	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	10	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.1	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	27	117	10	10	38	38	38	76	76
g / C, Green / Cycle	0.17	0.73	0.06	0.06	0.24	0.24	0.24	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.14	0.44	0.02	0.01	0.22	0.22	0.16	0.52	0.49
s, saturation flow rate [veh/h]	1824	4190	1707	1588	1892	1724	1556	5150	1678
c, Capacity [veh/h]	305	2956	137	97	447	407	368	2449	798
d1, Uniform Delay [s]	64.18	12.37	71.59	71.56	59.74	59.74	55.21	41.95	41.95
k, delay calibration	0.41	0.50	0.04	0.04	0.15	0.15	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.20	1.00	0.27	0.45	11.12	11.97	0.79	46.11	40.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.81	0.62	0.20	0.23	0.93	0.93	0.67	1.09	1.03
d, Delay for Lane Group [s/veh]	81.38	13.37	71.86	72.01	70.86	71.71	56.00	88.06	82.80
Lane Group LOS	F	B	E	E	E	E	E	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.21	11.43	1.10	0.89	17.86	16.37	9.12	42.22	40.10
50th-Percentile Queue Length [ft/ln]	280.35	285.83	27.52	22.30	446.55	409.21	228.04	1055.50	1002.61
95th-Percentile Queue Length [veh/ln]	16.71	16.98	1.98	1.61	24.79	23.00	14.07	56.37	51.87
95th-Percentile Queue Length [ft/ln]	417.65	424.46	49.54	40.15	619.83	575.09	351.87	1409.34	1296.83

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	81.38	81.38	13.37	71.86	71.94	72.01	70.86	71.27	56.00	88.06	82.80	82.80
Movement LOS	F	F	B	E	E	E	E	E	E	F	F	F
d_A, Approach Delay [s/veh]	21.42			71.93			67.65			86.82		
Approach LOS	C			E			E			F		
d_I, Intersection Delay [s/veh]	63.22											
Intersection LOS	E											
Intersection V/C	1.066											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	71.25	71.25	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.006	2.661	0.000
Crosswalk LOS	F	B	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	80	349	693	654
d_b, Bicycle Delay [s]	73.73	54.89	34.33	36.27
I_b,int, Bicycle LOS Score for Intersection	5.003	1.601	2.416	7.307
Bicycle LOS	F	A	B	F

**Sequence**

Ring 1	-	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	163.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.089

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1045	199	0	1132	879	0	0	0	0	777	352
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	4.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1045	199	0	1132	879	0	0	0	0	777	352
Peak Hour Factor	1.0000	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	281	50	0	304	236	0	0	0	0	194	98
Total Analysis Volume [veh/h]	0	1124	199	0	1217	945	0	0	0	0	777	391
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing in		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			10			0			0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	0	30	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	21	0	0	0	0	0	59	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		Yes			Yes						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	43	43	43		29	29
g / C, Green / Cycle	0.54	0.54	0.54		0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.22	0.24	1.36		0.22	0.31
s, saturation flow rate [veh/h]	5094	5012	693		3514	1271
c, Capacity [veh/h]	2753	2709	375		1262	457
d1, Uniform Delay [s]	10.81	11.13	17.77		21.03	23.66
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.45	0.54	692.46		0.49	4.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.41	0.45	2.52		0.62	0.86
d, Delay for Lane Group [s/veh]	11.26	11.67	710.23		21.52	28.38
Lane Group LOS	B	B	F		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	3.64	4.06	77.89		5.73	3.50
50th-Percentile Queue Length [ft/ln]	90.95	101.55	1947.21		143.30	87.39
95th-Percentile Queue Length [veh/ln]	6.55	7.31	133.25		9.66	6.29
95th-Percentile Queue Length [ft/ln]	163.71	182.79	3331.27		241.47	157.29

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	11.26	0.00	0.00	11.67	710.23	0.00	0.00	0.00	0.00	21.52	28.38
Movement LOS		B			B	F					C	C
d_A, Approach Delay [s/veh]	11.26		317.01				0.00		23.82			
Approach LOS	B		F				A		C			
d_I, Intersection Delay [s/veh]	162.96											
Intersection LOS	F											
Intersection V/C	2.089											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.970	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	426	426	0	1377
d_b, Bicycle Delay [s]	24.77	24.88	39.95	3.88
I_b,int, Bicycle LOS Score for Intersection	2.178	2.749	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	237.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.264

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)			Eastbound			Northwestbound		
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1309	459	0	1709	674	0	0	0	296	0	859
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1309	459	0	1709	674	0	0	0	296	0	859
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	334	117	0	436	169	0	0	0	74	0	239
Total Analysis Volume [veh/h]	0	1336	468	0	1744	674	0	0	0	296	0	954
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	20	0	0	20	0	0	0	0	60	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	L	R
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	24	48	48
g / C, Green / Cycle	0.30	0.30	0.30	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.44	0.30	0.57	0.08	0.57
s, saturation flow rate [veh/h]	3051	1579	3051	3514	1685
c, Capacity [veh/h]	915	474	915	2108	1011
d1, Uniform Delay [s]	27.96	27.56	27.96	6.99	14.75
k, delay calibration	0.50	0.50	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	212.84	38.50	411.45	0.03	5.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.46	0.99	1.91	0.14	0.94
d, Delay for Lane Group [s/veh]	240.81	66.06	439.41	7.02	20.09
Lane Group LOS	F	E	F	A	C
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	23.56	13.41	40.39	0.98	7.34
50th-Percentile Queue Length [ft/ln]	589.02	335.27	1009.85	24.45	183.58
95th-Percentile Queue Length [veh/ln]	37.95	19.42	66.16	1.76	11.79
95th-Percentile Queue Length [ft/ln]	948.79	485.42	1653.93	44.01	294.69

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	240.81	66.06	0.00	439.41	0.00	0.00	0.00	0.00	7.02	0.00	20.09
Movement LOS		F	E		F					A		C
d_A, Approach Delay [s/veh]	195.47		439.41		0.00		16.99					
Approach LOS	F		F		A		B					
d_I, Intersection Delay [s/veh]	237.64											
Intersection LOS	F											
Intersection V/C	1.264											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	31.48	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.151	1.419	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400	0	1401
d_b, Bicycle Delay [s]	25.60	25.63	39.97	3.59
I_b,int, Bicycle LOS Score for Intersection	2.552	2.519	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	68.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.114

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←↔→		↑↑↑↔		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	749	582	2490	348	223	1819
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	749	582	2490	348	223	1819
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	201	156	669	94	60	489
Total Analysis Volume [veh/h]	805	626	2677	374	240	1956
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	10	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	64	64
g / C, Green / Cycle	0.21	0.21	0.53	0.53	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.24	0.41	0.53	0.24	0.68	0.39
s, saturation flow rate [veh/h]	3361	1543	5049	1579	351	4979
c, Capacity [veh/h]	719	330	2700	844	299	3387
d1, Uniform Delay [s]	36.75	36.55	21.54	13.21	28.51	7.87
k, delay calibration	0.05	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	56.26	414.47	3.33	0.14	19.93	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.12	1.90	0.99	0.44	0.80	0.58
d, Delay for Lane Group [s/veh]	93.01	451.02	24.87	13.35	48.44	7.93
Lane Group LOS	F	F	C	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.64	45.33	18.31	4.52	3.20	5.84
50th-Percentile Queue Length [ft/ln]	340.92	1133.34	457.64	113.08	80.10	145.99
95th-Percentile Queue Length [veh/ln]	20.87	71.72	25.32	8.01	5.77	9.80
95th-Percentile Queue Length [ft/ln]	521.78	1793.01	633.06	200.28	144.17	245.07

**Movement, Approach, & Intersection Results**

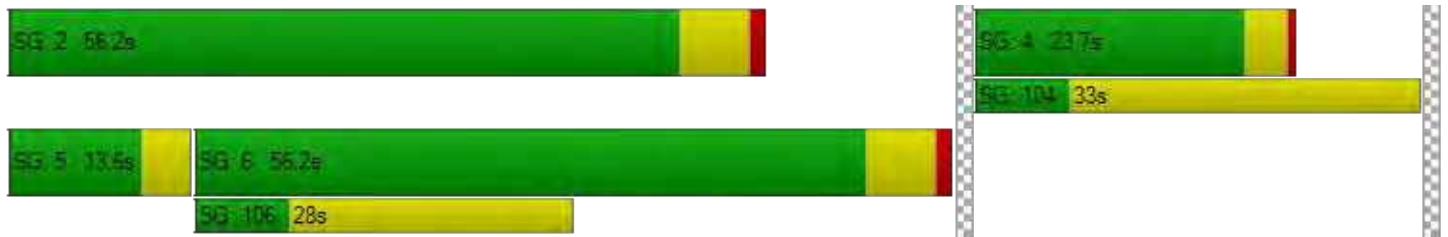
d_M, Delay for Movement [s/veh]	93.01	451.02	24.87	13.35	48.44	7.93
Movement LOS	F	F	C	B	D	A
d_A, Approach Delay [s/veh]	249.63		23.46		12.36	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	68.27					
Intersection LOS	E					
Intersection V/C	1.114					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.40	36.40	36.40
I_p,int, Pedestrian LOS Score for Intersection	2.976	3.405	3.361
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	428	1070	1070
d_b, Bicycle Delay [s]	29.01	10.12	10.12
I_b,int, Bicycle LOS Score for Intersection	1.560	3.238	2.767
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.975

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	1019	90	2679	99	74	2245
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1019	90	2679	99	74	2245
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	260	23	683	25	19	573
Total Analysis Volume [veh/h]	1040	92	2734	101	76	2291
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	25	25	50	50	5	59
g / C, Green / Cycle	0.26	0.26	0.53	0.53	0.05	0.62
(v / s)_i Volume / Saturation Flow Rate	0.30	0.06	0.54	0.06	0.04	0.46
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	910	424	2659	842	100	3104
d1, Uniform Delay [s]	35.09	27.43	22.59	11.44	44.32	12.48
k, delay calibration	0.06	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	66.05	0.09	14.45	0.02	4.32	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.14	0.22	1.03	0.12	0.76	0.74
d, Delay for Lane Group [s/veh]	101.14	27.53	37.04	11.46	48.64	12.61
Lane Group LOS	F	C	F	B	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	18.72	1.65	20.30	0.97	1.82	9.07
50th-Percentile Queue Length [ft/ln]	468.11	41.29	507.45	24.30	45.47	226.68
95th-Percentile Queue Length [veh/ln]	27.84	2.97	28.30	1.75	3.27	14.01
95th-Percentile Queue Length [ft/ln]	696.11	74.32	707.40	43.73	81.84	350.14

**Movement, Approach, & Intersection Results**

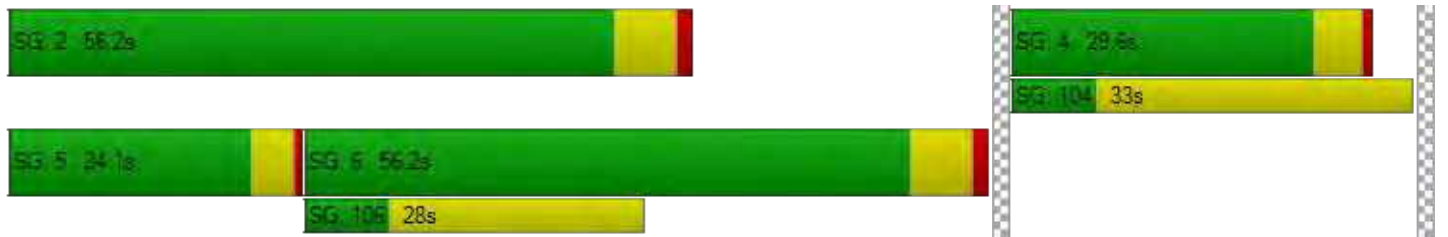
d_M, Delay for Movement [s/veh]	101.14	27.53	37.04	11.46	48.64	12.61
Movement LOS	F	C	F	B	D	B
d_A, Approach Delay [s/veh]	95.15		36.13		13.77	
Approach LOS	F		D		B	
d_I, Intersection Delay [s/veh]	38.32					
Intersection LOS	D					
Intersection V/C	0.975					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.19	37.19	37.19
I_p,int, Pedestrian LOS Score for Intersection	2.399	3.855	3.681
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	526	1051	1051
d_b, Bicycle Delay [s]	25.84	10.70	10.70
I_b,int, Bicycle LOS Score for Intersection	1.560	3.119	2.861
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bafront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.940

**Intersection Setup**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑↑		⇐⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	581	164	2486	60	48	1264
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.80	14.80	4.10	4.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	581	164	2486	60	48	1264
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	42	634	15	12	322
Total Analysis Volume [veh/h]	593	167	2537	61	49	1290
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	10	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	57	57
g / C, Green / Cycle	0.23	0.23	0.57	0.57	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.56	0.04	0.10	0.29
s, saturation flow rate [veh/h]	1438	1365	4507	1406	471	4470
c, Capacity [veh/h]	330	313	2588	807	342	2936
d1, Uniform Delay [s]	33.54	33.54	18.07	8.26	20.41	7.21
k, delay calibration	0.50	0.50	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	104.70	112.89	2.22	0.01	0.07	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.17	1.19	0.98	0.08	0.14	0.44
d, Delay for Lane Group [s/veh]	138.25	146.43	20.29	8.27	20.48	7.25
Lane Group LOS	F	F	C	A	C	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.35	16.23	14.85	0.48	0.14	3.29
50th-Percentile Queue Length [ft/ln]	408.81	405.70	371.31	11.88	3.46	82.18
95th-Percentile Queue Length [veh/ln]	24.96	24.97	21.17	0.86	0.25	5.92
95th-Percentile Queue Length [ft/ln]	624.01	624.28	529.32	21.39	6.23	147.92

**Movement, Approach, & Intersection Results**

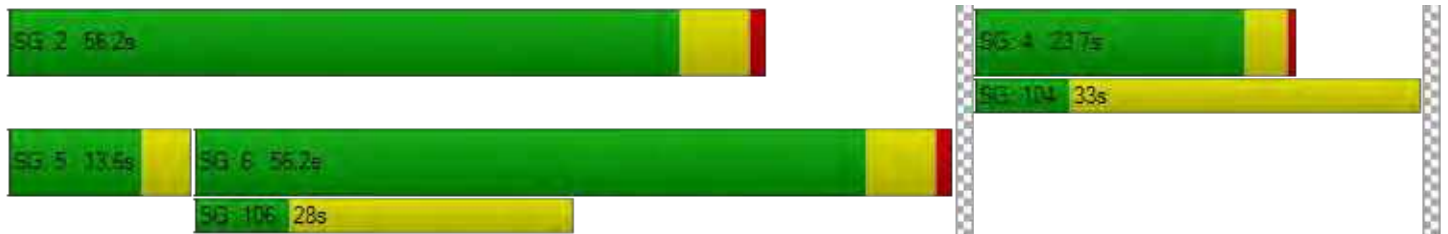
d_M, Delay for Movement [s/veh]	141.12	146.43	20.29	8.27	20.48	7.25
Movement LOS	F	F	C	A	C	A
d_A, Approach Delay [s/veh]	142.26		20.01		7.74	
Approach LOS	F		C		A	
d_I, Intersection Delay [s/veh]	36.29					
Intersection LOS	D					
Intersection V/C	0.940					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.21	33.21	33.21
I_p,int, Pedestrian LOS Score for Intersection	2.383	3.216	3.216
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	460	1149	1149
d_b, Bicycle Delay [s]	25.81	7.88	7.88
I_b,int, Bicycle LOS Score for Intersection	2.814	2.989	2.296
Bicycle LOS	C	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	157.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.504

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	483	399	19	359	191	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	483	399	19	359	191	20
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	139	115	5	103	55	6
Total Analysis Volume [veh/h]	555	459	22	413	220	23
Pedestrian Volume [ped/h]	0		0		0	



**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	1014	616	527
Degree of Utilization, x	1.50	0.71	0.46

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	50.09	5.76	2.41
95th-Percentile Queue Length [ft]	1252.30	144.11	60.22
Approach Delay [s/veh]	250.30	21.71	15.57
Approach LOS	F	C	C
Intersection Delay [s/veh]	157.82		
Intersection LOS	F		

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**Intersection Level Of Service Report  
Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

**Intersection Setup**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	0	179	2537	24	49	1332
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	19.20	3.80	3.80	8.60	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	179	2537	24	49	1332
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	49	697	7	13	366
Total Analysis Volume [veh/h]	0	197	2788	26	54	1464
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	10	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	0.5	0.5	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	82	82	82	82	82
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	15	50	50	57	57
g / C, Green / Cycle	0.18	0.61	0.61	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.16	0.62	0.02	0.25	0.34
s, saturation flow rate [veh/h]	1233	4518	1410	214	4342
c, Capacity [veh/h]	222	2761	862	224	3035
d1, Uniform Delay [s]	32.75	15.91	6.31	20.33	5.59
k, delay calibration	0.13	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.61	7.55	0.01	0.20	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.89	1.01	0.03	0.24	0.48
d, Delay for Lane Group [s/veh]	46.36	23.47	6.31	20.53	5.63
Lane Group LOS	D	F	A	C	A
Critical Lane Group	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.53	15.96	0.16	0.23	2.91
50th-Percentile Queue Length [ft/ln]	113.26	398.99	3.96	5.83	72.78
95th-Percentile Queue Length [veh/ln]	8.02	22.69	0.28	0.42	5.24
95th-Percentile Queue Length [ft/ln]	200.53	567.24	7.12	10.49	131.01

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	46.36	23.47	6.31	20.53	5.63
Movement LOS		D	F	A	C	A
d_A, Approach Delay [s/veh]	46.36		23.31		6.16	
Approach LOS	D		C		A	
d_I, Intersection Delay [s/veh]	18.56					
Intersection LOS	B					
Intersection V/C	0.888					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	-6.2	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.30	30.60	30.60
I_p,int, Pedestrian LOS Score for Intersection	1.911	3.184	3.216
Crosswalk LOS	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	1224	1224
d_b, Bicycle Delay [s]	23.31	6.16	6.16
I_b,int, Bicycle LOS Score for Intersection	1.560	3.107	2.395
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	251.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.085

**Intersection Setup**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Base Volume Input [veh/h]	75	367	27	131	414	60	412	21	501	270	18	678
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	367	27	131	414	60	412	21	501	270	18	678
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	104	8	37	118	17	117	6	142	77	5	193
Total Analysis Volume [veh/h]	85	417	31	149	470	68	468	24	569	307	20	770
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing in	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing mi	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	11	46	0	11	46	0	0	36	0	0	21	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	50	0	15	50	0	0	40	0	0	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	46	11	46	36	36	21	21
g / C, Green / Cycle	0.08	0.35	0.08	0.35	0.28	0.28	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.05	0.24	0.04	0.30	0.28	0.39	0.33	0.35
s, saturation flow rate [veh/h]	1767	1833	3431	1781	1771	1469	1687	1577
c, Capacity [veh/h]	149	648	290	630	490	407	273	255
d1, Uniform Delay [s]	57.22	35.92	56.94	38.88	47.00	45.80	54.50	54.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.75	5.95	6.35	13.76	41.47	193.99	468.24	531.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.69	0.51	0.85	1.00	1.40	2.01	2.15
d, Delay for Lane Group [s/veh]	71.97	41.87	63.29	52.64	88.47	239.78	522.74	586.45
Lane Group LOS	E	D	E	D	F	F	F	F
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	3.31	13.20	2.61	18.17	21.40	34.64	44.36	45.96
50th-Percentile Queue Length [ft/ln]	82.67	329.93	65.15	454.28	535.00	866.06	1109.03	1148.93
95th-Percentile Queue Length [veh/ln]	5.95	19.15	4.69	25.16	29.05	52.72	69.54	72.39
95th-Percentile Queue Length [ft/ln]	148.80	478.87	117.27	629.05	726.25	1318.02	1738.44	1809.87

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	71.97	41.87	41.87	63.29	52.64	52.64	88.47	88.47	239.78	522.74	522.74	568.12
Movement LOS	E	D	D	E	D	D	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	46.67			54.95			169.62			554.59		
Approach LOS	D			D			F			F		
d_I, Intersection Delay [s/veh]	251.92											
Intersection LOS	F											
Intersection V/C	1.085											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	56.31	56.31
I_p,int, Pedestrian LOS Score for Intersection	2.570	2.775	2.360	2.467
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	708	708	554	323
d_b, Bicycle Delay [s]	27.14	27.14	33.98	45.70
I_b,int, Bicycle LOS Score for Intersection	2.439	2.693	3.310	3.370
Bicycle LOS	B	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	143.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.375

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
Base Volume Input [veh/h]	362	54	39	339	146	3	49	8	242	0	490	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	362	54	39	339	146	3	49	8	242	0	490	74
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	14	10	85	37	1	12	2	61	0	123	19
Total Analysis Volume [veh/h]	362	54	39	339	146	3	49	8	242	0	490	74
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			8			7		
v_di, Inbound Pedestrian Volume crossing in	0			0			7			8		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	41	0	0	27	0	0	22	0	0	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	38	22	22	18	38	38
g / C, Green / Cycle	0.43	0.24	0.24	0.20	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.83	0.21	0.09	0.33	0.18	0.18
s, saturation flow rate [veh/h]	547	1609	1680	899	1629	1476
c, Capacity [veh/h]	305	386	402	181	733	628
d1, Uniform Delay [s]	35.80	33.03	28.61	36.00	17.96	18.20
k, delay calibration	0.50	0.11	0.11	0.45	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	238.91	6.56	0.57	313.53	1.63	2.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.49	0.88	0.37	1.65	0.40	0.43
d, Delay for Lane Group [s/veh]	274.71	39.59	29.18	349.53	19.59	20.34
Lane Group LOS	F	D	C	F	B	C
Critical Lane Group	Yes	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	26.96	7.64	2.71	19.67	4.40	4.16
50th-Percentile Queue Length [ft/ln]	673.89	191.10	67.66	491.80	109.94	103.99
95th-Percentile Queue Length [veh/ln]	44.10	12.18	4.87	32.64	7.84	7.49
95th-Percentile Queue Length [ft/ln]	1102.57	304.46	121.78	815.91	195.92	187.17

**Movement, Approach, & Intersection Results**

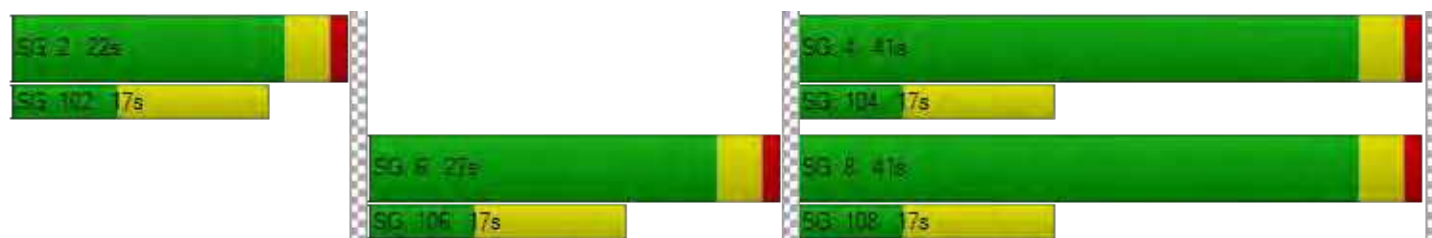
d_M, Delay for Movement [s/veh]	274.71	274.71	274.71	39.59	29.18	29.18	349.53	349.53	349.53	19.59	19.89	20.34
Movement LOS	F	F	F	D	C	C	F	F	F	B	B	C
d_A, Approach Delay [s/veh]	274.71			36.41			349.53			19.95		
Approach LOS	F			D			F			B		
d_I, Intersection Delay [s/veh]	143.15											
Intersection LOS	F											
Intersection V/C	1.375											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	34.72
I_p,int, Pedestrian LOS Score for Intersection	2.436	2.114	2.659	2.158
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	821	511	400	821
d_b, Bicycle Delay [s]	15.64	24.98	28.85	15.64
I_b,int, Bicycle LOS Score for Intersection	2.310	2.365	2.053	2.025
Bicycle LOS	B	B	B	B

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-








**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	393.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.521

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	172	133	260	291	175	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	172	133	260	291	175	50
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	40	78	88	53	15
Total Analysis Volume [veh/h]	207	160	313	351	211	60
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	1.52	0.20	0.25	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	393.16	371.28	8.75	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	24.80	24.80	0.97	0.97	0.00	0.00
95th-Percentile Queue Length [ft/ln]	620.07	620.07	24.29	24.29	0.00	0.00
d_A, Approach Delay [s/veh]	383.62		4.13		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	110.24					
Intersection LOS	F					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/ Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.086

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	99	210	35	15	30	217
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.90	7.90	14.00	14.00	12.70	17.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	210	35	15	30	217
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	65	11	5	9	67
Total Analysis Volume [veh/h]	122	259	43	19	37	268
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.08	0.00	0.00	0.00	0.09	0.28
d_M, Delay for Movement [s/veh]	7.60	0.00	0.00	0.00	15.78	11.10
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.26	0.26	0.00	0.00	1.66	1.66
95th-Percentile Queue Length [ft/ln]	6.61	6.61	0.00	0.00	41.48	41.48
d_A, Approach Delay [s/veh]	2.44		0.00		11.67	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	6.00					
Intersection LOS	C					

Vistro File: \\...\Vistro\_AllScenarios\_PM - 12.1.2021.vistro

Scenario 21 Cumulative w/dumbarton PM (2040 vols)

Report File: \\...\Cumulative PM\_DUMB.pdf

12/9/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	959		1145		1338	444	3886

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	49	1326	7	75	1031	249	15	6	412	303	6	4	3483

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	290	675	54	13	989	354	451	34	234	127	85	40	3346

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	2	745	61	416	703	68	77	26	2	65	61	339	2565

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	137	543	481	634	475	104	2374

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	34	32	32	214	0	287	2	767	135	326	718	2	2549

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84)/University Ave (SR 109)	3669	20	389	970	68	1940	7056

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	213	95	1112	159	332	146	76	2469	301	559	827	34	6323

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	43	1065	287	138	994	54	123	196	35	193	194	264	3586

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	175	933	1212	84	85	114	2603

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1000	649	57	1178	274	421	3579

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	410	1313	270	78	1282	27	50	223	574	399	362	56	5044

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	40	1329	804	270	341	40	2824

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	9	1053	4	29	540	18	142	31	39	21	8	47	1941

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	22	693	5	2	691	112	146	2	48	15	4	6	1746

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	3	656	123	54	705	10	38	123	5	85	53	58	1913

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	30	286	263	372	125	301	134	483	184	277	681	22	3158

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road/101 NB Ramps	1961		1461		570	869	4861

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	22	285	18	143	696	36	21	132	21	7	18	47	1446

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	197	40	1766	12	31	5	9	752	236	2552	778	14	6392

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	1045	199	1132	879	777	352	4384

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1309	459	1709	674	296	859	5306

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	749	582	2490	348	223	1819	6211

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	1019	90	2679	99	74	2245	6206

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	581	164	2486	60	48	1264	4603

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	483	399	19	359	191	20	1471

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	179		2537	24	49	1332	4121

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	75	367	27	131	414	60	412	21	501	270	18	678	2974

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	362	54	39	339	146	3	49	8	242	0	490	74	1806

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	172	133	260	291	175	50	1081

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	99	210	35	15	30	217	606



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Scenario 21 Cumulative w/dumbarton PM (2040 vols)

Report File: \\...\Cumulative PM\_DUMB.pdf

12/9/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	959		1145		1338	444	3886
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>		<b>959</b>		<b>1145</b>		<b>1338</b>	<b>444</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	49	1326	7	75	1031	249	15	6	412	303	6	4	3483	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>49</b>	<b>1326</b>	<b>7</b>	<b>75</b>	<b>1031</b>	<b>249</b>	<b>15</b>	<b>6</b>	<b>412</b>	<b>303</b>	<b>6</b>	<b>4</b>	<b>3483</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	290	675	54	13	989	354	451	34	234	127	85	40	3346	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>290</b>	<b>675</b>	<b>54</b>	<b>13</b>	<b>989</b>	<b>354</b>	<b>451</b>	<b>34</b>	<b>234</b>	<b>127</b>	<b>85</b>	<b>40</b>	<b>3346</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	2	745	61	416	703	68	77	26	2	65	61	339	2565	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>		<b>2</b>	<b>745</b>	<b>61</b>	<b>416</b>	<b>703</b>	<b>68</b>	<b>77</b>	<b>26</b>	<b>2</b>	<b>65</b>	<b>61</b>	<b>339</b>	<b>2565</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	137	543	481	634	475	104	2374
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>137</b>	<b>543</b>	<b>481</b>	<b>634</b>	<b>475</b>	<b>104</b>	<b>2374</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	Final Base	34	32	32	214	0	287	2	767	135	326	718	2	2549
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>34</b>	<b>32</b>	<b>32</b>	<b>214</b>	<b>0</b>	<b>287</b>	<b>2</b>	<b>767</b>	<b>135</b>	<b>326</b>	<b>718</b>	<b>2</b>	<b>2549</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	3669	20	389	970	68	1940	7056
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3669</b>	<b>20</b>	<b>389</b>	<b>970</b>	<b>68</b>	<b>1940</b>	<b>7056</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	213	95	1112	159	332	146	76	2469	301	559	827	34	6323
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>213</b>	<b>95</b>	<b>1112</b>	<b>159</b>	<b>332</b>	<b>146</b>	<b>76</b>	<b>2469</b>	<b>301</b>	<b>559</b>	<b>827</b>	<b>34</b>	<b>6323</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	43	1065	287	138	994	54	123	196	35	193	194	264	3586	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>43</b>	<b>1065</b>	<b>287</b>	<b>138</b>	<b>994</b>	<b>54</b>	<b>123</b>	<b>196</b>	<b>35</b>	<b>193</b>	<b>194</b>	<b>264</b>	<b>3586</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	175	933	1212	84	85	114	2603
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>175</b>	<b>933</b>	<b>1212</b>	<b>84</b>	<b>85</b>	<b>114</b>	<b>2603</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1000	649	57	1178	274	421	3579
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1000</b>	<b>649</b>	<b>57</b>	<b>1178</b>	<b>274</b>	<b>421</b>	<b>3579</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
20	Willow Rd (SR 114)/Newbridge St	Final Base	410	1313	270	78	1282	27	50	223	574	399	362	56	5044	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>410</b>	<b>1313</b>	<b>270</b>	<b>78</b>	<b>1282</b>	<b>27</b>	<b>50</b>	<b>223</b>	<b>574</b>	<b>399</b>	<b>362</b>	<b>56</b>	<b>5044</b>	

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	40	1329	804	270	341	40	2824
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>40</b>	<b>1329</b>	<b>804</b>	<b>270</b>	<b>341</b>	<b>40</b>	<b>2824</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	9	1053	4	29	540	18	142	31	39	21	8	47	1941
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>1053</b>	<b>4</b>	<b>29</b>	<b>540</b>	<b>18</b>	<b>142</b>	<b>31</b>	<b>39</b>	<b>21</b>	<b>8</b>	<b>47</b>	<b>1941</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	22	693	5	2	691	112	146	2	48	15	4	6	1746
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>693</b>	<b>5</b>	<b>2</b>	<b>691</b>	<b>112</b>	<b>146</b>	<b>2</b>	<b>48</b>	<b>15</b>	<b>4</b>	<b>6</b>	<b>1746</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	3	656	123	54	705	10	38	123	5	85	53	58	1913
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3</b>	<b>656</b>	<b>123</b>	<b>54</b>	<b>705</b>	<b>10</b>	<b>38</b>	<b>123</b>	<b>5</b>	<b>85</b>	<b>53</b>	<b>58</b>	<b>1913</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
25	Middlefield Rd- Willow Rd	Final Base	30	286	263	372	125	301	134	483	184	277	681	22	3158	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>30</b>	<b>286</b>	<b>263</b>	<b>372</b>	<b>125</b>	<b>301</b>	<b>134</b>	<b>483</b>	<b>184</b>	<b>277</b>	<b>681</b>	<b>22</b>	<b>3158</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road/101 NB Ramps	Final Base	1961		1461		570	869	4861
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1961</b>		<b>1461</b>		<b>570</b>	<b>869</b>	<b>4861</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
131	Chilco Street/Hamilton Avenue	Final Base	22	285	18	143	696	36	21	132	21	7	18	47	1446	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>285</b>	<b>18</b>	<b>143</b>	<b>696</b>	<b>36</b>	<b>21</b>	<b>132</b>	<b>21</b>	<b>7</b>	<b>18</b>	<b>47</b>	<b>1446</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
163	Bayfront Expy/Marsh Rd	Final Base	197	40	1766	12	31	5	9	752	236	2552	778	14	6392	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>197</b>	<b>40</b>	<b>1766</b>	<b>12</b>	<b>31</b>	<b>5</b>	<b>9</b>	<b>752</b>	<b>236</b>	<b>2552</b>	<b>778</b>	<b>14</b>	<b>6392</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1045	199	1132	879	777	352	4384
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1045</b>	<b>199</b>	<b>1132</b>	<b>879</b>	<b>777</b>	<b>352</b>	<b>4384</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1309	459	1709	674	296	859	5306
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1309</b>	<b>459</b>	<b>1709</b>	<b>674</b>	<b>296</b>	<b>859</b>	<b>5306</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	749	582	2490	348	223	1819	6211
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>749</b>	<b>582</b>	<b>2490</b>	<b>348</b>	<b>223</b>	<b>1819</b>	<b>6211</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	1019	90	2679	99	74	2245	6206
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1019</b>	<b>90</b>	<b>2679</b>	<b>99</b>	<b>74</b>	<b>2245</b>	<b>6206</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	Final Base	581	164	2486	60	48	1264	4603
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>581</b>	<b>164</b>	<b>2486</b>	<b>60</b>	<b>48</b>	<b>1264</b>	<b>4603</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	483	399	19	359	191	20	1471
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>483</b>	<b>399</b>	<b>19</b>	<b>359</b>	<b>191</b>	<b>20</b>	<b>1471</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	179	2537	24	49	1332	4121	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>179</b>	<b>2537</b>	<b>24</b>	<b>49</b>	<b>1332</b>	<b>4121</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	75	367	27	131	414	60	412	21	501	270	18	678	2974
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>75</b>	<b>367</b>	<b>27</b>	<b>131</b>	<b>414</b>	<b>60</b>	<b>412</b>	<b>21</b>	<b>501</b>	<b>270</b>	<b>18</b>	<b>678</b>	<b>2974</b>

ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	362	54	39	339	146	3	49	8	242	0	490	74	1806
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>362</b>	<b>54</b>	<b>39</b>	<b>339</b>	<b>146</b>	<b>3</b>	<b>49</b>	<b>8</b>	<b>242</b>	<b>0</b>	<b>490</b>	<b>74</b>	<b>1806</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	172	133	260	291	175	50	1081
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>172</b>	<b>133</b>	<b>260</b>	<b>291</b>	<b>175</b>	<b>50</b>	<b>1081</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	Final Base	99	210	35	15	30	217	606
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>99</b>	<b>210</b>	<b>35</b>	<b>15</b>	<b>30</b>	<b>217</b>	<b>606</b>



## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	325	875	72	174
2	315	849	70	169
3	309	831	68	165
4	289	779	64	155
5	257	691	57	137
6	254	683	56	136
7	250	674	55	134
8	227	613	50	122
9	224	604	50	120
10	221	595	49	118
11	192	516	42	103
12	179	481	40	96
13	176	473	39	94
14	130	350	29	70
15	130	350	29	70
16	91	245	20	49
17	52	140	12	28
18	52	140	12	28
19	29	79	6	16
20	16	44	4	9
21	10	26	2	5
22	3	9	1	2
23	3	9	1	2
24	3	9	1	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1200	1	174	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1164	1	169	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1140	1	165	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	1068	1	155	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	948	1	137	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	937	1	136	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	924	1	134	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	840	1	122	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9	1	828	1	120	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
10	1	816	1	118	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
11	1	708	1	103	No	No	No	Yes	No	Yes	Yes	Yes	No	No
12	1	660	1	96	No	No	No	Yes	No	Yes	Yes	Yes	No	No
13	1	649	1	94	No	No	No	Yes	No	Yes	Yes	Yes	No	No
14	1	480	1	70	No	No	No	No	No	No	No	Yes	No	No
15	1	480	1	70	No	No	No	No	No	No	No	Yes	No	No
16	1	336	1	49	No	No	No	No	No	No	No	No	No	No
17	1	192	1	28	No	No	No	No	No	No	No	No	No	No
18	1	192	1	28	No	No	No	No	No	No	No	No	No	No
19	1	108	1	16	No	No	No	No	No	No	No	No	No	No
20	1	60	1	9	No	No	No	No	No	No	No	No	No	No
21	1	36	1	5	No	No	No	No	No	No	No	No	No	No
22	1	12	1	2	No	No	No	No	No	No	No	No	No	No
23	1	12	1	2	No	No	No	No	No	No	No	No	No	No
24	1	12	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	9	10	13	10	13	13	15	7	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.1	13.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:13	0:39
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	72	174
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1446	1446
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	378	882	211
2	367	856	205
3	359	838	200
4	336	785	188
5	299	697	167
6	295	688	165
7	291	679	162
8	265	617	148
9	261	609	146
10	257	600	143
11	223	520	124
12	208	485	116
13	204	476	114
14	151	353	84
15	151	353	84
16	106	247	59
17	60	141	34
18	60	141	34
19	34	79	19
20	19	44	11
21	11	26	6
22	4	9	2
23	4	9	2
24	4	9	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1260	1	211	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1223	1	205	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1197	1	200	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	1121	1	188	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	996	1	167	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	983	1	165	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	970	1	162	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	882	1	148	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	870	1	146	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	857	1	143	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	743	1	124	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
12	1	693	1	116	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
13	1	680	1	114	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
14	1	504	1	84	No	No	No	Yes	No	No	No	Yes	No	No
15	1	504	1	84	No	No	No	Yes	No	No	No	Yes	No	No
16	1	353	1	59	No	No	No	No	No	No	No	No	No	No
17	1	201	1	34	No	No	No	No	No	No	No	No	No	No
18	1	201	1	34	No	No	No	No	No	No	No	No	No	No
19	1	113	1	19	No	No	No	No	No	No	No	No	No	No
20	1	63	1	11	No	No	No	No	No	No	No	No	No	No
21	1	37	1	6	No	No	No	No	No	No	No	No	No	No
22	1	13	1	2	No	No	No	No	No	No	No	No	No	No
23	1	13	1	2	No	No	No	No	No	No	No	No	No	No
24	1	13	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	15	10	13	13	15	10	1

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	15.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:54
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	211
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1471
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	225	551	305
2	218	534	296
3	214	523	290
4	200	490	271
5	178	435	241
6	176	430	238
7	173	424	235
8	158	386	214
9	155	380	210
10	153	375	207
11	133	325	180
12	124	303	168
13	122	298	165
14	90	220	122
15	90	220	122
16	63	154	85
17	36	88	49
18	36	88	49
19	20	50	27
20	11	28	15
21	7	17	9
22	2	6	3
23	2	6	3
24	2	6	3

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	776	1	305	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	752	1	296	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	737	1	290	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
4	1	690	1	271	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	1	613	1	241	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
6	1	606	1	238	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
7	1	597	1	235	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No
8	1	544	1	214	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
9	1	535	1	210	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
10	1	528	1	207	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
11	1	458	1	180	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	427	1	168	No	Yes	Yes	Yes	No	No	No	Yes	No	No
13	1	420	1	165	No	Yes	Yes	Yes	No	No	No	Yes	No	No
14	1	310	1	122	No	No	No	Yes	No	No	No	No	No	No
15	1	310	1	122	No	No	No	Yes	No	No	No	No	No	No
16	1	217	1	85	No	No	No	No	No	No	No	No	No	No
17	1	124	1	49	No	No	No	No	No	No	No	No	No	No
18	1	124	1	49	No	No	No	No	No	No	No	No	No	No
19	1	70	1	27	No	No	No	No	No	No	No	No	No	No
20	1	39	1	15	No	No	No	No	No	No	No	No	No	No
21	1	24	1	9	No	No	No	No	No	No	No	No	No	No
22	1	8	1	3	No	No	No	No	No	No	No	No	No	No
23	1	8	1	3	No	No	No	No	No	No	No	No	No	No
24	1	8	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					10	13	13	15	2	6	10	13	7	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	383.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	32:30
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	305
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1081
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>

## Signal Warrants Report For Intersection 265: Adam Court/ Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	309	50	247
2	300	49	240
3	294	48	235
4	275	45	220
5	244	40	195
6	241	39	193
7	238	39	190
8	216	35	173
9	213	35	170
10	210	34	168
11	182	30	146
12	170	28	136
13	167	27	133
14	124	20	99
15	124	20	99
16	87	14	69
17	49	8	40
18	49	8	40
19	28	5	22
20	15	3	12
21	9	2	7
22	3	1	2
23	3	1	2
24	3	1	2

## Warrant Analysis by Hour

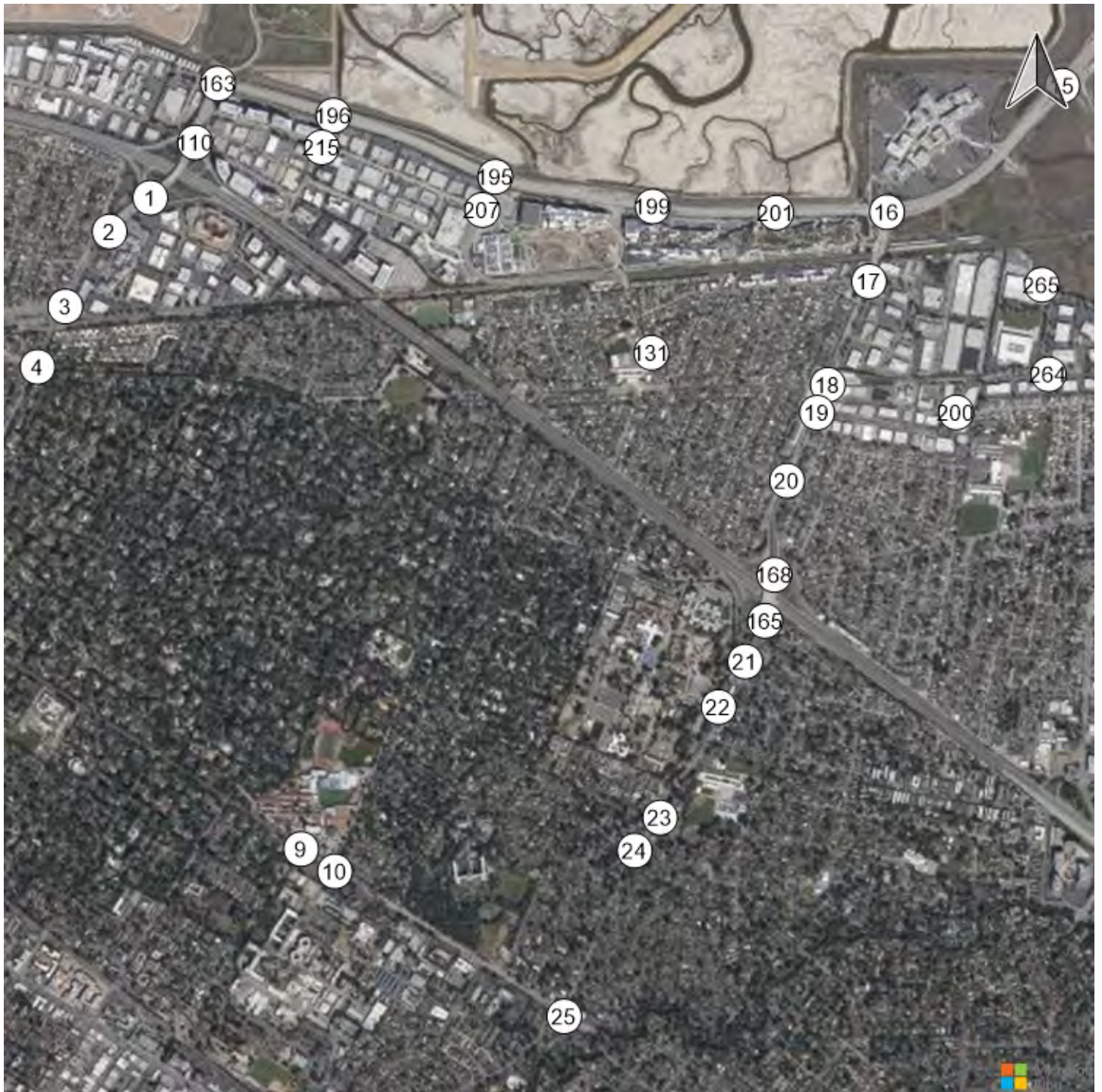
Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	359	1	247	No	No	Yes	Yes	No	No	No	No	No	No
2	1	349	1	240	No	No	No	Yes	No	No	No	No	No	No
3	1	342	1	235	No	No	No	Yes	No	No	No	No	No	No
4	1	320	1	220	No	No	No	Yes	No	No	No	No	No	No
5	1	284	1	195	No	No	No	Yes	No	No	No	No	No	No
6	1	280	1	193	No	No	No	Yes	No	No	No	No	No	No
7	1	277	1	190	No	No	No	No	No	No	No	No	No	No
8	1	251	1	173	No	No	No	No	No	No	No	No	No	No
9	1	248	1	170	No	No	No	No	No	No	No	No	No	No
10	1	244	1	168	No	No	No	No	No	No	No	No	No	No
11	1	212	1	146	No	No	No	No	No	No	No	No	No	No
12	1	198	1	136	No	No	No	No	No	No	No	No	No	No
13	1	194	1	133	No	No	No	No	No	No	No	No	No	No
14	1	144	1	99	No	No	No	No	No	No	No	No	No	No
15	1	144	1	99	No	No	No	No	No	No	No	No	No	No
16	1	101	1	69	No	No	No	No	No	No	No	No	No	No
17	1	57	1	40	No	No	No	No	No	No	No	No	No	No
18	1	57	1	40	No	No	No	No	No	No	No	No	No	No
19	1	33	1	22	No	No	No	No	No	No	No	No	No	No
20	1	18	1	12	No	No	No	No	No	No	No	No	No	No
21	1	11	1	7	No	No	No	No	No	No	No	No	No	No
22	1	4	1	2	No	No	No	No	No	No	No	No	No	No
23	1	4	1	2	No	No	No	No	No	No	No	No	No	No
24	1	4	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	1	6	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:48
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	247
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	606
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



Study Intersections

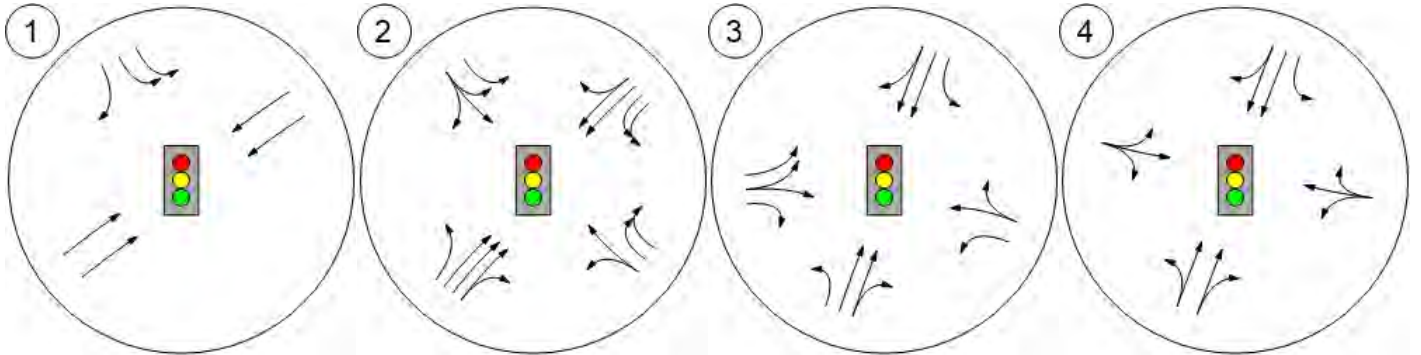


Lane Configuration and Traffic Control

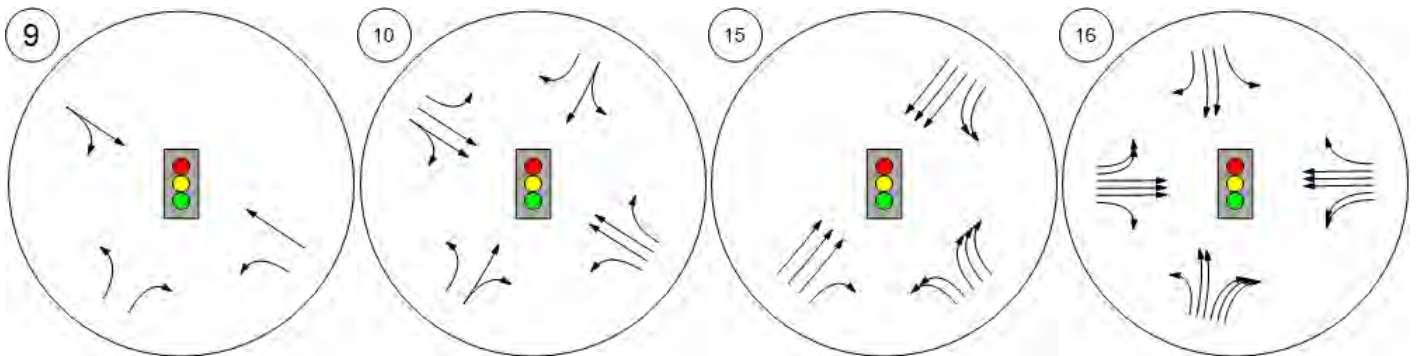


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



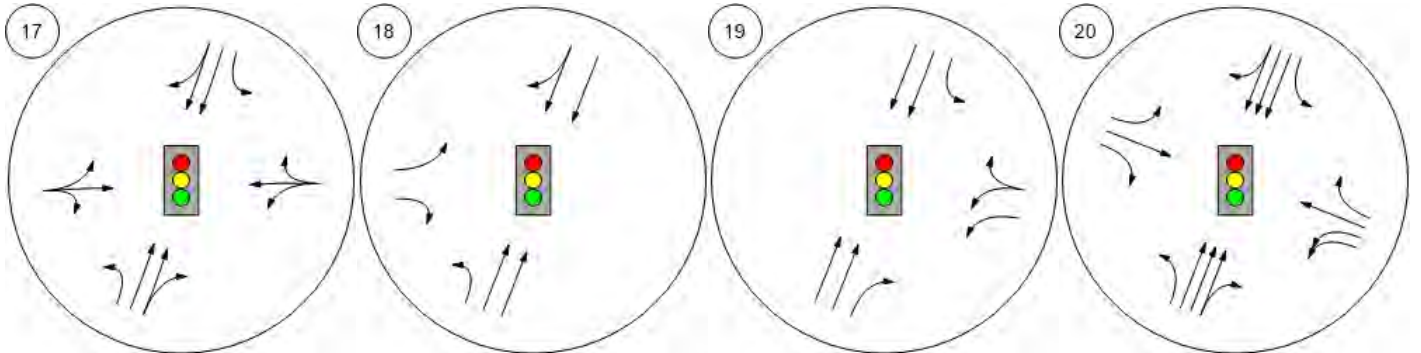
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



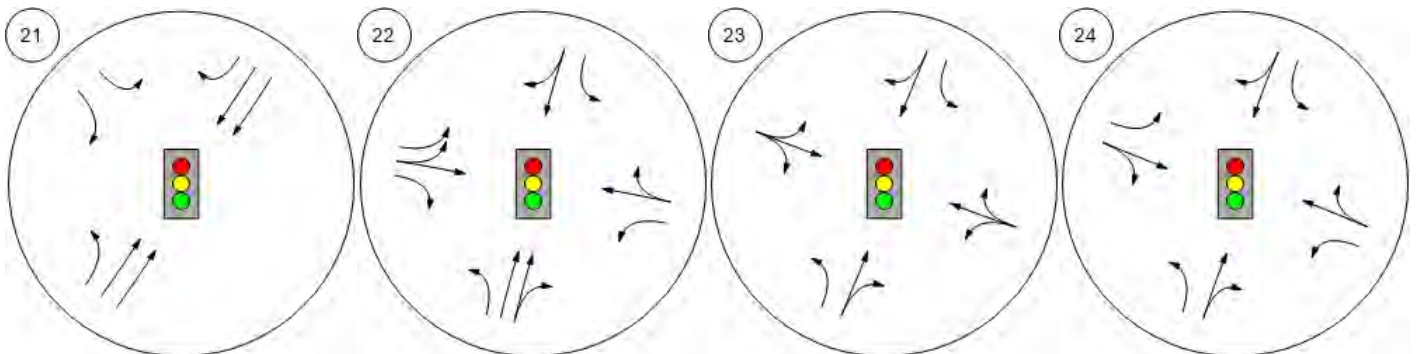
Lane Configuration and Traffic Control



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



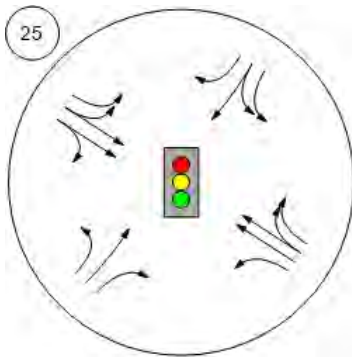
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



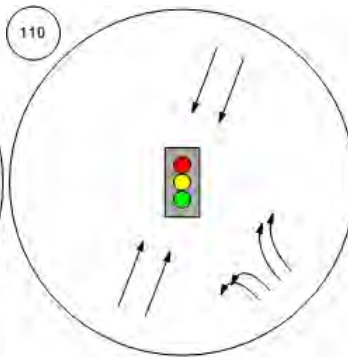
Lane Configuration and Traffic Control



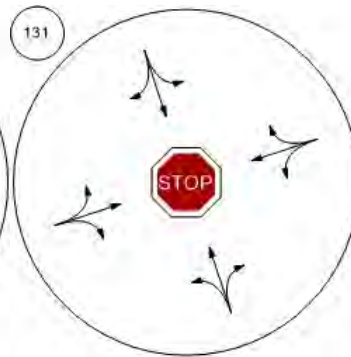
Middlefield Rd-Willow Rd



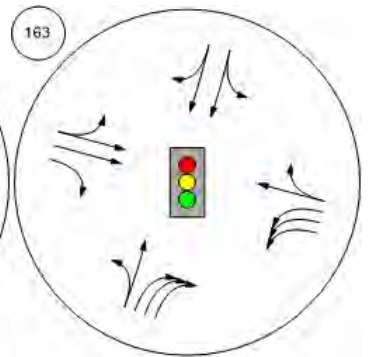
Marsh Road/101 NB Ramps



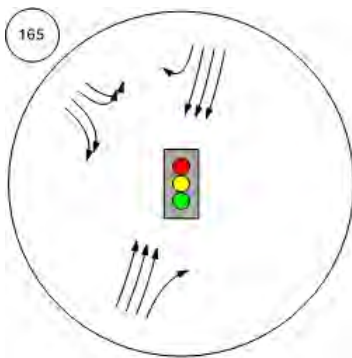
Chilco Street/Hamilton Avenue



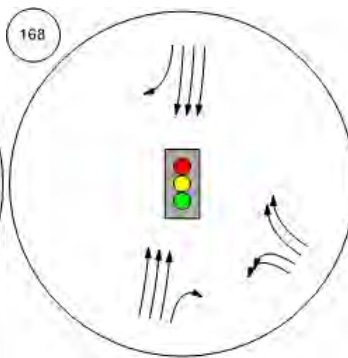
Bayfront Expy/Marsh Rd



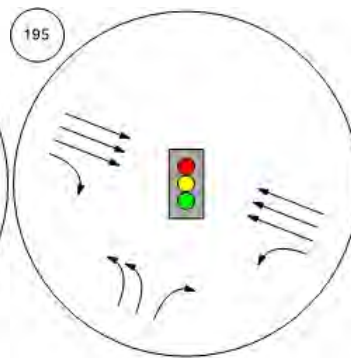
Willow Rd/US-101 SB Ramps



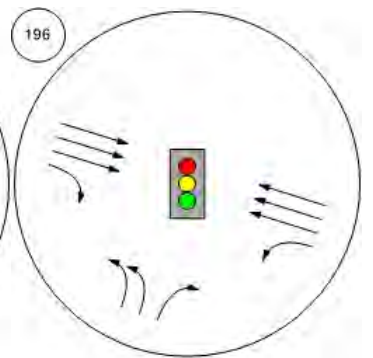
Willow Rd/US-101 NB Ramp



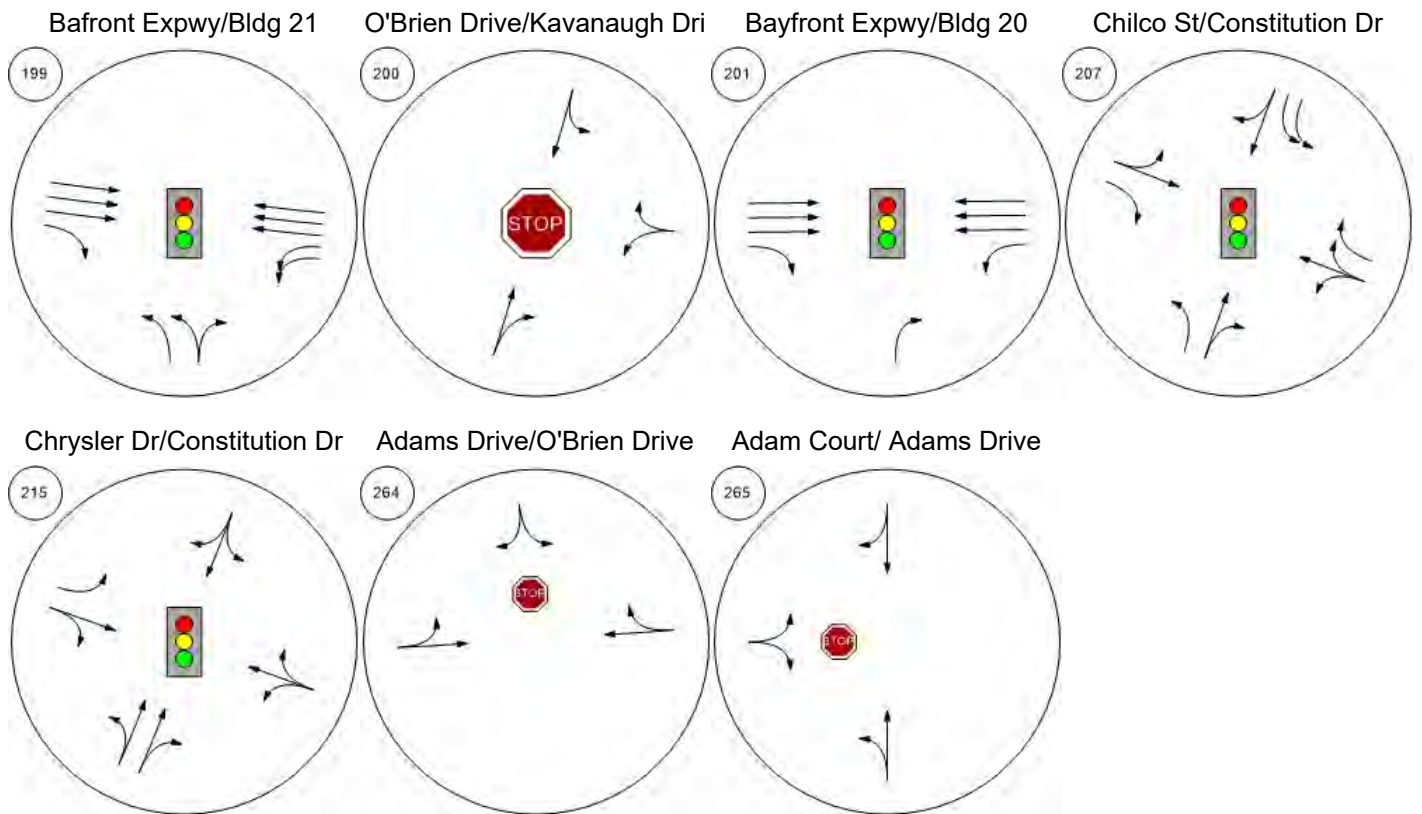
Bayfront Expy/Chilco St



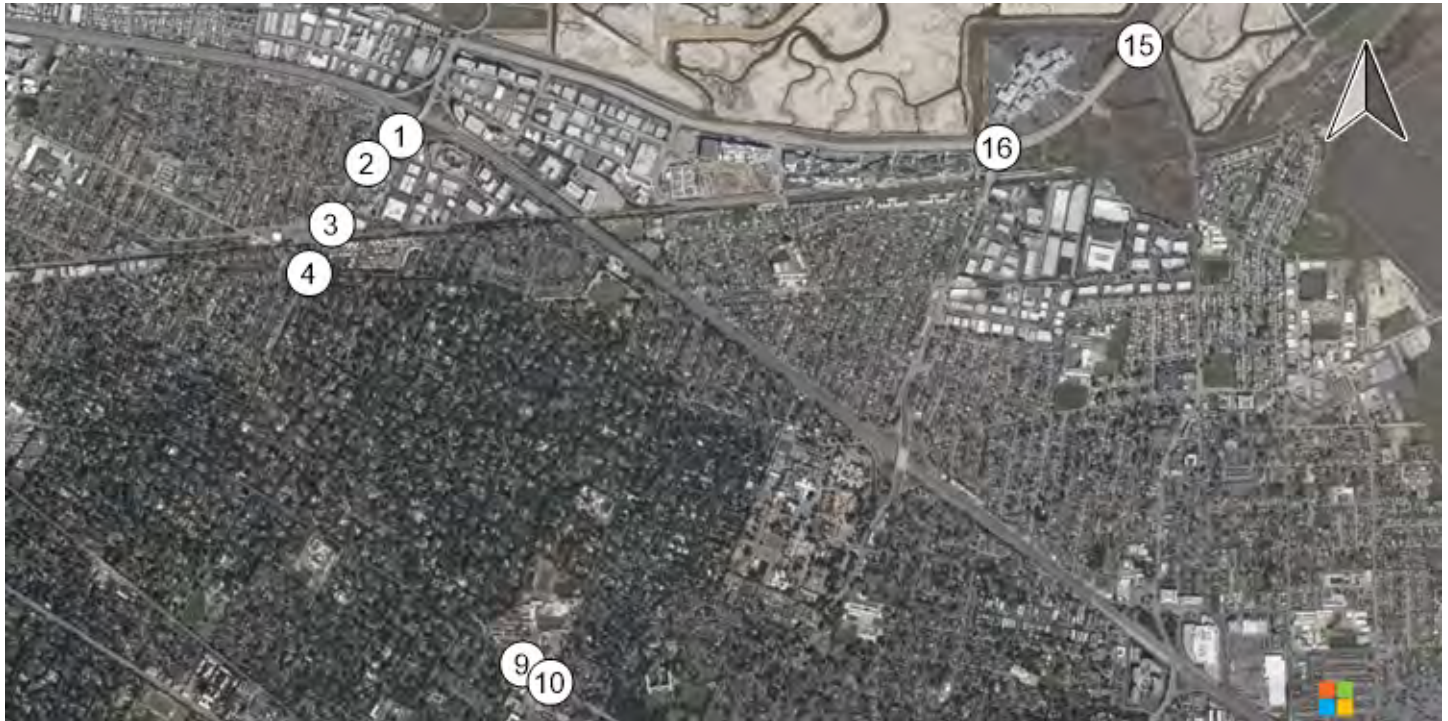
Bayfront Expy/Chrysler Drive



Lane Configuration and Traffic Control

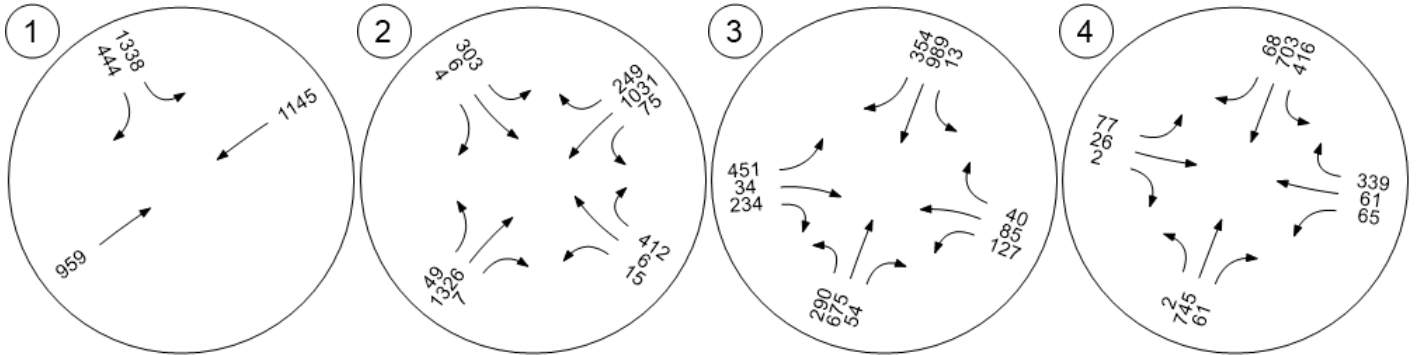


Traffic Volume - Base Volume

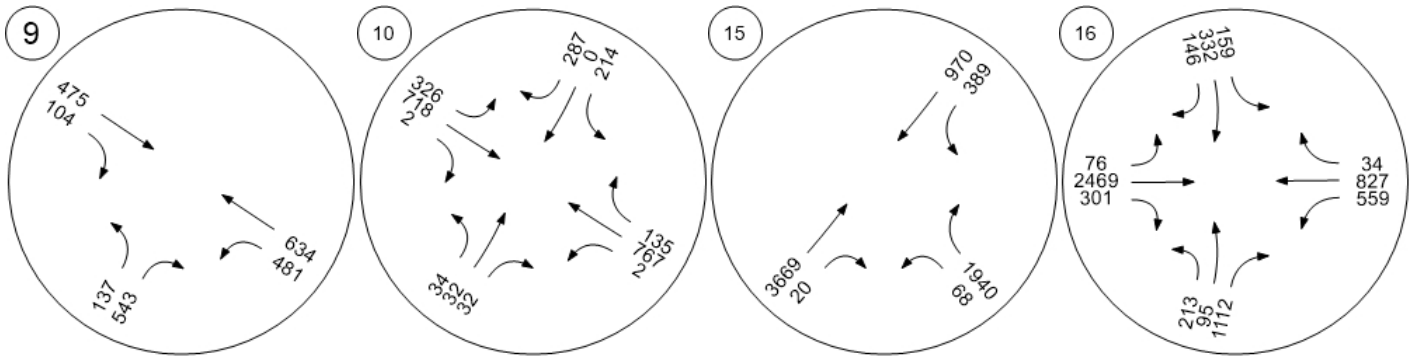


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



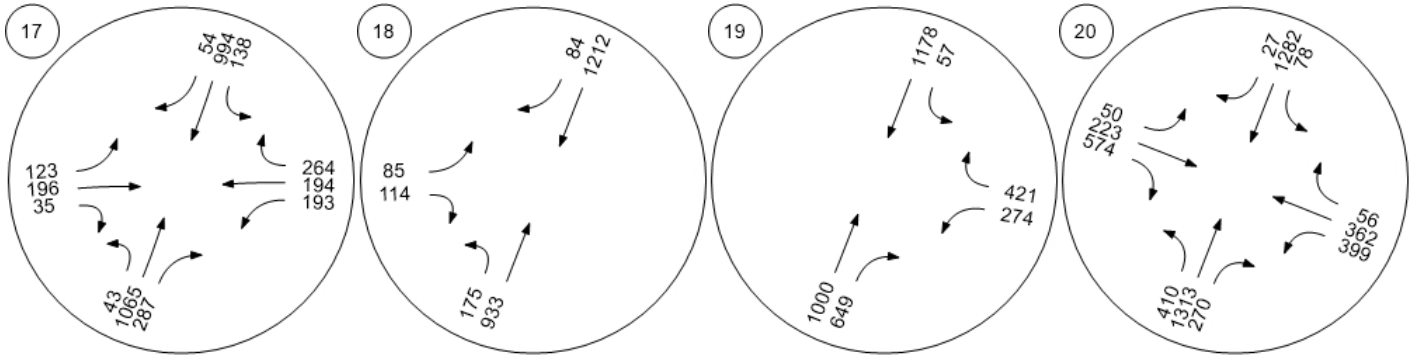
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



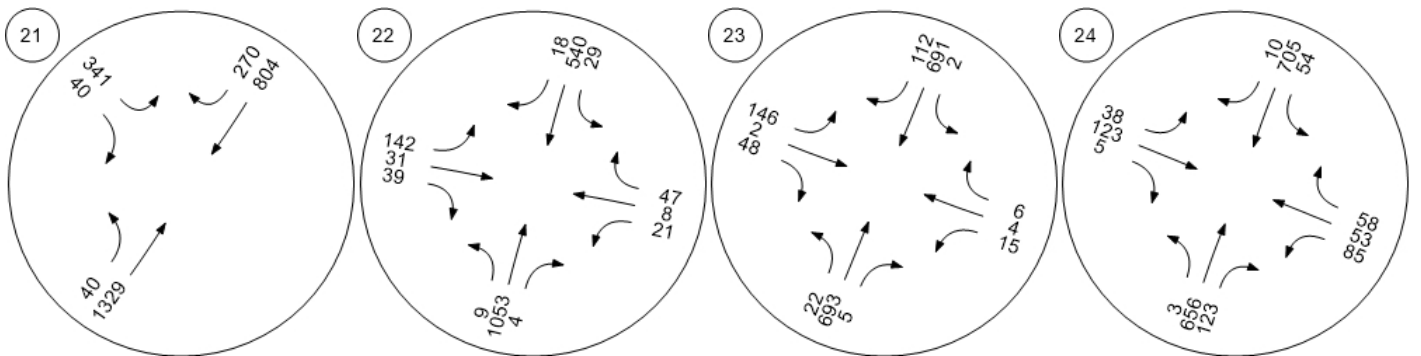
Traffic Volume - Base Volume



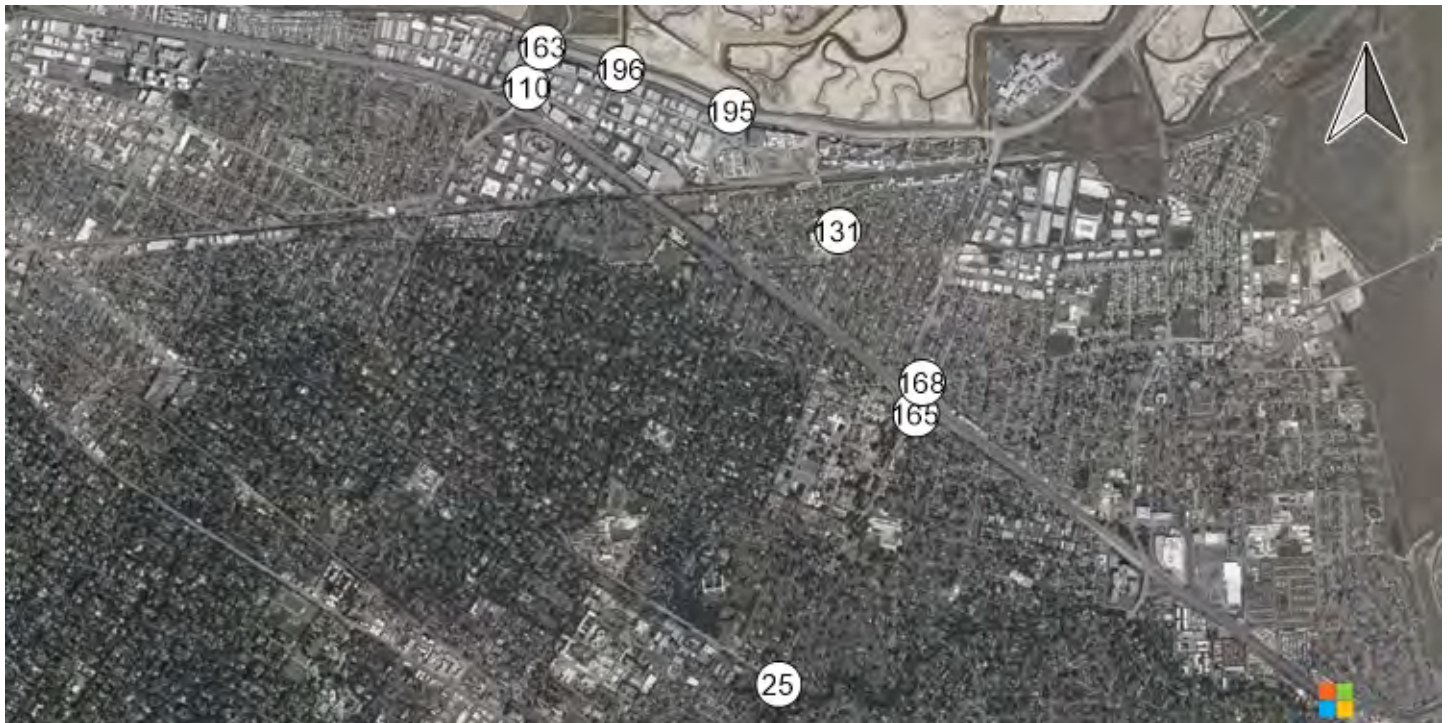
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



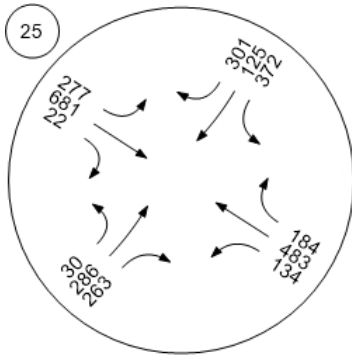
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



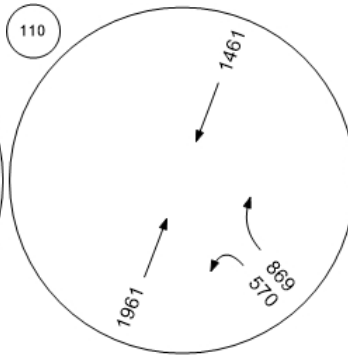
Traffic Volume - Base Volume



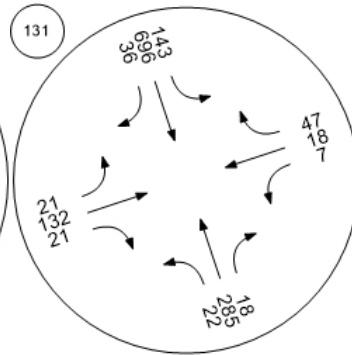
Middlefield Rd-Willow Rd



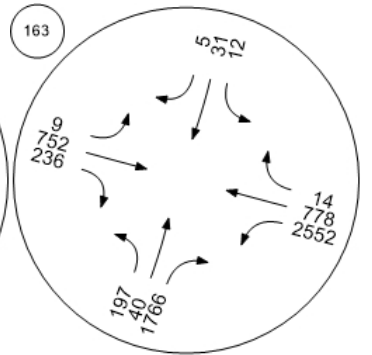
Marsh Road/101 NB Ramps



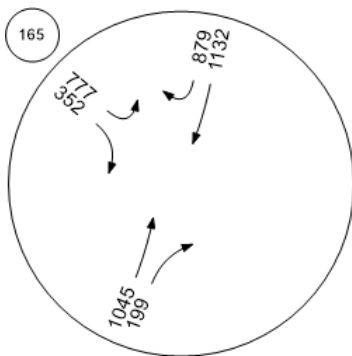
Chilco Street/Hamilton Avenue



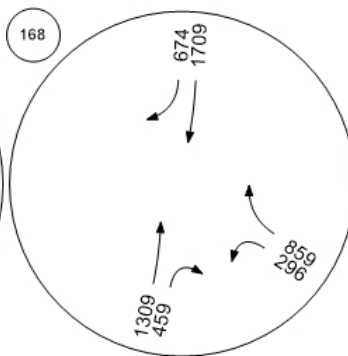
Bayfront Expy/Marsh Rd



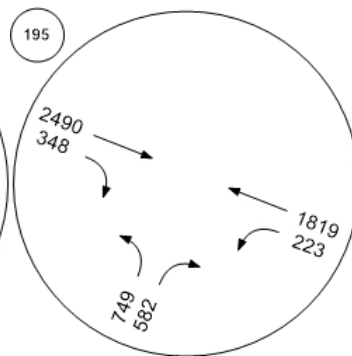
Willow Rd/US-101 SB Ramps



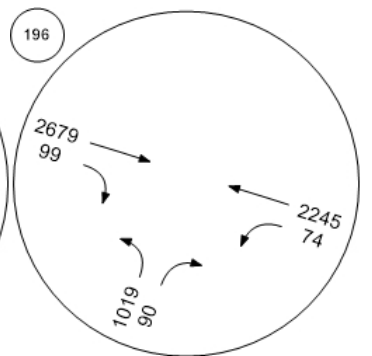
Willow Rd/US-101 NB Ramp



Bayfront Expy/Chilco St

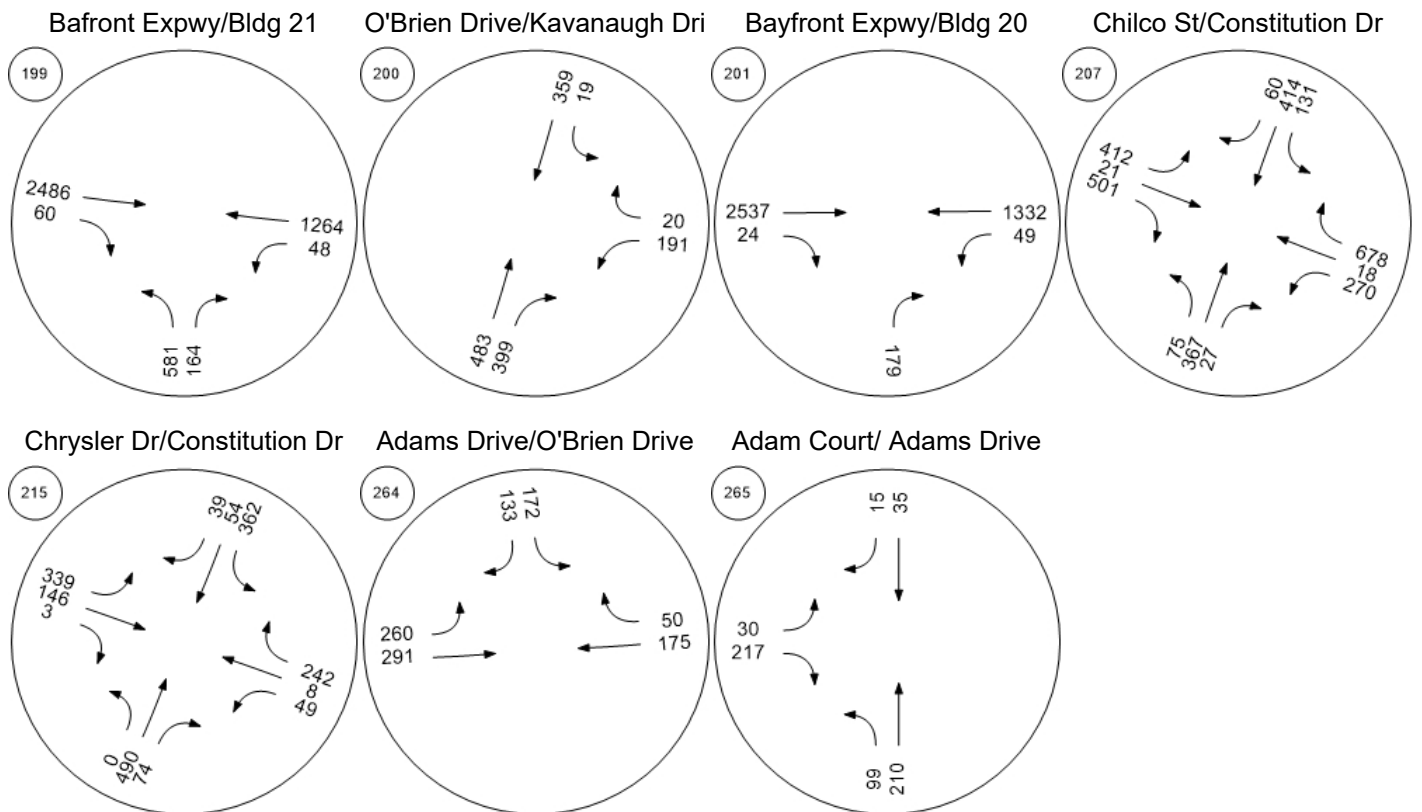


Bayfront Expy/Chrysler Drive





Traffic Volume - Base Volume

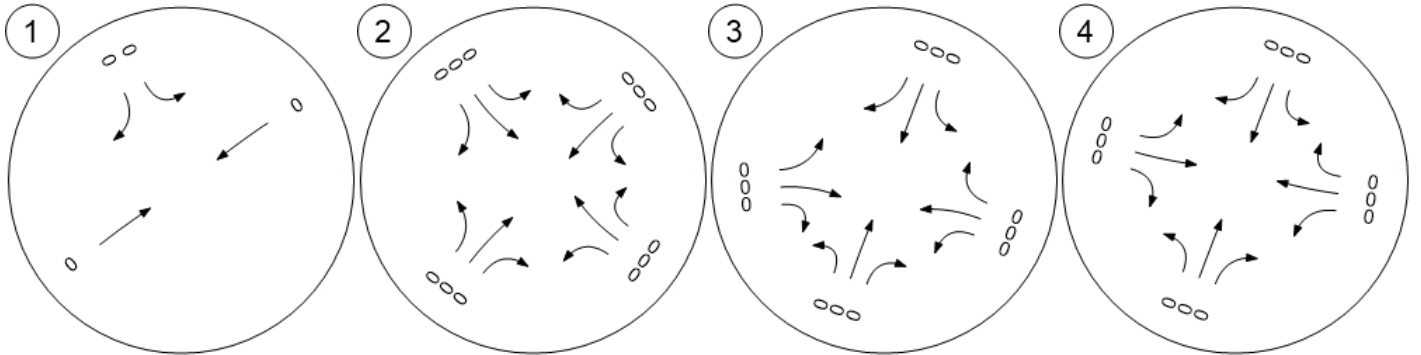


Traffic Volume - In-Process Volume

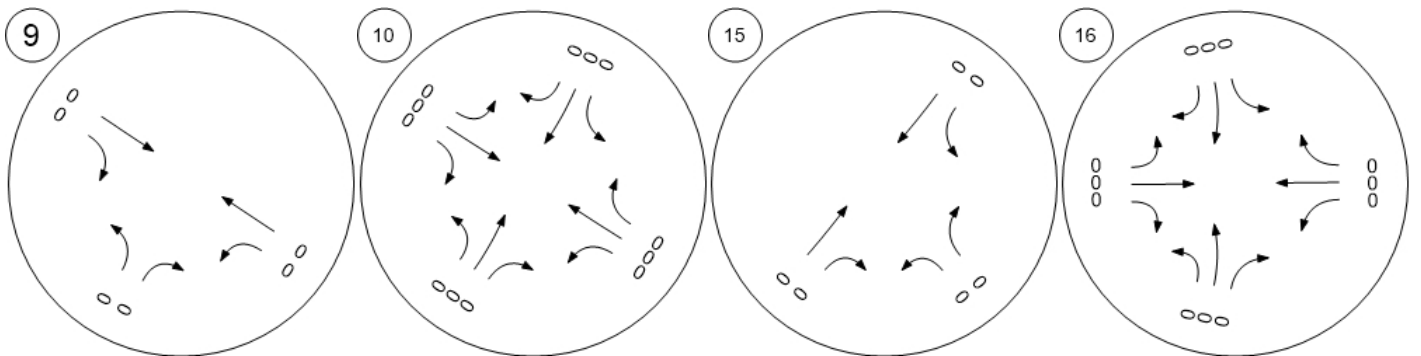


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



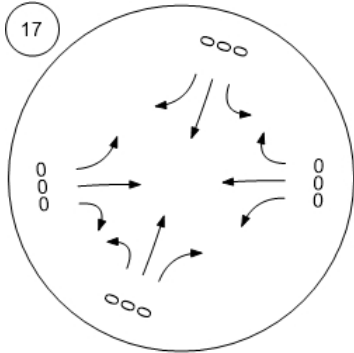
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



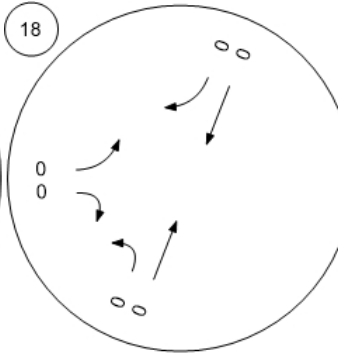
Traffic Volume - In-Process Volume



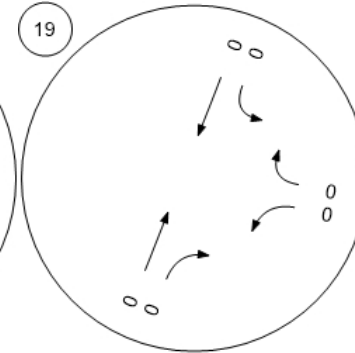
Willow Rd (SR 114)/Hamilton



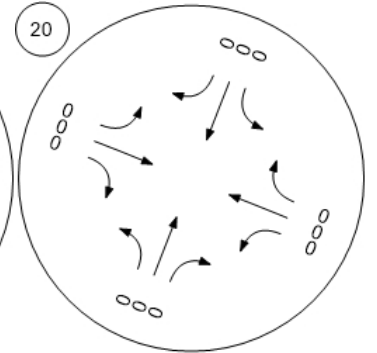
Willow Rd (SR 114)/Ivy Dr



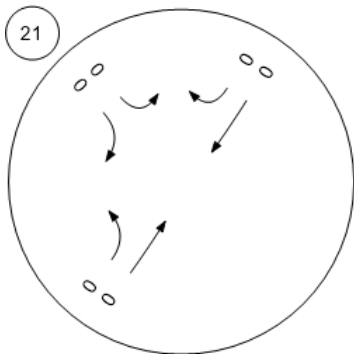
Willow Rd (SR 114)/O'Brien



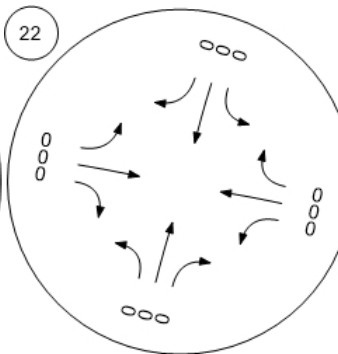
Willow Rd (SR 114)/Newbrid



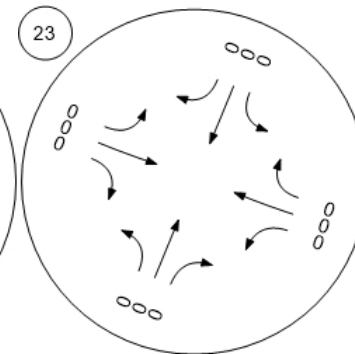
Willow Rd/Bay Rd



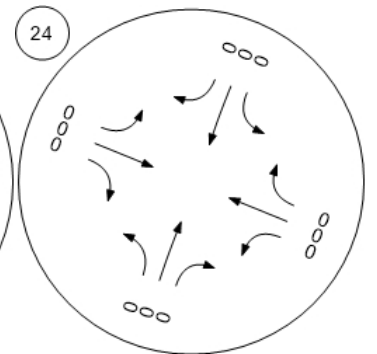
Willow Rd/Durham St-VA Me



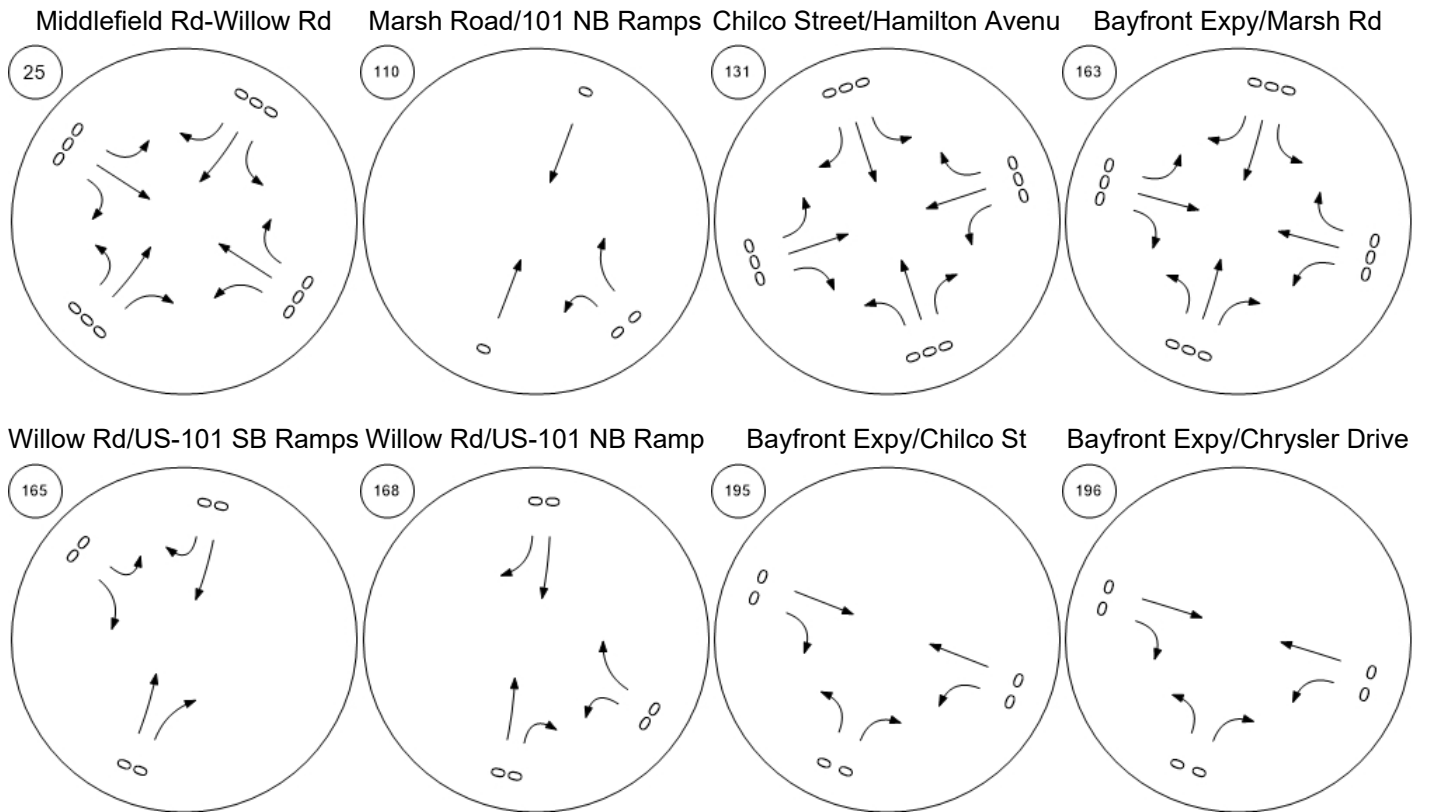
Willow Rd/Coleman Ave



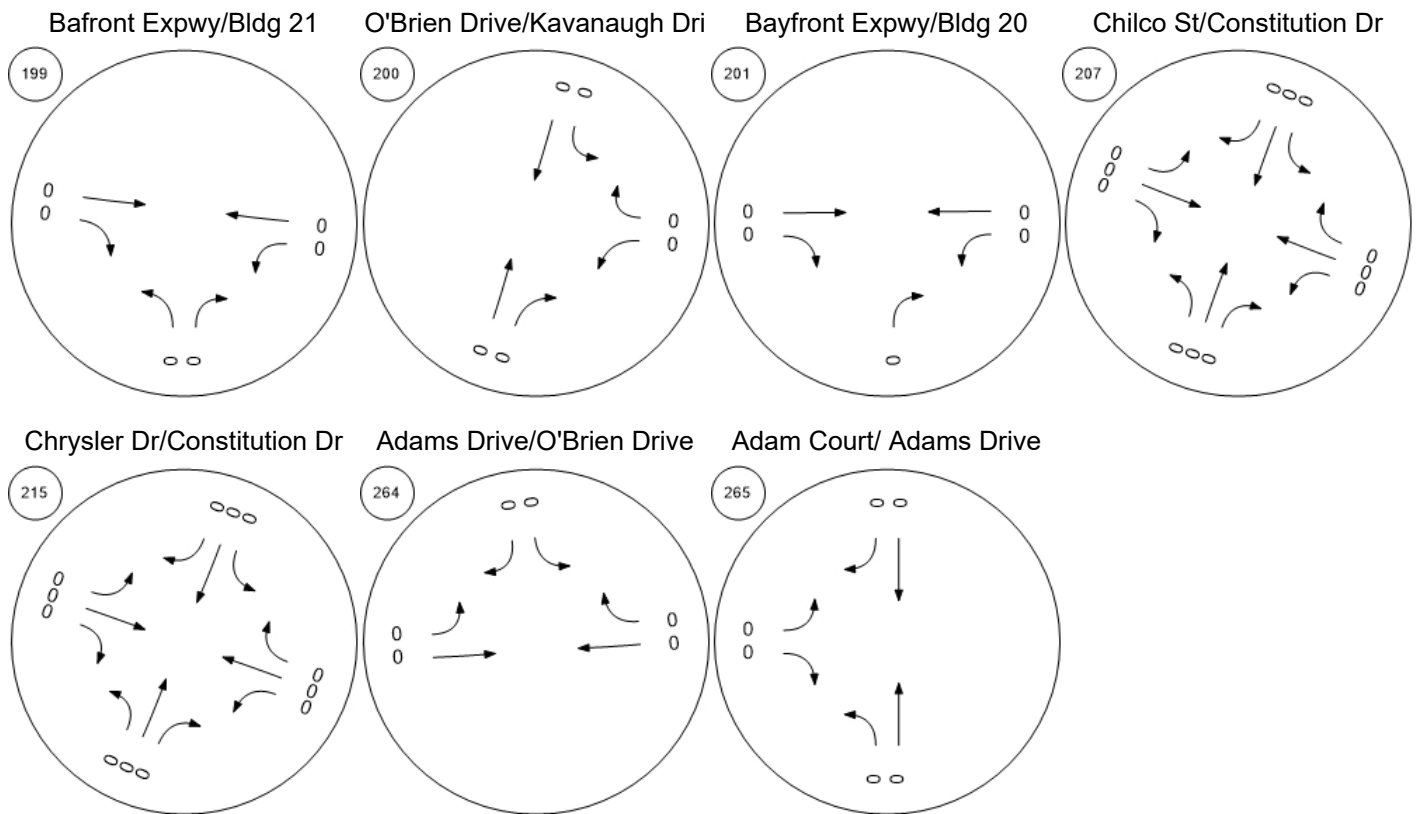
Willow Rd/Gilbert Ave



Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume

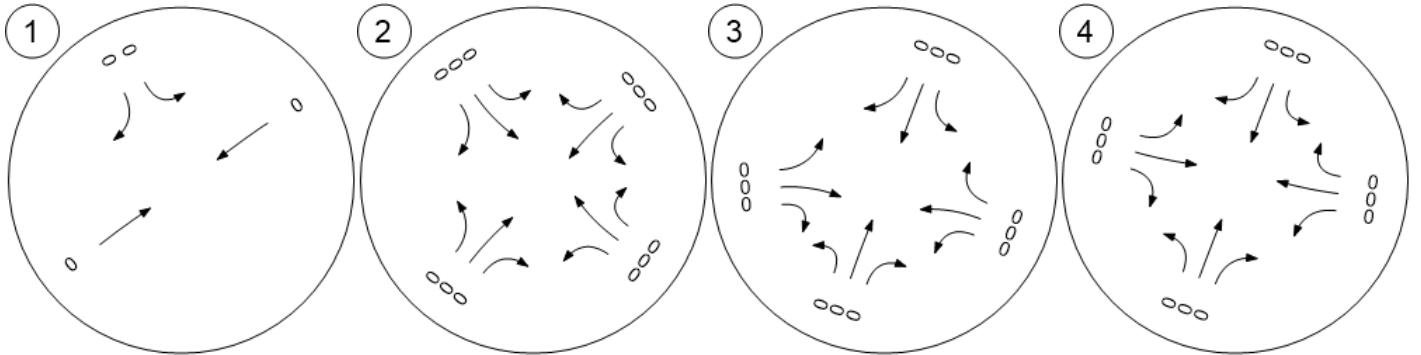


Traffic Volume - Net New Site Trips

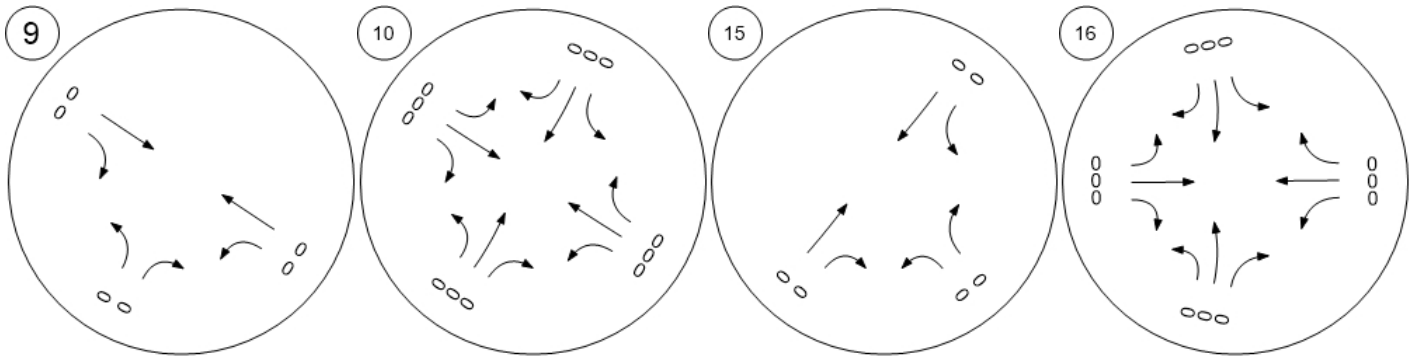


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



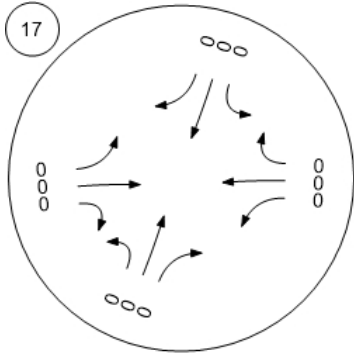
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



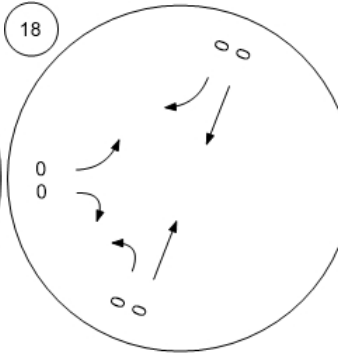
Traffic Volume - Net New Site Trips



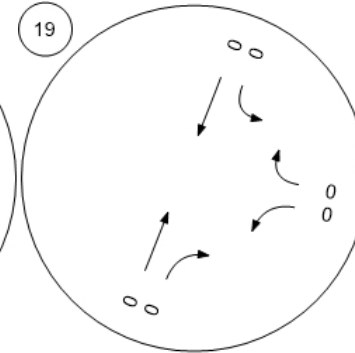
Willow Rd (SR 114)/Hamilton



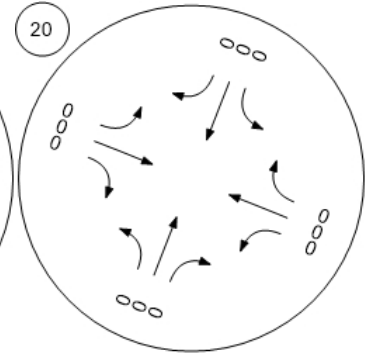
Willow Rd (SR 114)/Ivy Dr



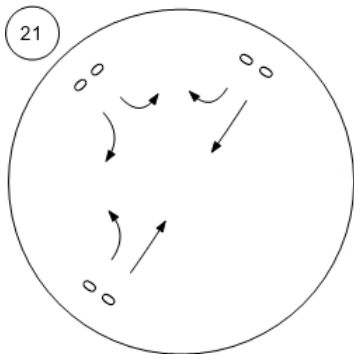
Willow Rd (SR 114)/O'Brien



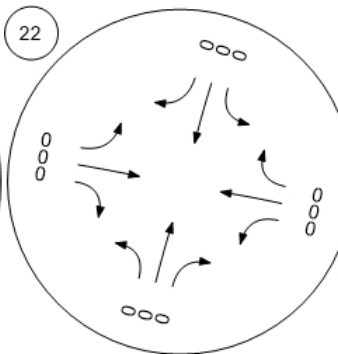
Willow Rd (SR 114)/Newbrid



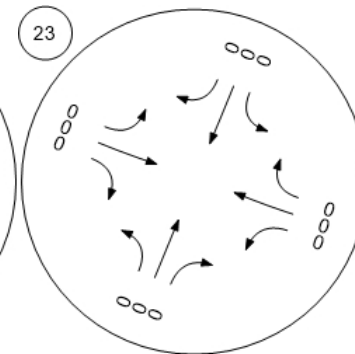
Willow Rd/Bay Rd



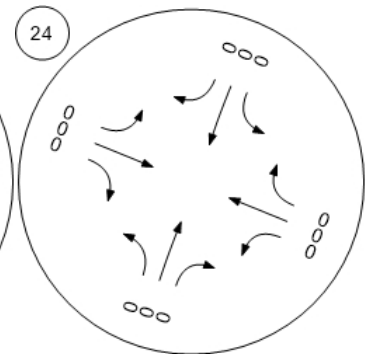
Willow Rd/Durham St-VA Me



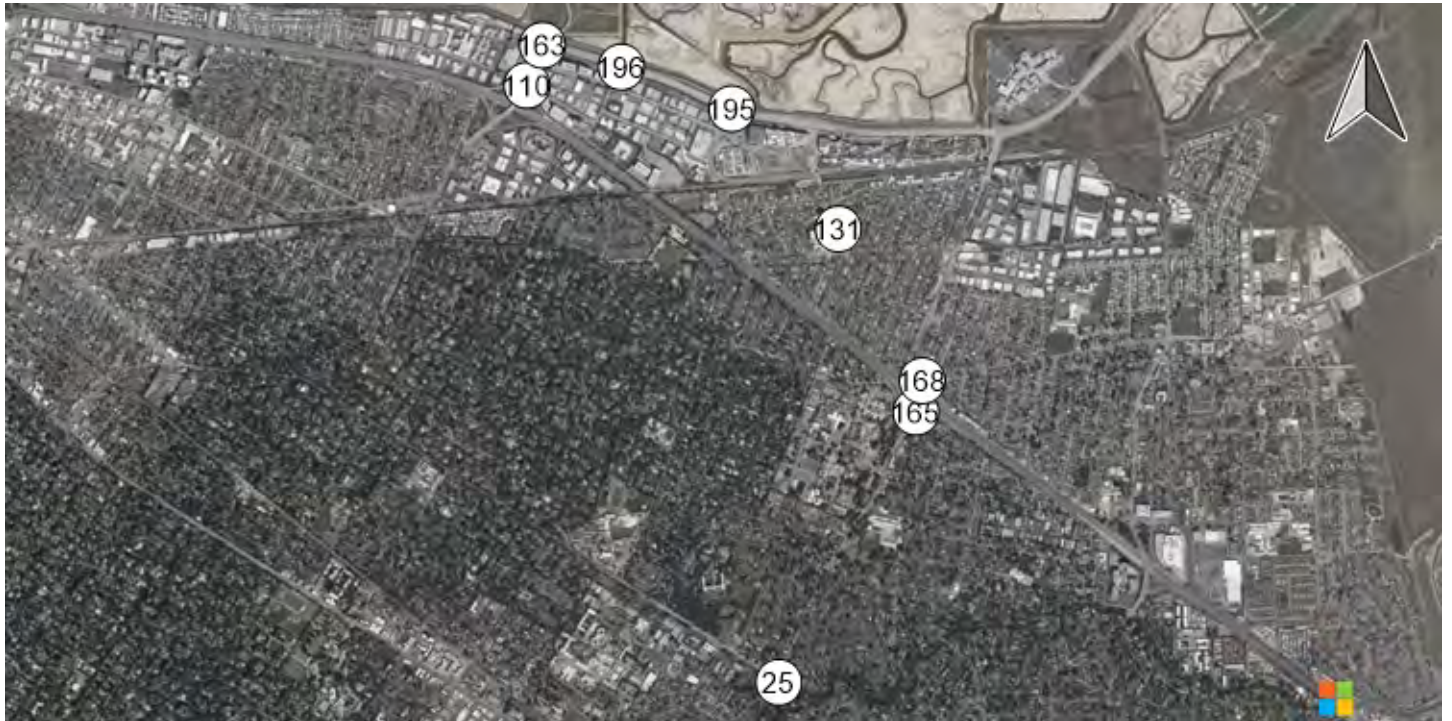
Willow Rd/Coleman Ave



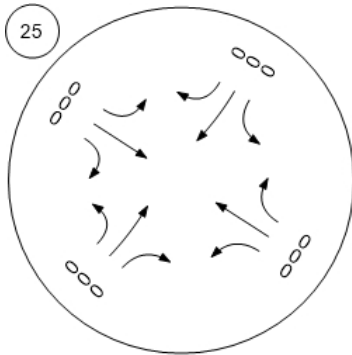
Willow Rd/Gilbert Ave



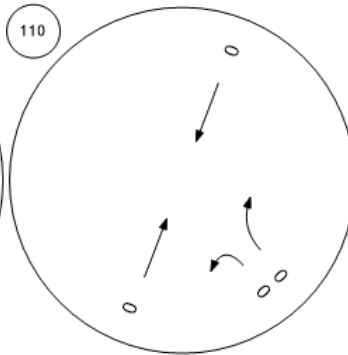
Traffic Volume - Net New Site Trips



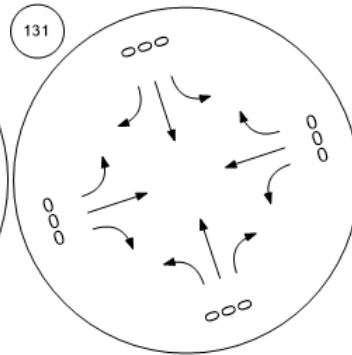
Middlefield Rd-Willow Rd



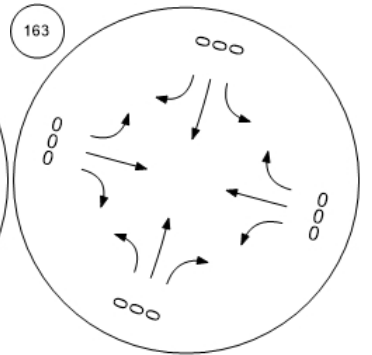
Marsh Road/101 NB Ramps



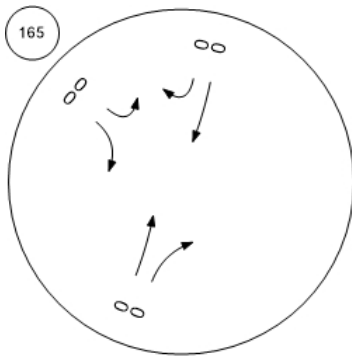
Chilco Street/Hamilton Avenue



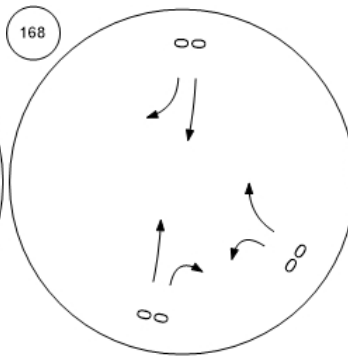
Bayfront Expy/Marsh Rd



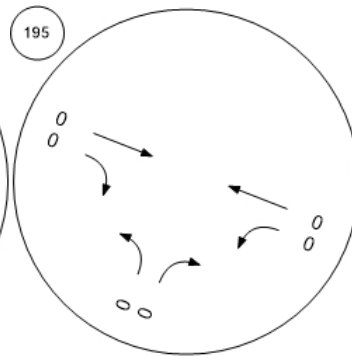
Willow Rd/US-101 SB Ramps



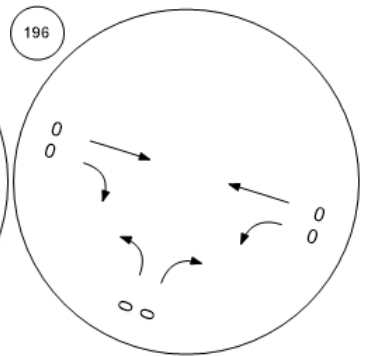
Willow Rd/US-101 NB Ramp



Bayfront Expy/Chilco St

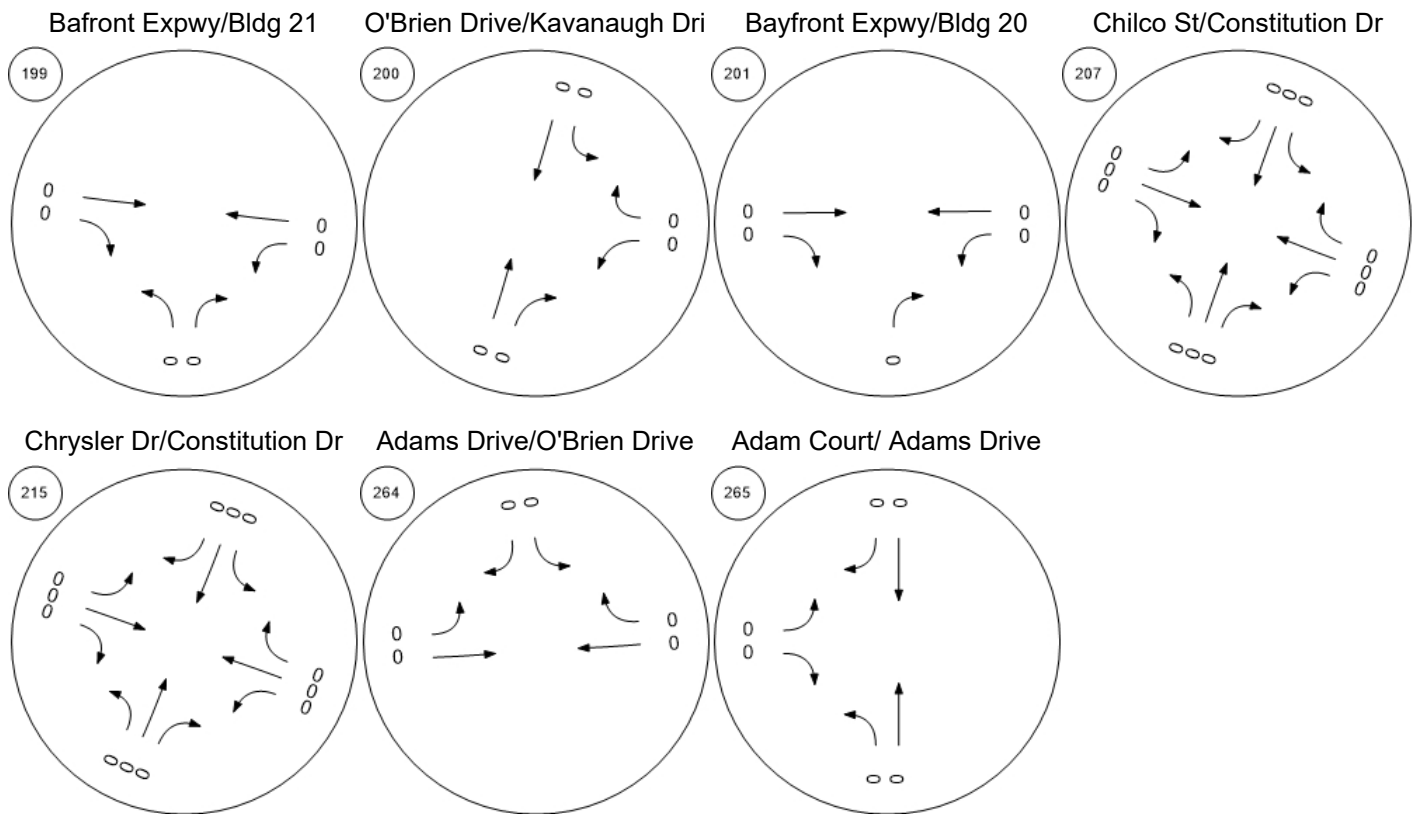


Bayfront Expy/Chrysler Drive





Traffic Volume - Net New Site Trips

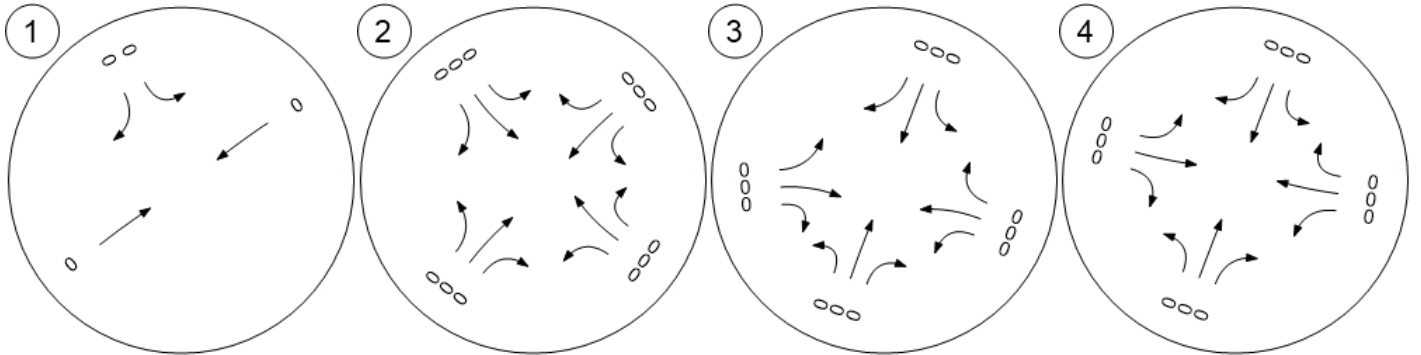


Traffic Volume - Other Volume

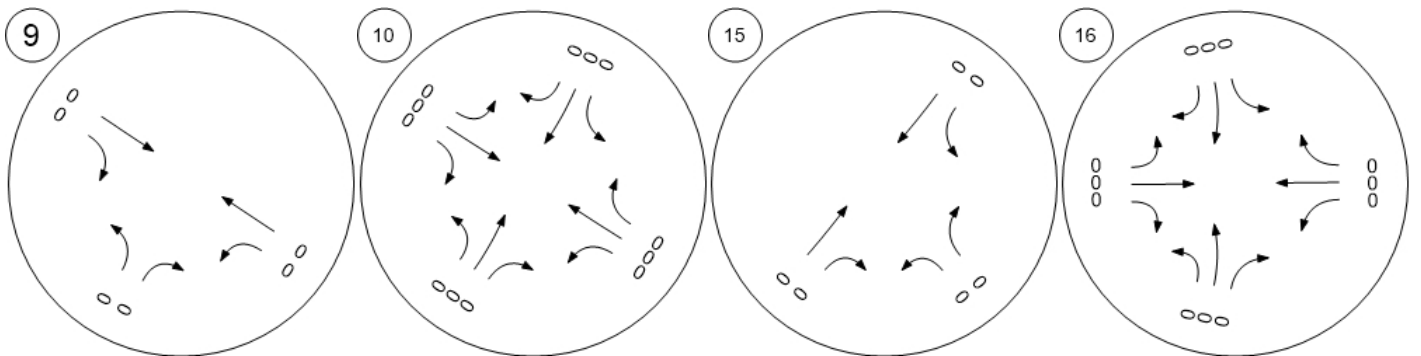


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



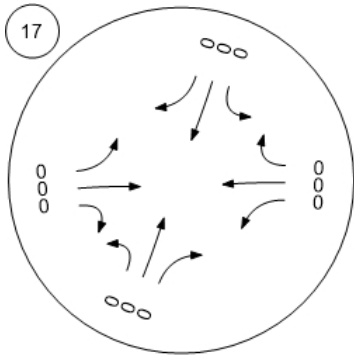
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



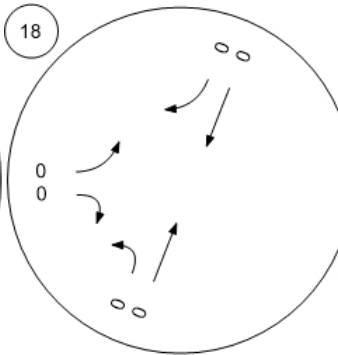
Traffic Volume - Other Volume



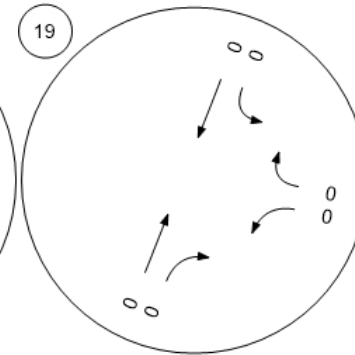
Willow Rd (SR 114)/Hamilton



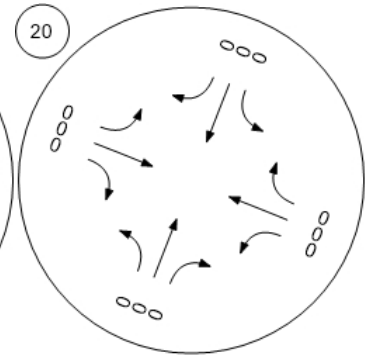
Willow Rd (SR 114)/Ivy Dr



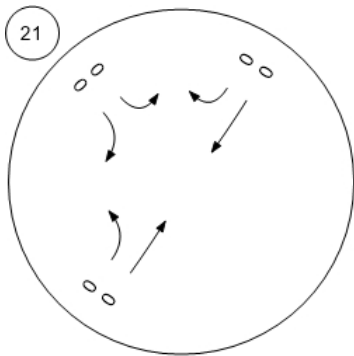
Willow Rd (SR 114)/O'Brien



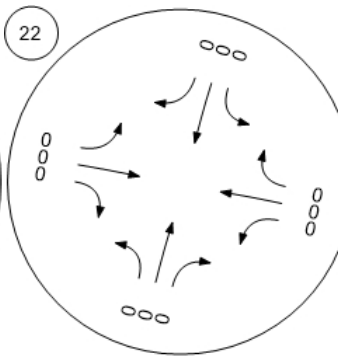
Willow Rd (SR 114)/Newbrid



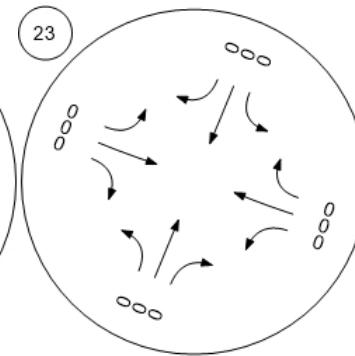
Willow Rd/Bay Rd



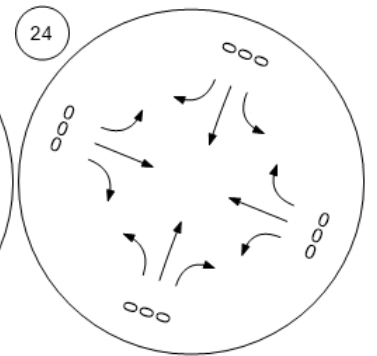
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



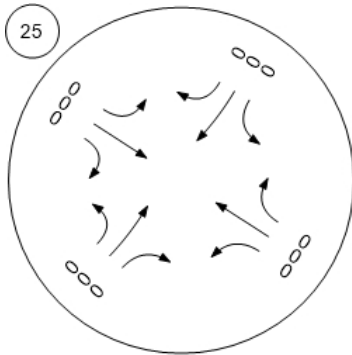
Willow Rd/Gilbert Ave



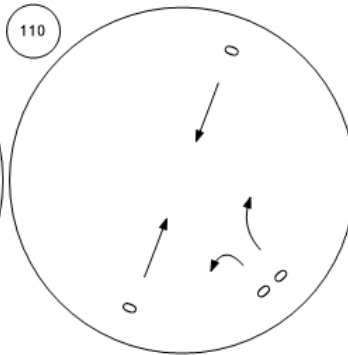
Traffic Volume - Other Volume



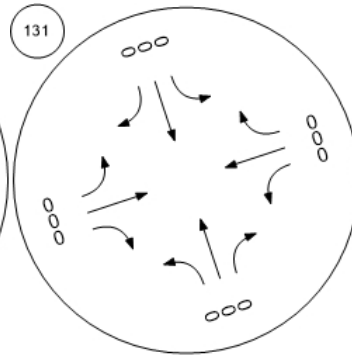
Middlefield Rd-Willow Rd



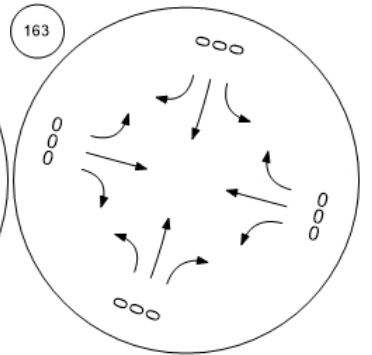
Marsh Road/101 NB Ramps



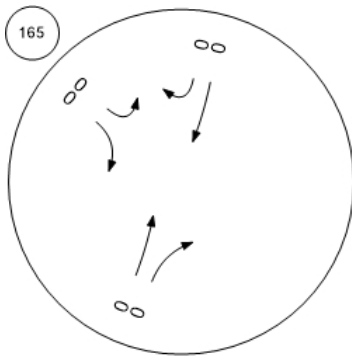
Chilco Street/Hamilton Avenue



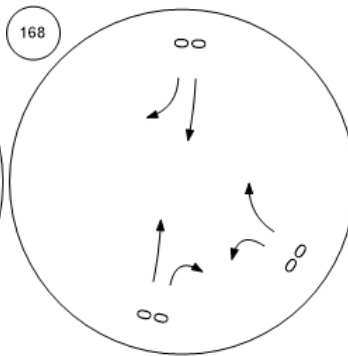
Bayfront Expy/Marsh Rd



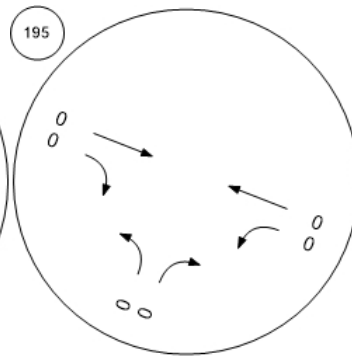
Willow Rd/US-101 SB Ramps



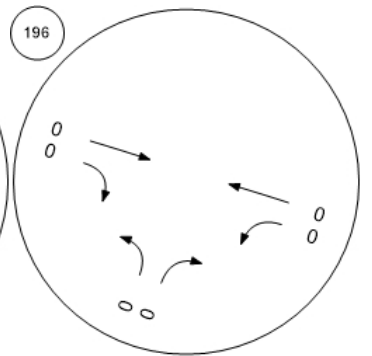
Willow Rd/US-101 NB Ramp



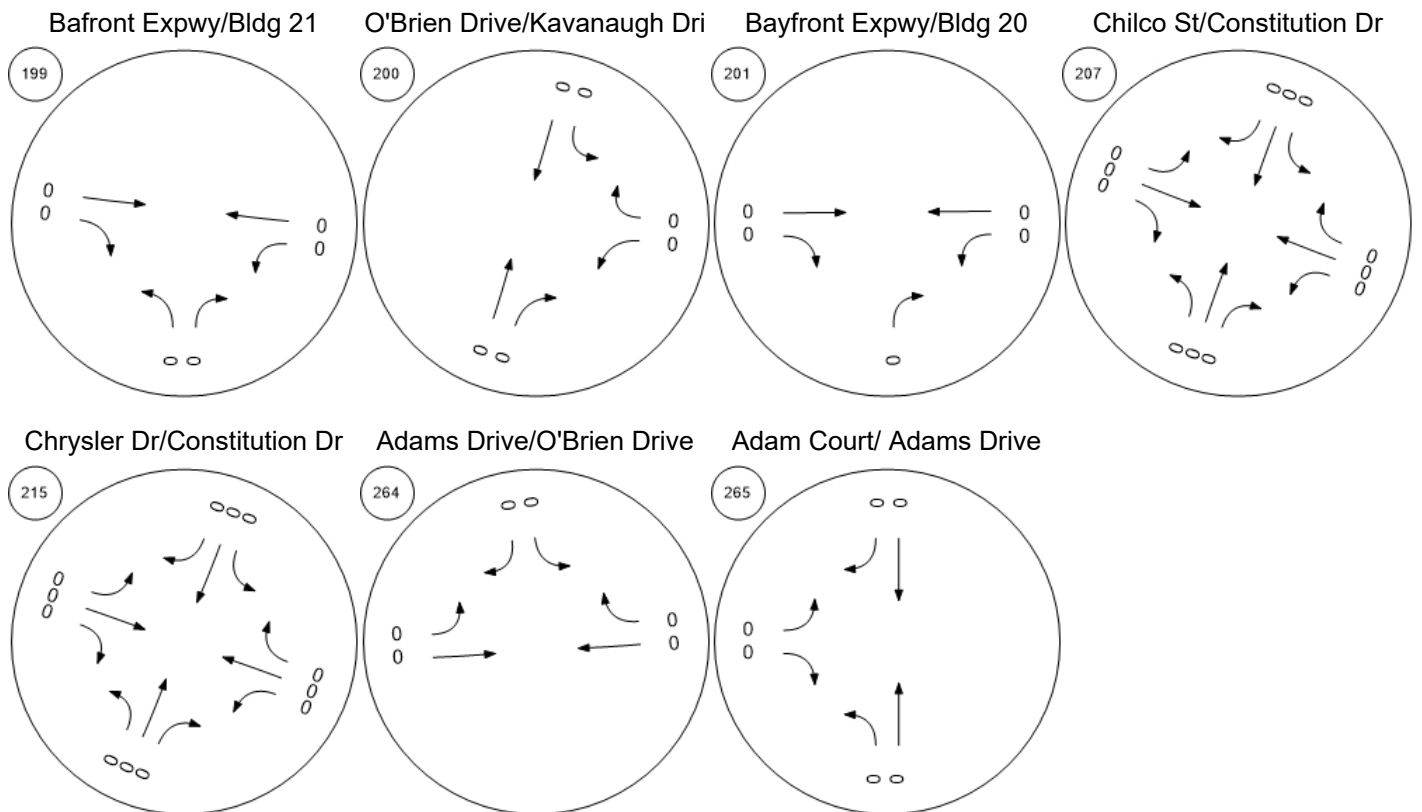
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



Traffic Volume - Other Volume

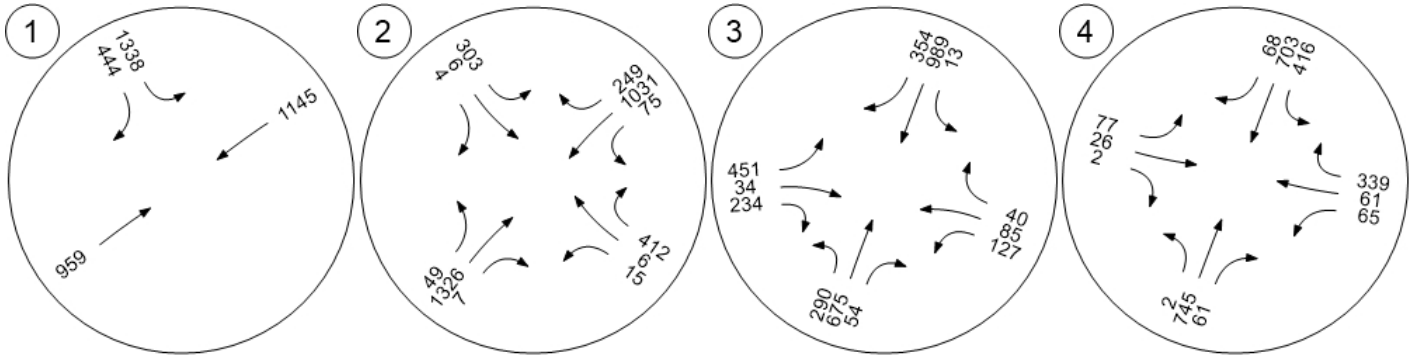


Traffic Volume - Future Total Volume

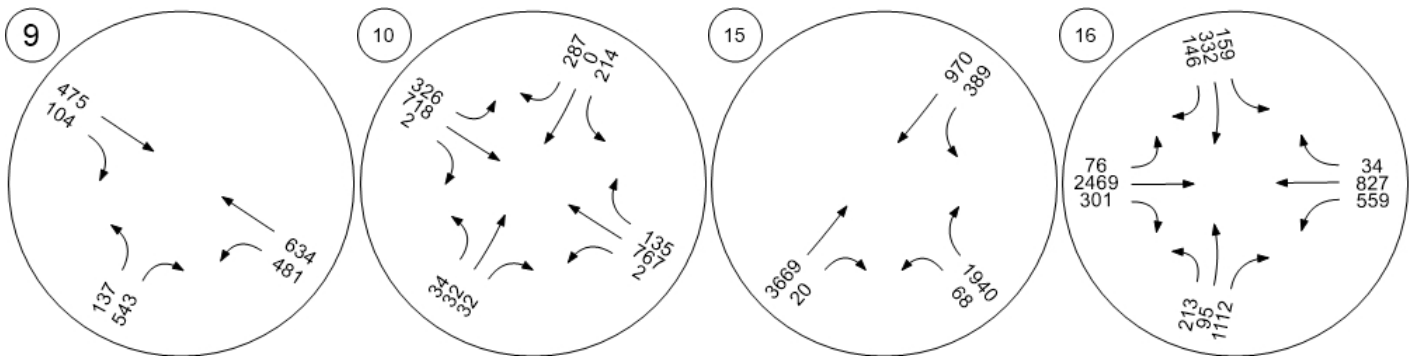


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



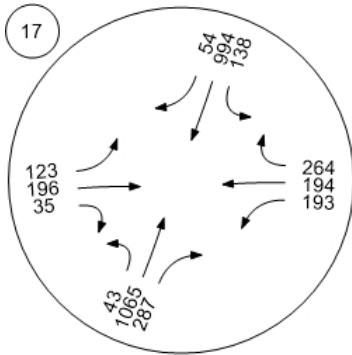
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



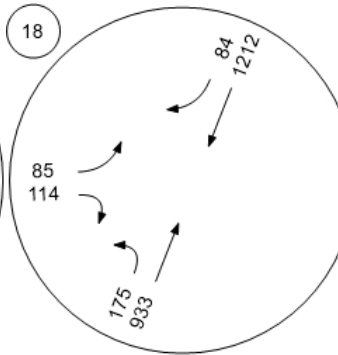
Traffic Volume - Future Total Volume



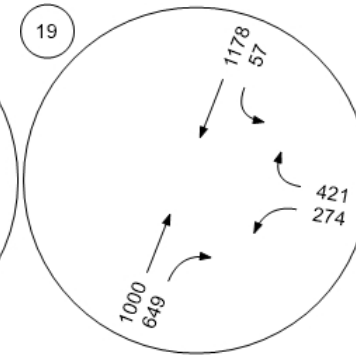
Willow Rd (SR 114)/Hamilton



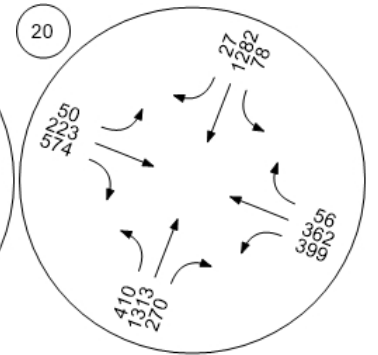
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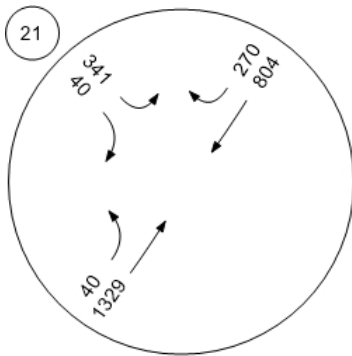
Willow Rd (SR 114)/O'Brien



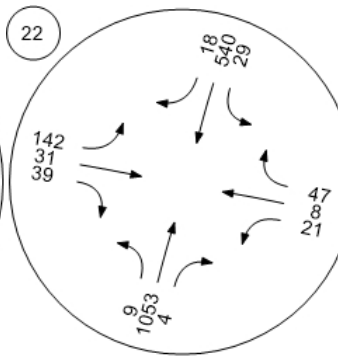
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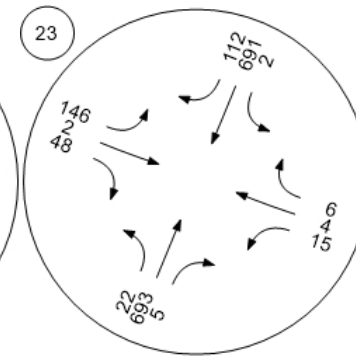
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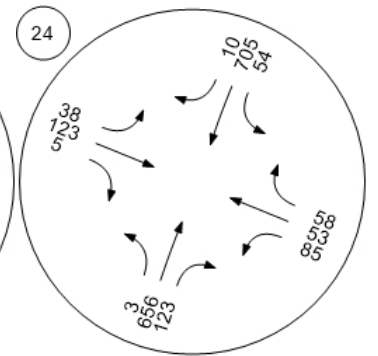
Willow Rd/Durham St-VA Me



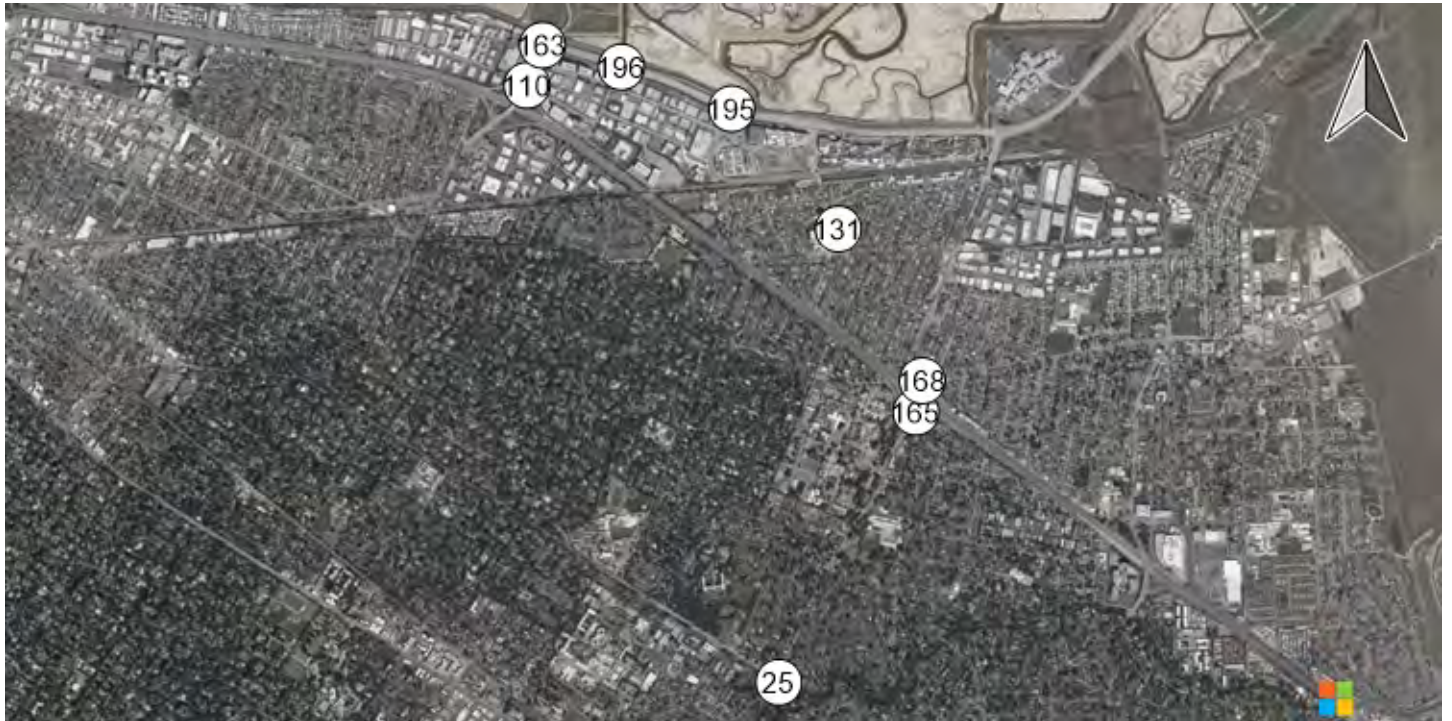
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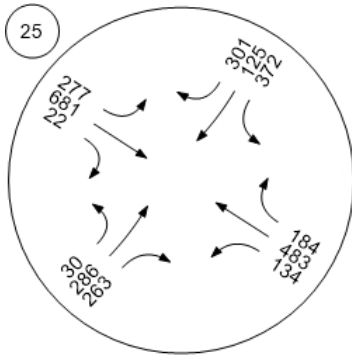
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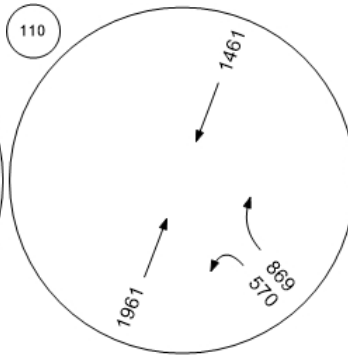
Traffic Volume - Future Total Volume



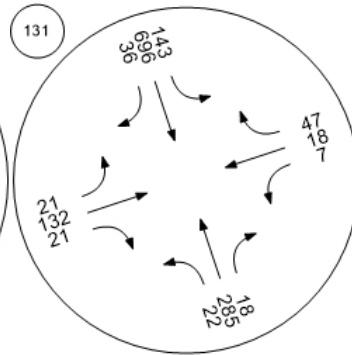
Middlefield Rd-Willow Rd



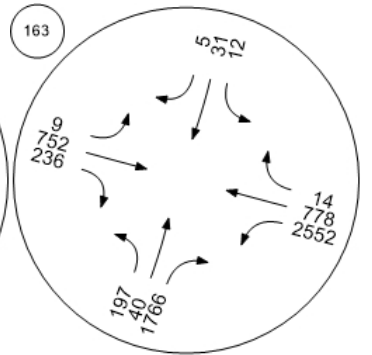
Marsh Road/101 NB Ramps



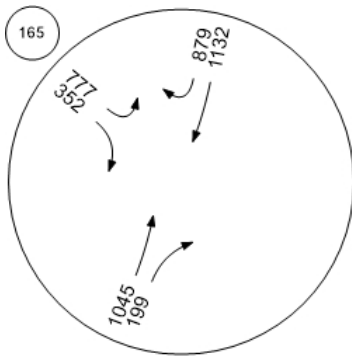
Chilco Street/Hamilton Avenue



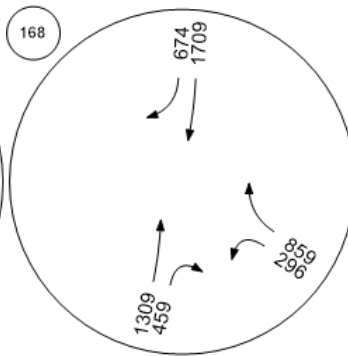
Bayfront Expy/Marsh Rd



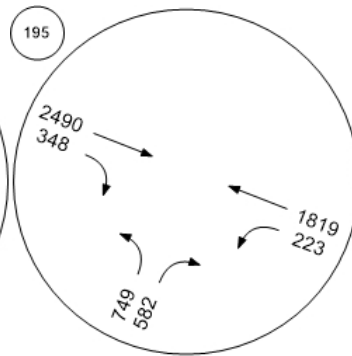
Willow Rd/US-101 SB Ramps



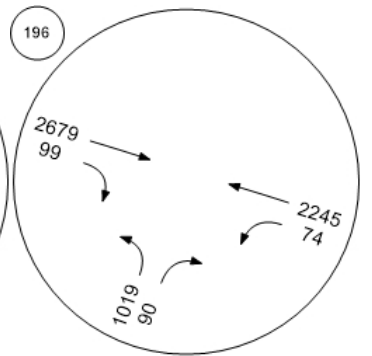
Willow Rd/US-101 NB Ramp



Bayfront Expy/Chilco St

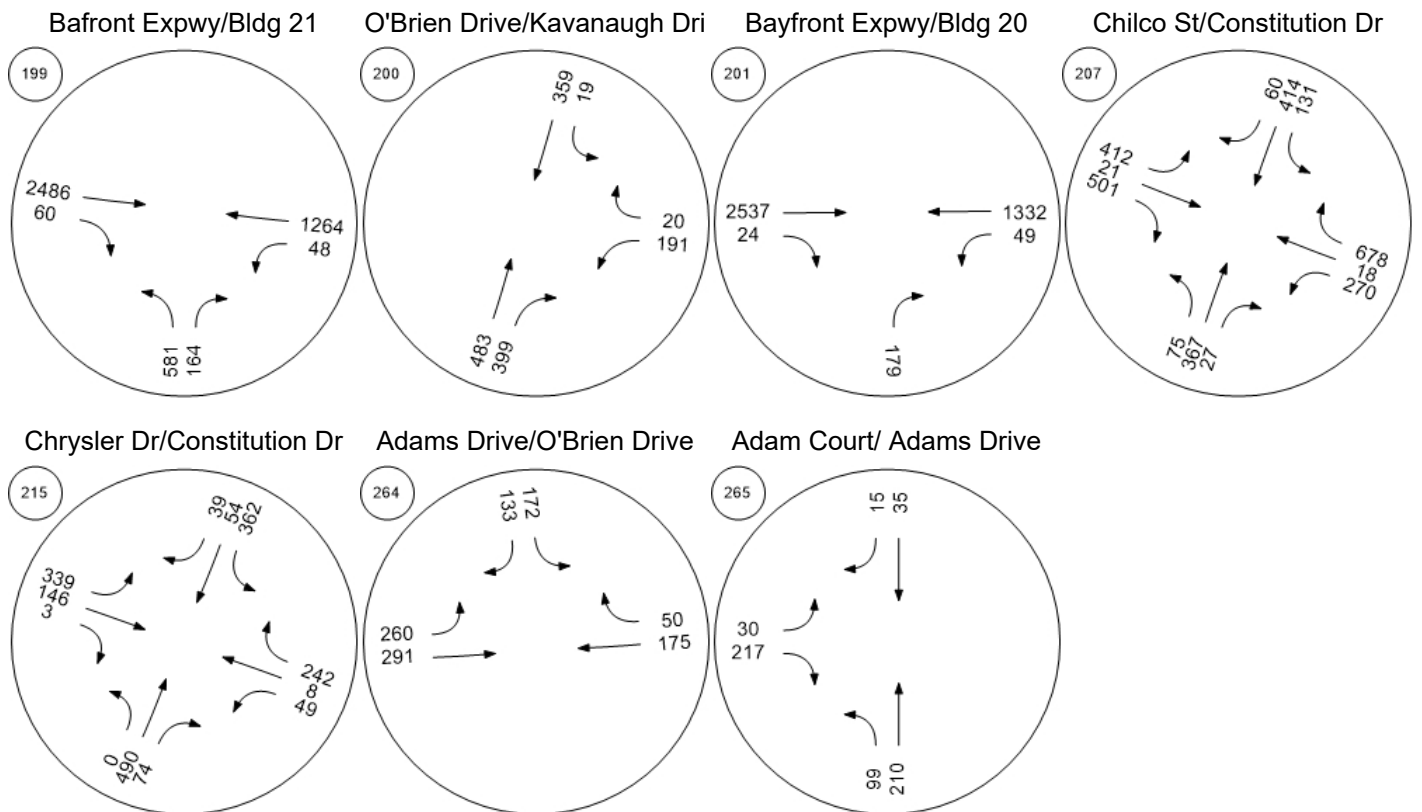


Bayfront Expy/Chrysler Drive





Traffic Volume - Future Total Volume

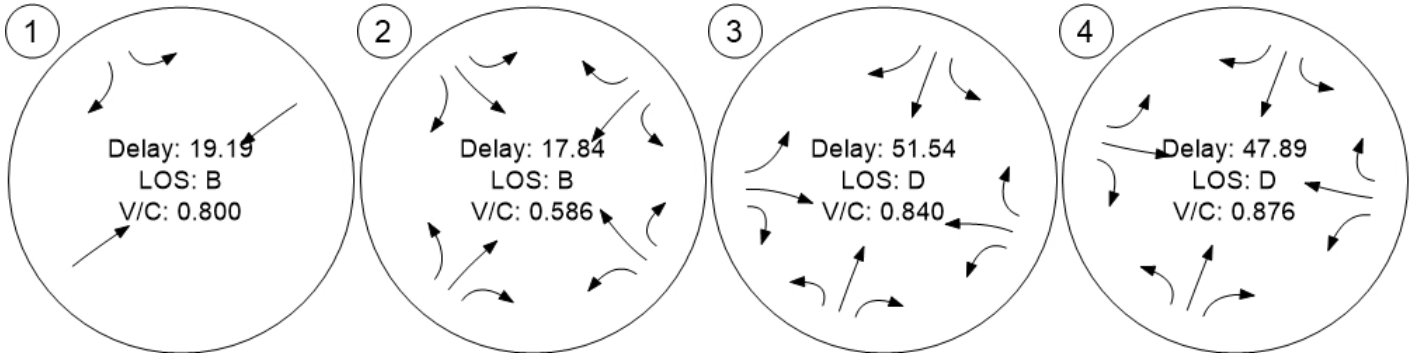


Traffic Conditions

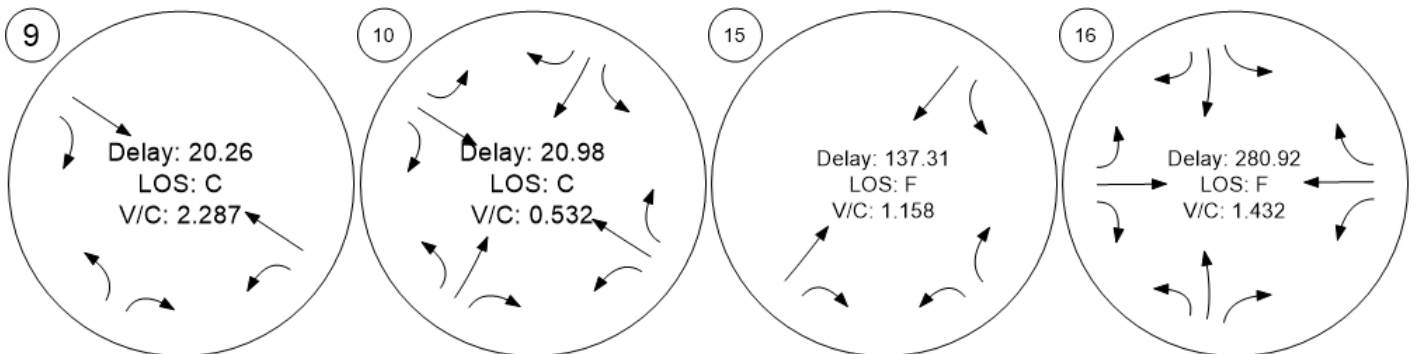


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



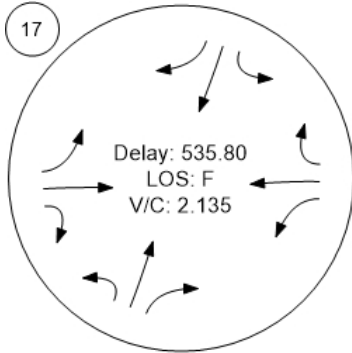
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



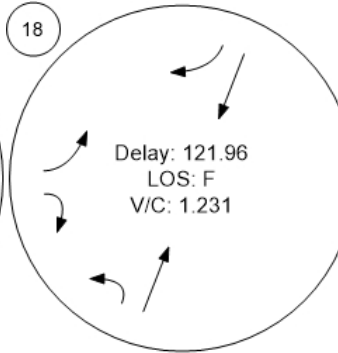
Traffic Conditions



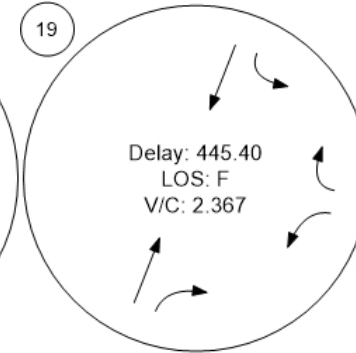
Willow Rd (SR 114)/Hamilton



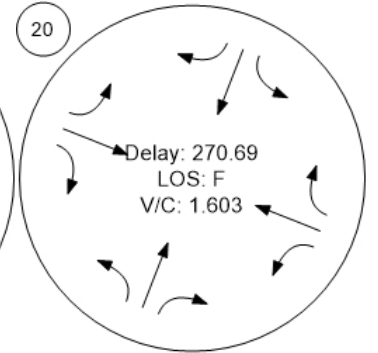
Willow Rd (SR 114)/Ivy Dr



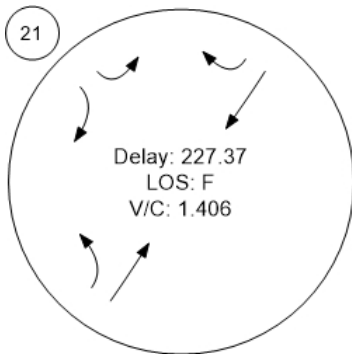
Willow Rd (SR 114)/O'Brien



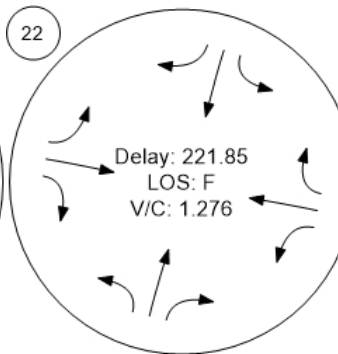
Willow Rd (SR 114)/Newbrid



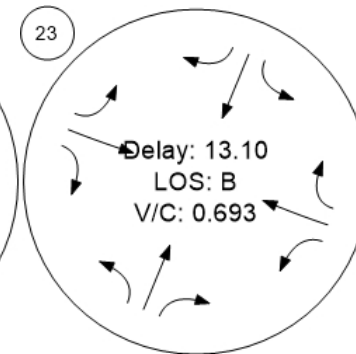
Willow Rd/Bay Rd



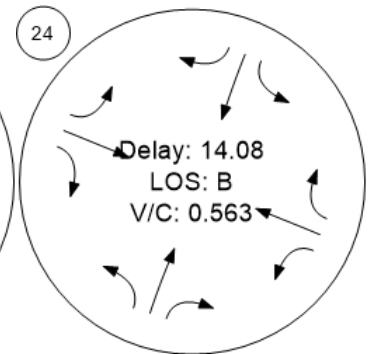
Willow Rd/Durham St-VA Me



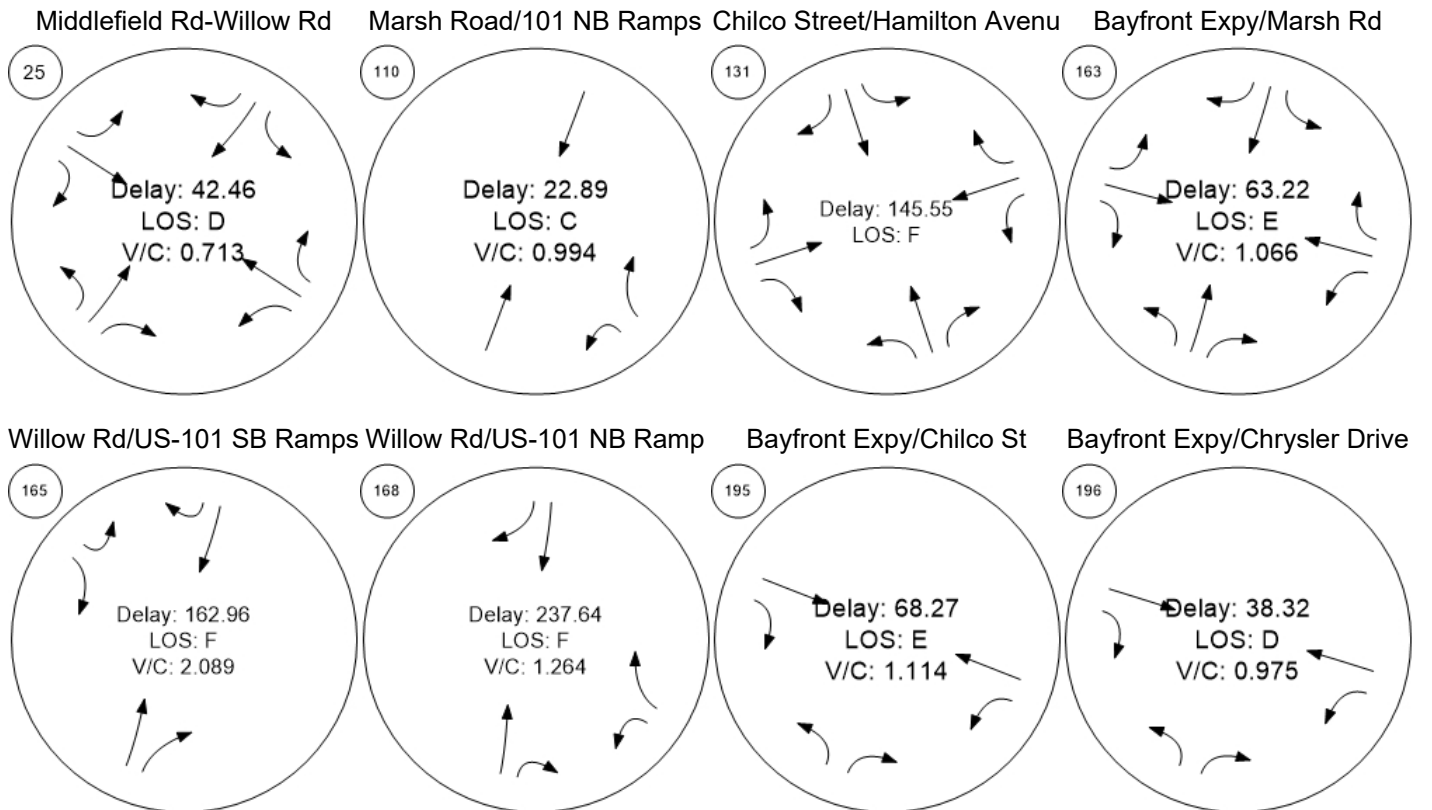
Willow Rd/Coleman Ave



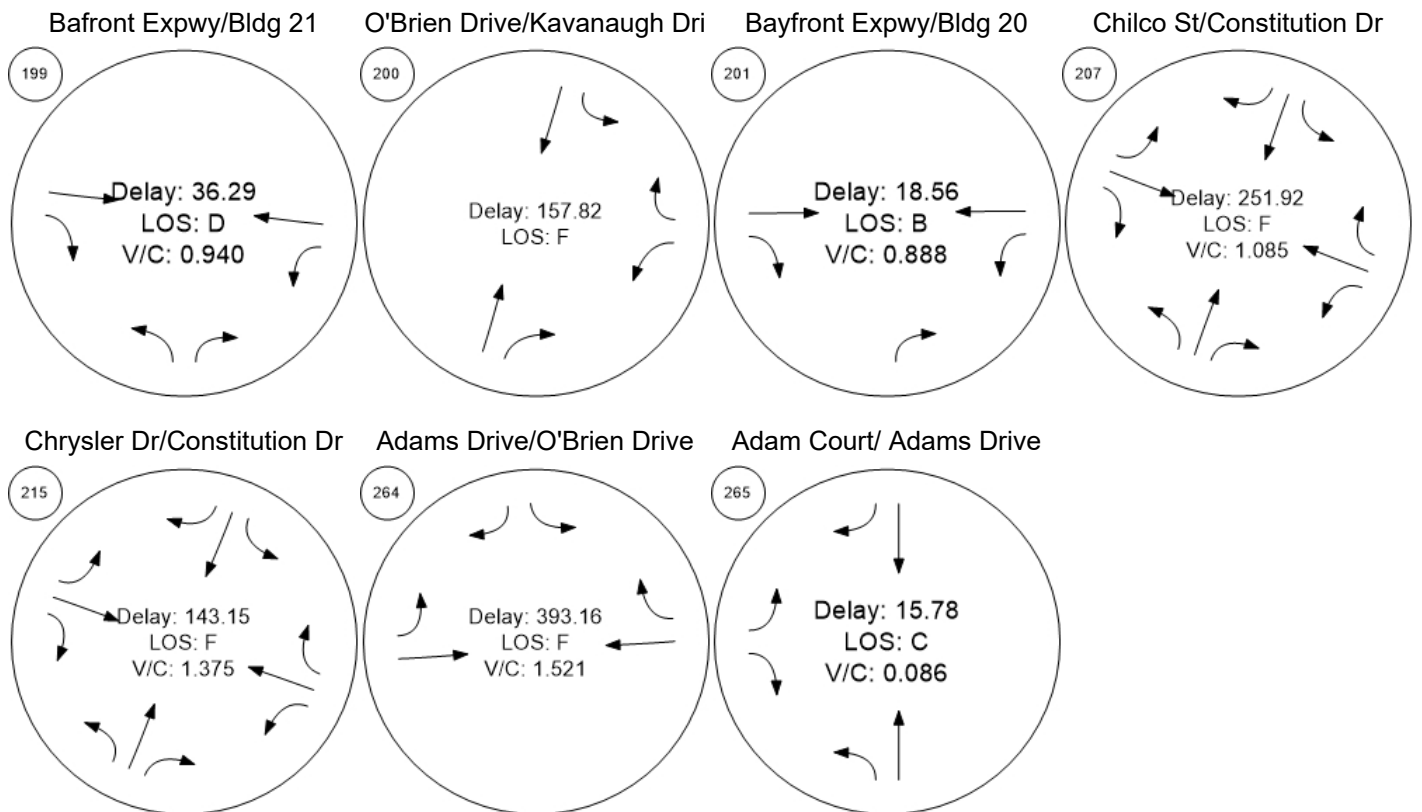
Willow Rd/Gilbert Ave



Traffic Conditions

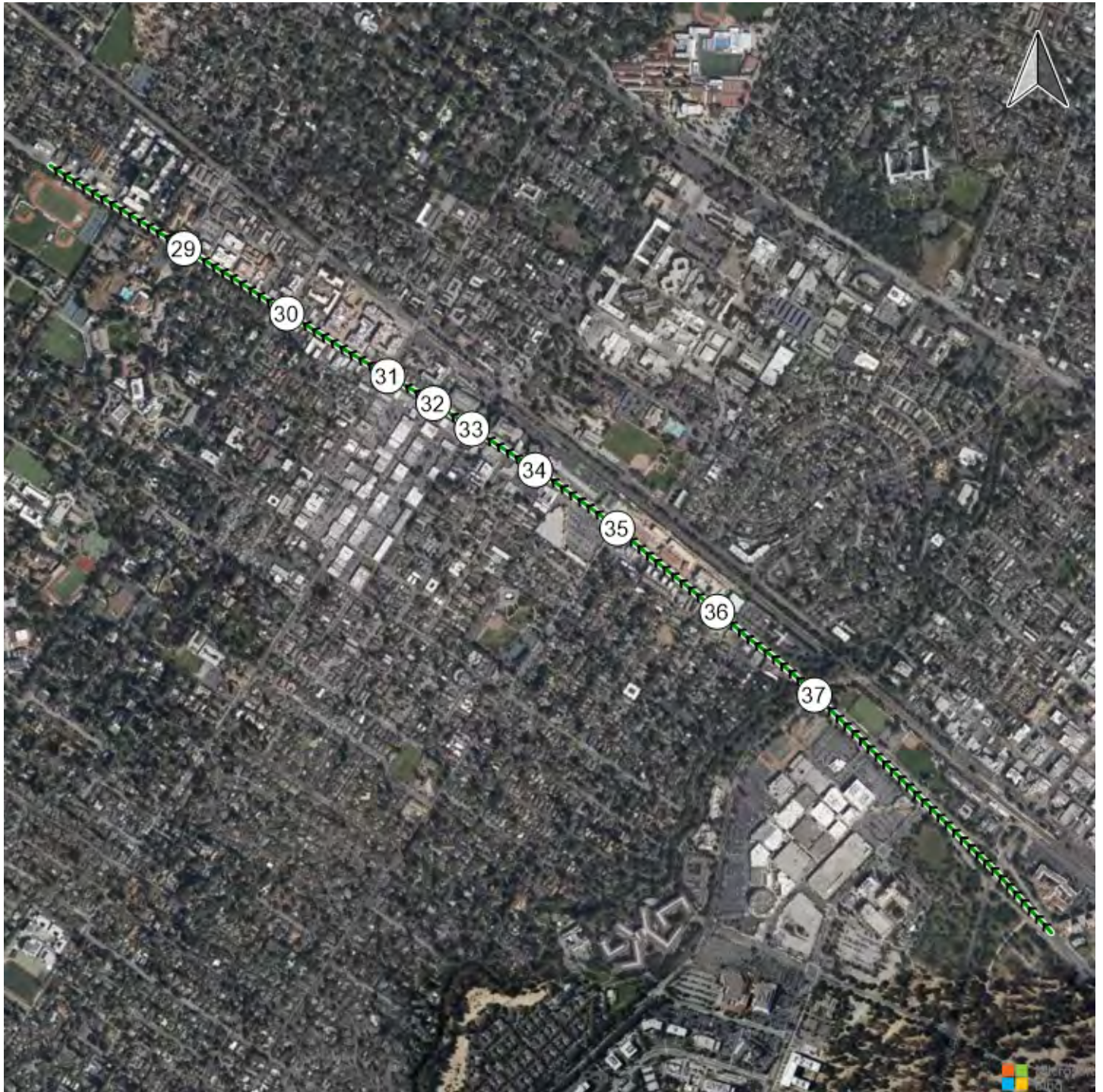


Traffic Conditions



Time Space Diagram - Flowing Off

Route 1: ECR NB



Generated with 

Version 2021 (SP 0-4)

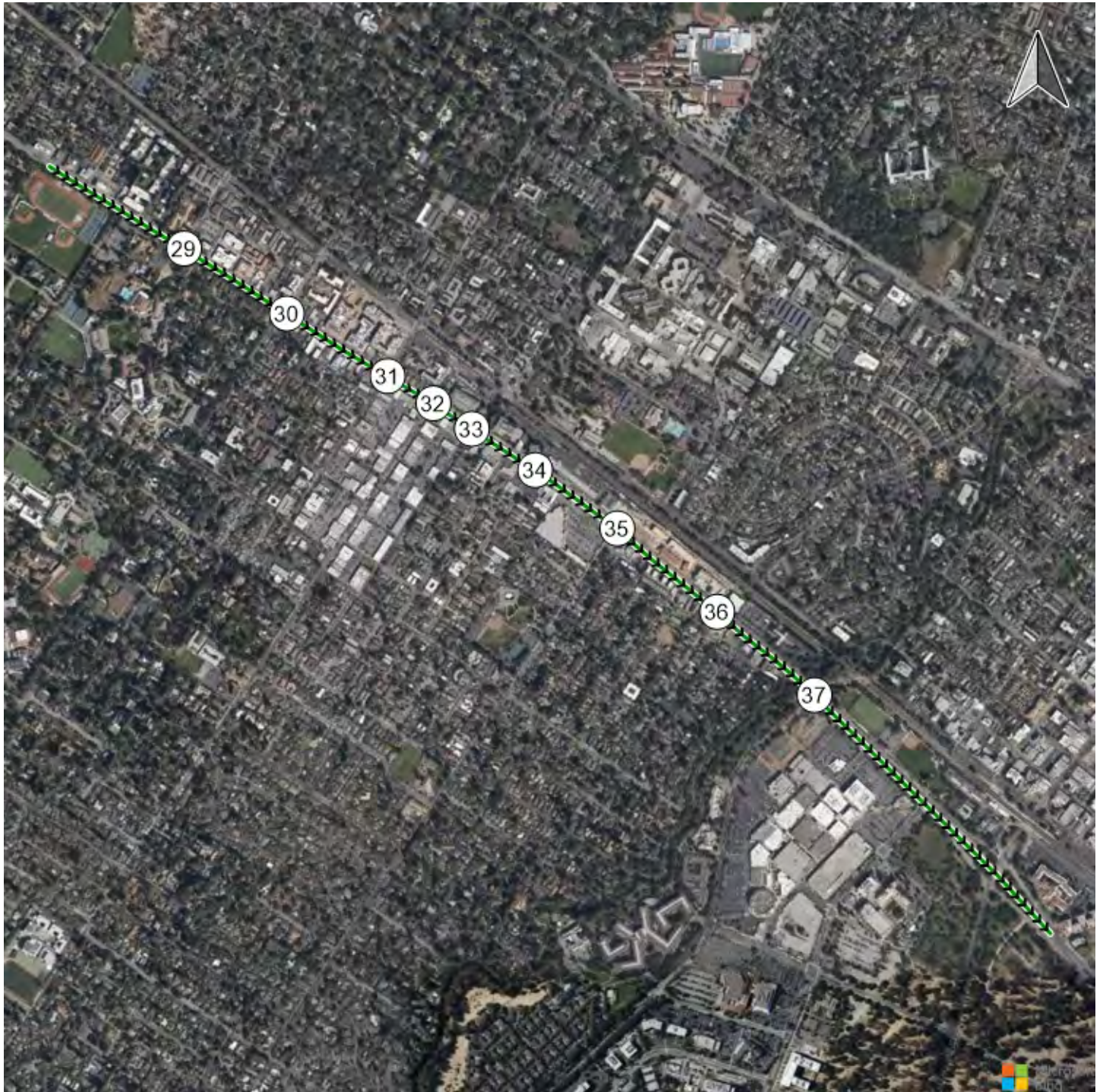
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Route 1: ECR NB

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Time Space Diagram - Flowing Off

Route 2: ECR SB





Generated with  PTV VISTRO

Version 2021 (SP 0-4)

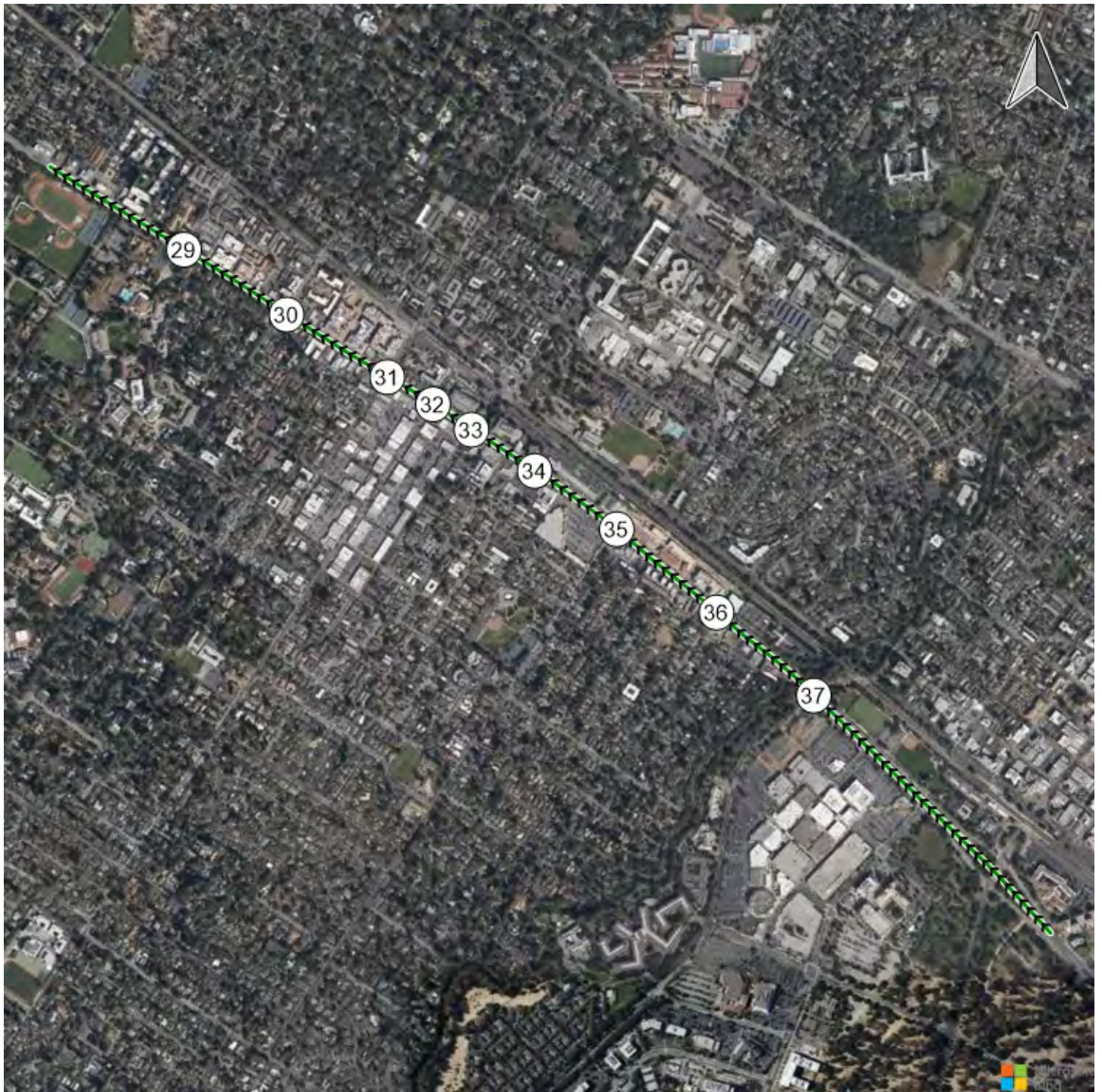
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



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Version 2021 (SP 0-4)

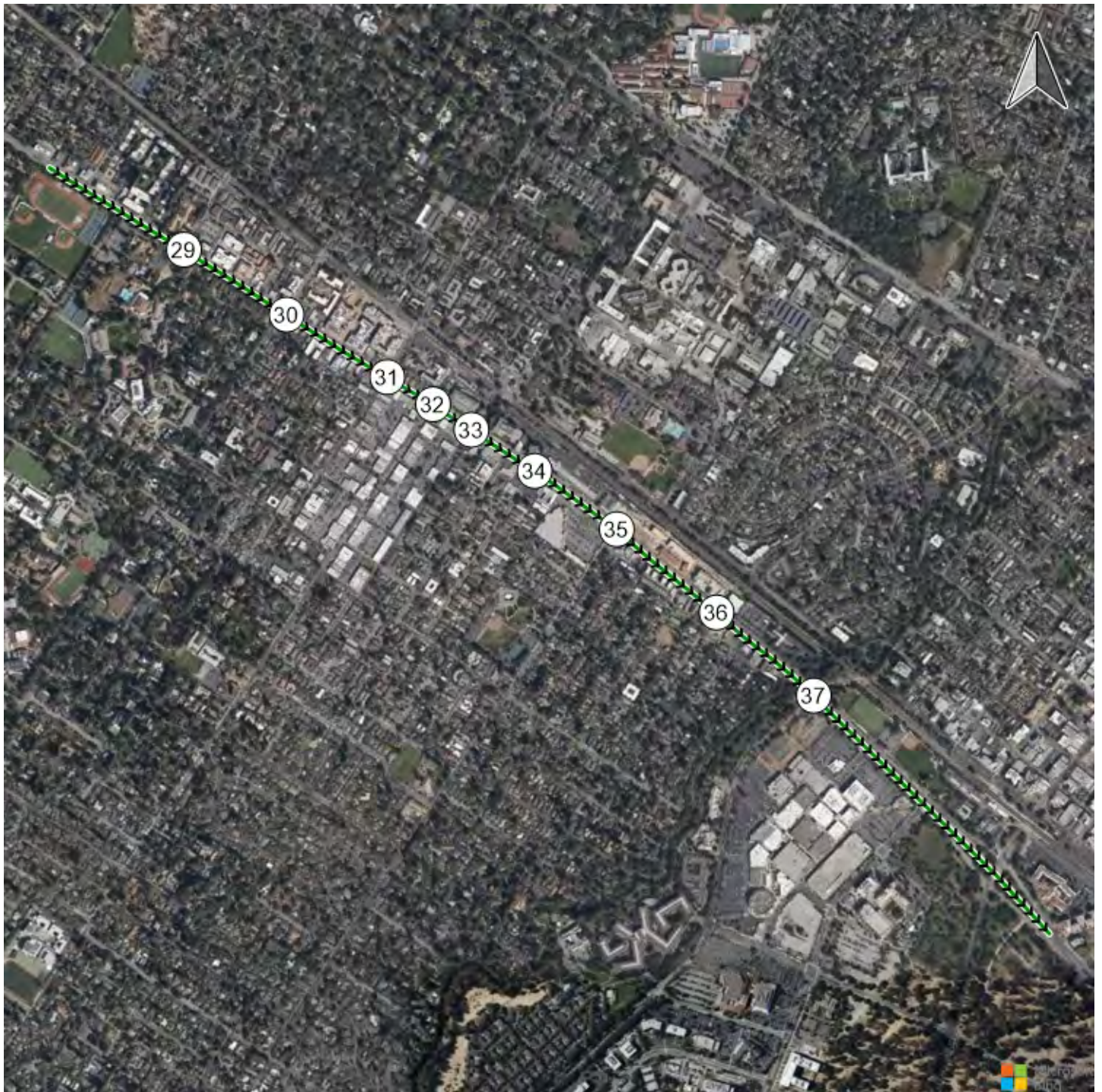
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



Generated with 

Version 2021 (SP 0-4)

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Route 2: ECR SB

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Vistro File: \\...\Vistro\_AllScenarios\_AM - 12.1.2021.vistro

Scenario 22 Cumulative w/Dumbarton AM (2040 vols)+  
ProjectReport File: \\...\Cumulative w Dumbarton + Project AM  
(RedTripCap).pdf

12/9/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Right	0.910	22.6	C
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	SEB Left	0.825	30.4	C
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.831	58.7	E
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	EB Left	1.212	63.5	E
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NWB Left	0.757	49.7	D
10	Middlefield Rd/Ringswood Ave	Signalized	HCM 6th Edition	NEB Left	0.408	13.2	B
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NWB Left	0.770	13.1	B
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	WB Left	1.278	258.8	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	SB Left	1.167	163.5	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	NB Left	1.619	251.1	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	NB Thru	1.149	76.6	E
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	WB Right	1.611	230.1	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	SEB Left	1.172	77.4	E
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	WB Right	1.124	122.9	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.925	33.6	C
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.694	23.4	C
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.625	64.8	E

110	Marsh Road and US 101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	1.110	61.9	E
131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	NB Thru	0.833	24.3	C
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	NB Left	0.847	65.3	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	1.711	96.4	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.569	129.0	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.038	45.5	D
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	WB Left	0.751	12.5	B
199	Bayfront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.722	5.6	A
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	1.983	266.3	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.933	9.9	A
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	NB Left	0.733	86.7	F
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	SB Thru	1.586	325.6	F
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	0.915	285.6	F
265	Adam Court/Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.047	17.3	C
267	Willow Road(SR114)/Park Street	Signalized	HCM 6th Edition	SB Left	0.509	33.6	C
269	O'Brien Drive/Loop Road	Roundabout	HCM 6th Edition	WB Right		8.4	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.910

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↵↵↵	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	



**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	1038	1462	217	1343	532
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.30	3.60	2.15	5.10	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1038	1462	217	1343	532
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	265	373	54	343	136
Total Analysis Volume [veh/h]	0	1059	1492	217	1370	543
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	7	10	0	5	0
Pedestrian Clearance [s]	0	16	0	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.26	0.42	0.41	0.35
s, saturation flow rate [veh/h]	4000	3515	3373	1572
c, Capacity [veh/h]	2121	1772	1394	650
d1, Uniform Delay [s]	11.98	17.07	23.15	21.01
k, delay calibration	0.50	0.50	0.05	0.37
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	5.06	4.39	9.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.50	0.84	0.98	0.84
d, Delay for Lane Group [s/veh]	12.82	22.13	27.55	30.37
Lane Group LOS	B	C	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.51	11.47	12.56	10.11
50th-Percentile Queue Length [ft/ln]	137.79	286.87	314.07	252.82
95th-Percentile Queue Length [veh/ln]	9.36	17.03	18.38	15.33
95th-Percentile Queue Length [ft/ln]	234.04	425.75	459.39	383.20

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.82	22.13	0.00	27.55	30.37
Movement LOS		B	C		C	C
d_A, Approach Delay [s/veh]	12.82		22.13		28.35	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	22.59					
Intersection LOS	C					
Intersection V/C	0.910					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	14.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.48	0.00	27.20
I_p,int, Pedestrian LOS Score for Intersection	3.007	0.000	2.587
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	773
d_b, Bicycle Delay [s]	9.79	9.78	15.04
I_b,int, Bicycle LOS Score for Intersection	2.433	2.791	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Road		
Base Volume Input [veh/h]	42	1307	7	448	1225	328	13	4	68	341	19	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.60	3.00	7.10	3.90	4.00	1.00	0.00	0.00	12.70	1.70	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	59	0	0	0
Total Hourly Volume [veh/h]	42	1307	7	448	1225	328	13	4	9	341	19	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	363	2	124	340	91	4	1	3	95	5	0
Total Analysis Volume [veh/h]	47	1452	8	498	1361	364	14	4	10	379	21	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			1			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			1			1	
v_co, Outbound Pedestrian Volume crossing		1			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		1			0			1			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	70.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	8	3	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	0	6	0	4	4	4
Maximum Green [s]	15	40	40	15	40	40	0	20	0	20	20	20
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	0.0	3.2	0.0	3.2	3.2	3.2
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	51	51	31	70	70	0	41	0	37	37	37
Vehicle Extension [s]	2.5	3.5	3.5	2.0	3.5	3.5	0.0	2.5	0.0	2.5	2.5	2.5
Walk [s]	0	7	7	0	7	7	0	8	0	8	8	8
Pedestrian Clearance [s]	0	21	21	0	21	21	0	28	0	24	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	96	96	112	102	102	7	7	35	35
g / C, Green / Cycle	0.05	0.60	0.60	0.70	0.64	0.64	0.04	0.04	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.03	0.27	0.27	0.48	0.47	0.50	0.01	0.00	0.21	0.01
s, saturation flow rate [veh/h]	1758	3532	1849	1027	1840	1712	1829	2555	1785	1900
c, Capacity [veh/h]	82	2122	1111	699	1177	1096	82	115	390	415
d1, Uniform Delay [s]	74.70	17.49	17.49	16.14	19.52	20.89	73.64	73.20	61.96	49.35
k, delay calibration	0.08	0.50	0.50	0.50	0.50	0.50	0.08	0.08	0.50	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.69	0.70	1.33	6.09	4.05	5.73	0.98	0.24	38.80	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.58	0.45	0.45	0.71	0.73	0.79	0.22	0.09	0.97	0.05
d, Delay for Lane Group [s/veh]	79.39	18.18	18.82	22.23	23.57	26.63	74.62	73.44	100.76	49.39
Lane Group LOS	E	B	B	C	C	C	E	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.00	9.82	10.48	3.83	22.25	24.14	0.75	0.20	19.63	0.68
50th-Percentile Queue Length [ft/ln]	50.05	245.45	261.99	95.74	556.28	603.56	18.64	5.09	490.77	17.12
95th-Percentile Queue Length [veh/ln]	3.60	14.96	15.79	6.89	29.99	32.20	1.34	0.37	26.90	1.23
95th-Percentile Queue Length [ft/ln]	90.09	373.92	394.72	172.33	749.68	805.02	33.55	9.16	672.43	30.82



**Movement, Approach, & Intersection Results**

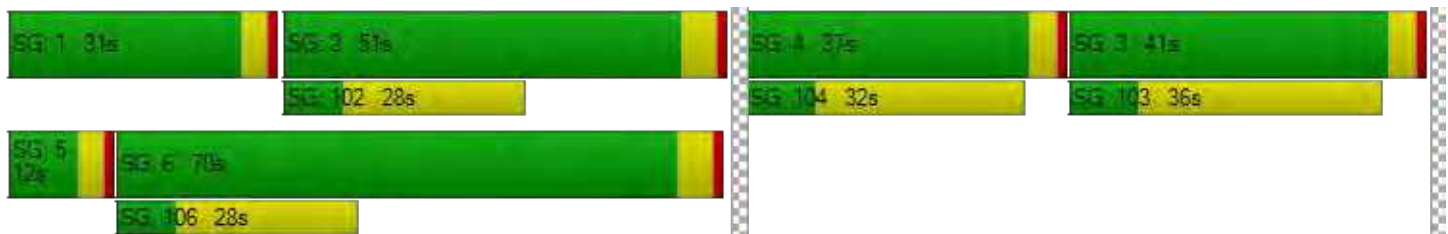
d_M, Delay for Movement [s/veh]	79.39	18.40	18.82	22.23	24.69	26.63	74.62	74.62	73.44	100.76	49.39	49.39
Movement LOS	E	B	B	C	C	C	E	E	E	F	D	D
d_A, Approach Delay [s/veh]	20.30			24.46			74.20			98.07		
Approach LOS	C			C			E			F		
d_I, Intersection Delay [s/veh]	30.37											
Intersection LOS	C											
Intersection V/C	0.825											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	68.43			68.43			69.35			69.35		
I_p,int, Pedestrian LOS Score for Intersection	3.089			3.291			2.945			2.188		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	575			813			460			410		
d_b, Bicycle Delay [s]	40.61			28.18			47.41			50.54		
I_b,int, Bicycle LOS Score for Intersection	2.388			3.394			1.703			2.220		
Bicycle LOS	B			C			A			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	58.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	224	974	126	29	1014	413	611	77	224	38	21	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	224	974	126	29	1014	413	611	77	209	38	21	25
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	251	32	7	261	106	157	20	54	10	5	6
Total Analysis Volume [veh/h]	231	1004	130	30	1045	426	630	79	215	39	22	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			2			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			1			2	
v_co, Outbound Pedestrian Volume crossing		0			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			0			6			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	96	96	5	89	89	38	38	38	12	12
g / C, Green / Cycle	0.08	0.60	0.60	0.03	0.56	0.56	0.24	0.24	0.24	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.31	0.02	0.42	0.43	0.21	0.21	0.14	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1792	1704	1823	1648	1717	1706	1526	1439	1212
c, Capacity [veh/h]	142	1132	1081	58	1015	917	409	407	364	106	90
d1, Uniform Delay [s]	73.44	18.16	18.25	75.88	27.02	27.61	58.55	58.41	53.79	70.46	71.37
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.17	0.16	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	310.01	1.64	1.76	2.58	5.12	6.31	8.69	8.10	1.14	1.56	3.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.62	0.51	0.52	0.51	0.75	0.77	0.87	0.87	0.59	0.37	0.54
d, Delay for Lane Group [s/veh]	383.45	19.80	20.01	78.45	32.14	33.91	67.24	66.52	54.93	72.02	75.03
Lane Group LOS	F	B	C	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	18.10	12.62	12.29	1.26	23.20	22.29	15.04	14.73	7.89	1.59	2.01
50th-Percentile Queue Length [ft/ln]	452.52	315.39	307.21	31.42	579.89	557.14	375.96	368.25	197.19	39.71	50.35
95th-Percentile Queue Length [veh/ln]	28.88	18.44	18.04	2.26	31.09	30.03	21.40	21.02	12.49	2.86	3.63
95th-Percentile Queue Length [ft/ln]	722.05	461.01	450.94	56.56	777.36	750.70	534.95	525.61	312.33	71.48	90.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	383.45	19.89	20.01	78.45	32.62	33.91	66.93	66.52	54.93	72.02	75.03	75.03
Movement LOS	F	B	C	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	81.43			33.90			64.10			73.68		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	58.72											
Intersection LOS	E											
Intersection V/C	0.831											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.34	69.34	69.34	69.34
I_p,int, Pedestrian LOS Score for Intersection	2.988	3.079	2.508	2.056
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	843	400	410
d_b, Bicycle Delay [s]	24.53	26.77	51.32	50.53
I_b,int, Bicycle LOS Score for Intersection	2.686	2.798	3.109	1.703
Bicycle LOS	B	C	C	A

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	63.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.212

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	0	839	82	425	755	47	334	69	2	44	53	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.20	2.40	7.10	6.20	3.20	3.50	2.60	0.00	0.00	5.30	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	839	82	425	755	47	334	69	2	44	53	339
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	214	21	108	193	12	85	18	1	11	14	86
Total Analysis Volume [veh/h]	0	856	84	434	770	48	341	70	2	45	54	346
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			5			0			5	
v_di, Inbound Pedestrian Volume crossing in		0			5			0			5	
v_co, Outbound Pedestrian Volume crossing		1			1			1			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			1			1			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			12			9			2	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	30	30
g / C, Green / Cycle	0.33	0.33	0.20	0.57	0.57	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.25	0.23	0.23	0.63	0.26
s, saturation flow rate [veh/h]	1882	1656	1708	1807	1763	654	1708
c, Capacity [veh/h]	669	549	343	1030	1005	326	686
d1, Uniform Delay [s]	24.41	24.42	32.07	9.62	9.64	31.09	21.81
k, delay calibration	0.50	0.50	0.23	0.50	0.50	0.50	0.34
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.46	11.69	129.85	1.16	1.21	142.63	3.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	0.80	1.26	0.40	0.40	1.27	0.65
d, Delay for Lane Group [s/veh]	31.87	36.11	161.92	10.79	10.84	173.72	25.00
Lane Group LOS	C	D	F	B	B	F	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.40	8.84	18.68	3.80	3.74	19.29	7.38
50th-Percentile Queue Length [ft/ln]	234.97	220.99	467.07	94.97	93.56	482.29	184.44
95th-Percentile Queue Length [veh/ln]	14.43	13.72	28.83	6.84	6.74	30.40	11.83
95th-Percentile Queue Length [ft/ln]	360.67	342.89	720.64	170.94	168.42	759.99	295.80

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	31.87	33.63	36.11	161.92	10.81	10.84	173.72	173.72	173.72	25.00	25.00	25.00
Movement LOS	C	C	D	F	B	B	F	F	F	C	C	C
d_A, Approach Delay [s/veh]	33.86			63.20			173.72			25.00		
Approach LOS	C			E			F			C		
d_I, Intersection Delay [s/veh]	63.55											
Intersection LOS	E											
Intersection V/C	1.212											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	23.9
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.82	29.82	29.82	19.73
I_p,int, Pedestrian LOS Score for Intersection	2.688	3.414	1.918	2.195
Crosswalk LOS	B	C	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	596	1071	681	681
d_b, Bicycle Delay [s]	19.73	8.70	17.50	17.44
I_b,int, Bicycle LOS Score for Intersection	2.335	2.593	2.241	2.294
Bicycle LOS	B	B	B	B

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	49.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	87	590	520	507	501	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	11.80	4.20	3.10	2.50	3.30	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	87	0	520	507	501	104
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	138	135	133	28
Total Analysis Volume [veh/h]	93	0	553	539	533	111
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	10		11		0	
v_di, Inbound Pedestrian Volume crossing in	11		10		0	
v_co, Outbound Pedestrian Volume crossing	1		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	22		39		37	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	10	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.6	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	Yes	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	13	13	33	100	68
g / C, Green / Cycle	0.11	0.11	0.28	0.84	0.57
(v / s)_i Volume / Saturation Flow Rate	0.06	0.00	0.31	0.29	0.36
s, saturation flow rate [veh/h]	1641	1561	1765	1862	1779
c, Capacity [veh/h]	180	172	485	1555	1005
d1, Uniform Delay [s]	50.42	0.00	43.52	2.30	17.79
k, delay calibration	0.08	0.08	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.69	0.00	84.97	0.61	3.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	1.14	0.35	0.64
d, Delay for Lane Group [s/veh]	52.11	0.00	128.49	2.91	20.92
Lane Group LOS	D	A	F	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.73	0.00	25.56	2.06	12.35
50th-Percentile Queue Length [ft/ln]	68.20	0.00	639.03	51.51	308.77
95th-Percentile Queue Length [veh/ln]	4.91	0.00	36.59	3.71	18.11
95th-Percentile Queue Length [ft/ln]	122.76	0.00	914.81	92.72	452.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	52.11	0.00	128.49	2.91	20.92	20.92
Movement LOS	D	A	F	A	C	C
d_A, Approach Delay [s/veh]	52.11		66.50		20.92	
Approach LOS	D		E		C	
d_I, Intersection Delay [s/veh]	49.72					
Intersection LOS	D					
Intersection V/C	0.757					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.52	49.52	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.948	2.891	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	763	1090	507
d_b, Bicycle Delay [s]	23.21	12.68	34.09
I_b,int, Bicycle LOS Score for Intersection	1.560	3.361	2.622
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringswood Ave**

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.408

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	⇐⇑⇒			⇑⇒⇐			⇑⇒⇐⇑⇒			⇑⇒⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	6	11	9	129	28	342	21	675	211	301	756	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	8.30	4.40	0.00	4.00	0.00	3.20	0.00	4.60	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	222	0	0	96	0	0	0
Total Hourly Volume [veh/h]	6	11	9	129	28	120	21	675	115	301	756	56
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	3	2	34	7	32	6	180	31	80	201	15
Total Analysis Volume [veh/h]	6	12	10	137	30	128	22	718	122	320	804	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			5			2			6	
v_di, Inbound Pedestrian Volume crossing in		2			6			1			5	
v_co, Outbound Pedestrian Volume crossing		9			41			40			8	
v_ci, Inbound Pedestrian Volume crossing mi		8			40			41			9	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		8			23			15			38	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	61.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.6	2.9	3.6	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.6	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	22	22	22	22	94	79	79	91	85	85
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.78	0.66	0.66	0.76	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.00	0.01	0.13	0.09	0.03	0.20	0.08	0.37	0.24	0.24
s, saturation flow rate [veh/h]	1397	1736	1310	1477	701	3526	1473	856	1840	1780
c, Capacity [veh/h]	124	325	300	277	574	2331	974	673	1301	1258
d1, Uniform Delay [s]	54.83	40.14	46.93	43.16	4.13	8.65	7.45	5.19	6.75	6.77
k, delay calibration	0.10	0.10	0.10	0.10	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	0.08	1.54	1.15	0.03	0.34	0.26	2.40	0.70	0.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.05	0.07	0.56	0.46	0.04	0.31	0.13	0.48	0.34	0.34
d, Delay for Lane Group [s/veh]	54.98	40.22	48.47	44.31	4.16	8.99	7.72	7.59	7.45	7.51
Lane Group LOS	D	D	D	D	A	A	A	A	A	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.18	0.56	4.82	3.46	0.11	3.79	1.15	2.39	4.06	3.99
50th-Percentile Queue Length [ft/ln]	4.56	13.93	120.51	86.61	2.87	94.76	28.72	59.78	101.53	99.71
95th-Percentile Queue Length [veh/ln]	0.33	1.00	8.42	6.24	0.21	6.82	2.07	4.30	7.31	7.18
95th-Percentile Queue Length [ft/ln]	8.20	25.07	210.53	155.89	5.16	170.57	51.69	107.61	182.75	179.48

**Movement, Approach, & Intersection Results**

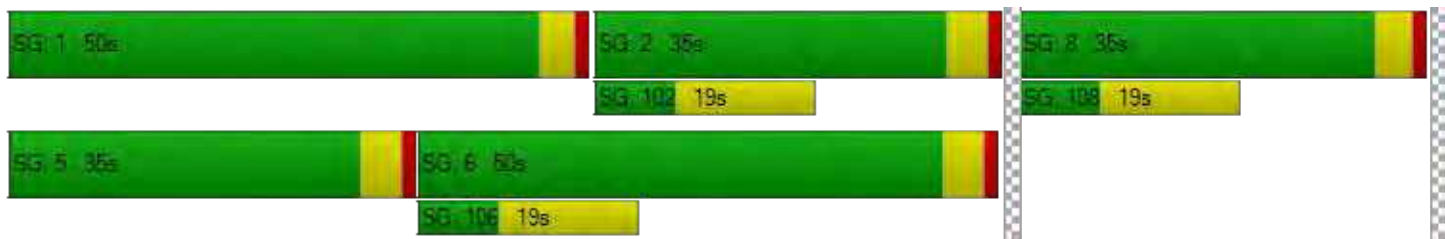
d_M, Delay for Movement [s/veh]	54.98	40.22	40.22	48.47	48.47	44.31	4.16	8.99	7.72	7.59	7.48	7.51
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	43.38			46.67			8.69			7.51		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	13.24											
Intersection LOS	B											
Intersection V/C	0.408											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.008			2.916			3.160			2.836		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	513			513			757			507		
d_b, Bicycle Delay [s]	33.29			33.54			23.36			34.10		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.413			2.350			2.536		
Bicycle LOS	A			B			B			B		

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

**Intersection Setup**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↔		↔↑↑↑		↔↔↔↔↔↔	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Bayfront Expy (SR84)		Bayfront Expy (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	834	67	1319	2912	241	416
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	3.50	1.60	3.10	2.20	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	834	67	1319	2912	241	416
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	215	17	340	751	62	107
Total Analysis Volume [veh/h]	860	69	1360	3002	248	429
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	6		0		7	
v_ci, Inbound Pedestrian Volume crossing mi	7		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	35	110	75	110	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	3.9	1.5	3.9	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	74	74	74	74	74	74
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	5.90	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	3.90	2.00	0.00
g_i, Effective Green Time [s]	20	20	32	56	8	45
g / C, Green / Cycle	0.27	0.27	0.44	0.76	0.11	0.60
(v / s)_i Volume / Saturation Flow Rate	0.17	0.04	0.39	0.59	0.07	0.10
s, saturation flow rate [veh/h]	4955	1548	3470	5049	3453	4166
c, Capacity [veh/h]	1344	420	1515	3819	381	2503
d1, Uniform Delay [s]	23.85	20.61	19.38	5.44	31.65	6.60
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.62	0.22	0.82	0.45	0.70	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.64	0.16	0.90	0.79	0.65	0.17
d, Delay for Lane Group [s/veh]	24.47	20.83	20.20	5.89	32.36	6.61
Lane Group LOS	C	C	C	A	C	A
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.89	0.82	8.66	2.63	2.07	0.82
50th-Percentile Queue Length [ft/ln]	97.19	20.46	216.40	65.68	51.73	20.45
95th-Percentile Queue Length [veh/ln]	7.00	1.47	13.48	4.73	3.72	1.47
95th-Percentile Queue Length [ft/ln]	174.95	36.83	337.03	118.22	93.12	36.81

**Movement, Approach, & Intersection Results**

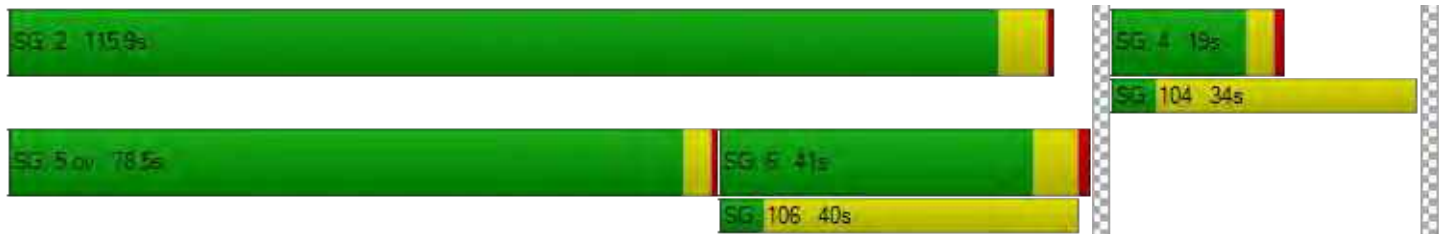
d_M, Delay for Movement [s/veh]	24.47	20.83	20.20	5.89	32.36	6.61
Movement LOS	C	C	C	A	C	A
d_A, Approach Delay [s/veh]	24.20		10.35		16.04	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	13.15					
Intersection LOS	B					
Intersection V/C	0.770					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	28.61	0.00	28.61
I_p,int, Pedestrian LOS Score for Intersection	3.653	0.000	2.928
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	944	378	405
d_b, Bicycle Delay [s]	10.33	24.40	23.58
I_b,int, Bicycle LOS Score for Intersection	2.071	3.959	1.670
Bicycle LOS	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	258.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.278

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	2	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Bayfront Expy (SR 84)			Bayfront Expy (SR 84)		
Base Volume Input [veh/h]	247	596	277	35	75	72	386	423	213	1160	2475	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	10.90	4.20	10.20	37.50	30.50	40.50	4.60	6.20	12.30	6.70	3.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	16	0	0	106	0	0	0
Total Hourly Volume [veh/h]	247	596	277	35	75	56	386	423	107	1160	2475	72
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	152	71	9	19	14	98	108	27	296	631	18
Total Analysis Volume [veh/h]	252	608	283	36	77	57	394	432	109	1184	2526	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			2			3			0	
v_di, Inbound Pedestrian Volume crossing in		0			3			2			0	
v_co, Outbound Pedestrian Volume crossing		4			0			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		3			0			4			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	8	8	15	15	8	6	10	10	6	10	10
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.6	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	15	25	25	20	20	25	25	55	70	40	70	55
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	5	7	0	5	0	0	0	5
Pedestrian Clearance [s]	0	10	10	0	29	10	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	3.1	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		No	Yes		No	Yes	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	126	126	126	126	126	126	126	126	126	126	126	126
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	5.10	5.10	4.60	6.00	6.00	4.60	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	3.10	3.10	2.60	4.00	4.00	2.60	4.00	4.00
g_i, Effective Green Time [s]	22	21	51	9	9	9	26	51	51	25	50	50
g / C, Green / Cycle	0.17	0.17	0.40	0.07	0.07	0.07	0.21	0.40	0.40	0.20	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.34	0.28	0.07	0.05	0.03	0.05	0.26	0.09	0.07	0.44	0.50	0.05
s, saturation flow rate [veh/h]	740	2209	3942	670	2746	1075	1515	4922	1458	2715	5020	1615
c, Capacity [veh/h]	128	369	1578	48	196	77	312	1989	589	538	1990	640
d1, Uniform Delay [s]	52.15	52.54	24.45	57.49	55.96	57.37	50.10	24.56	24.22	50.58	38.08	24.08
k, delay calibration	0.50	0.50	0.11	0.16	0.11	0.15	0.17	0.11	0.11	0.50	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	460.96	302.81	0.05	28.36	1.27	17.48	127.00	0.05	0.15	546.40	122.26	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.96	1.65	0.18	0.75	0.39	0.74	1.26	0.22	0.19	2.20	1.27	0.11
d, Delay for Lane Group [s/veh]	513.11	355.34	24.50	85.85	57.23	74.85	177.10	24.62	24.37	596.98	160.34	24.16
Lane Group LOS	F	F	C	F	E	E	F	C	C	F	F	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	20.40	21.26	1.81	1.52	1.23	2.18	10.40	2.85	2.15	49.29	42.62	1.41
50th-Percentile Queue Length [ft/ln]	510.06	531.54	45.13	38.07	30.70	54.61	260.10	71.35	53.68	1232.32	1065.38	35.31
95th-Percentile Queue Length [veh/ln]	34.42	34.60	3.25	2.74	2.21	3.93	17.40	5.14	3.86	78.56	62.16	2.54
95th-Percentile Queue Length [ft/ln]	860.59	865.09	81.24	68.53	55.27	98.31	435.04	128.43	96.62	1963.92	1554.07	63.56

**Movement, Approach, & Intersection Results**

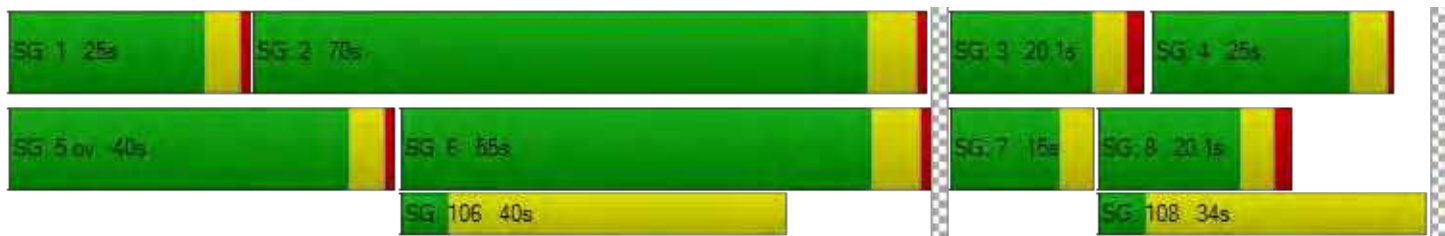
d_M, Delay for Movement [s/veh]	513.11	355.34	24.50	85.85	57.23	74.85	177.10	24.62	24.37	596.98	160.34	24.16
Movement LOS	F	F	C	F	E	E	F	C	C	F	F	C
d_A, Approach Delay [s/veh]	308.21			69.20			88.84			294.37		
Approach LOS	F			E			F			F		
d_I, Intersection Delay [s/veh]	258.78											
Intersection LOS	F											
Intersection V/C	1.278											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.44	0.00	54.44	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.142	0.000	3.342	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	326	238	776	1014
d_b, Bicycle Delay [s]	44.20	49.01	23.63	15.34
I_b,int, Bicycle LOS Score for Intersection	2.503	1.713	2.132	3.640
Bicycle LOS	B	A	B	D

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	163.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.167

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Main Street		
Base Volume Input [veh/h]	100	897	77	466	1351	48	47	15	48	17	6	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	6.30	7.00	9.10	8.40	10.50	1.30	4.50	6.00	23.10	12.50	30.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	100	897	77	466	1351	48	47	15	48	17	6	153
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	241	21	125	363	13	13	4	13	5	2	41
Total Analysis Volume [veh/h]	108	965	83	501	1453	52	51	16	52	18	6	165
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			57			5			57		
v_di, Inbound Pedestrian Volume crossing in	5			57			6			57		
v_co, Outbound Pedestrian Volume crossing	5			18			18			6		
v_ci, Inbound Pedestrian Volume crossing mi	6			18			18			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			38			5			11		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	10	10	4	10	10	4	4	4	4	4	4
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	50	100	74	24	74	100	36	36	36	36	36	36
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	0	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	0	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	120	96	96	120	104	104	33	33	33	33
g / C, Green / Cycle	0.75	0.60	0.60	0.75	0.65	0.65	0.21	0.21	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.27	0.66	0.66	0.45	0.81	0.82	0.04	0.10	0.02	0.24
s, saturation flow rate [veh/h]	404	808	782	1119	934	917	1221	703	1093	727
c, Capacity [veh/h]	132	485	470	312	604	593	45	144	151	150
d1, Uniform Delay [s]	50.44	31.92	31.92	51.79	28.23	28.23	80.00	55.97	64.61	63.50
k, delay calibration	0.42	0.50	0.50	0.50	0.50	0.50	0.11	0.04	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.97	68.88	71.49	286.58	123.99	133.65	102.82	0.89	0.35	115.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	1.09	1.10	1.60	1.25	1.27	1.13	0.47	0.12	1.14
d, Delay for Lane Group [s/veh]	86.41	100.80	103.41	338.36	152.22	161.89	182.82	56.86	64.95	179.42
Lane Group LOS	F	F	F	F	F	F	F	E	E	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.29	26.82	26.31	14.00	42.71	43.55	3.17	2.50	0.61	11.00
50th-Percentile Queue Length [ft/ln]	57.14	670.59	657.83	349.94	1067.85	1088.63	79.15	62.38	15.34	274.94
95th-Percentile Queue Length [veh/ln]	4.11	37.95	37.45	25.20	63.13	64.95	5.70	4.49	1.10	17.51
95th-Percentile Queue Length [ft/ln]	102.85	948.65	936.19	629.89	1578.37	1623.70	142.46	112.29	27.62	437.79

**Movement, Approach, & Intersection Results**

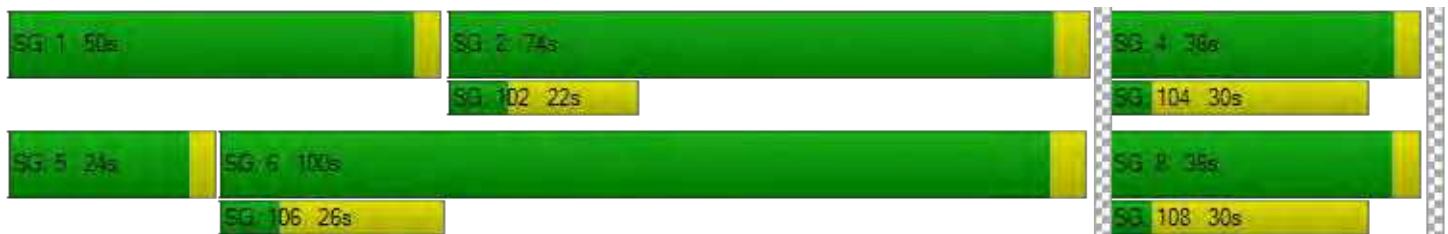
d_M, Delay for Movement [s/veh]	86.41	101.98	103.41	338.36	156.88	161.89	182.82	56.86	56.86	64.95	179.42	179.42
Movement LOS	F	F	F	F	F	F	F	E	E	E	F	F
d_A, Approach Delay [s/veh]	100.62			202.34			110.84			168.52		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	163.47											
Intersection LOS	F											
Intersection V/C	1.167											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.25	71.25	69.38	69.38
I_p,int, Pedestrian LOS Score for Intersection	3.145	3.139	2.146	2.756
Crosswalk LOS	C	C	B	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1200	875	410	413
d_b, Bicycle Delay [s]	12.90	25.80	50.69	50.68
I_b,int, Bicycle LOS Score for Intersection	2.513	3.215	1.756	1.871
Bicycle LOS	B	C	A	A

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	251.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.619

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↪	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	266	1221	1418	25	172	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	5.70	10.30	22.20	0.00	6.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	266	1221	1418	25	172	95
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	332	385	7	47	26
Total Analysis Volume [veh/h]	289	1327	1541	27	187	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing in	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	106	90	90	24	24
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	13	103	87	87	20	20
g / C, Green / Cycle	0.10	0.80	0.67	0.67	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.36	0.86	1.00	1.01	0.11	0.13
s, saturation flow rate [veh/h]	795	1546	781	775	1745	779
c, Capacity [veh/h]	80	1229	525	521	263	117
d1, Uniform Delay [s]	58.39	13.28	21.30	21.30	52.44	53.73
k, delay calibration	0.50	0.50	0.50	0.50	0.16	0.30
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1210.33	49.99	232.39	237.07	5.25	38.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	3.62	1.08	1.49	1.50	0.71	0.88
d, Delay for Lane Group [s/veh]	1268.72	63.27	253.69	258.37	57.69	92.16
Lane Group LOS	F	F	F	F	E	F
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	29.41	20.72	47.47	47.81	6.20	4.53
50th-Percentile Queue Length [ft/ln]	735.22	517.97	1186.64	1195.27	154.90	113.35
95th-Percentile Queue Length [veh/ln]	47.55	30.09	76.42	77.16	10.28	8.03
95th-Percentile Queue Length [ft/ln]	1188.82	752.28	1910.62	1928.99	256.96	200.65



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	1268.72	63.27	255.99	258.37	57.69	92.16
Movement LOS	F	F	F	F	E	F
d_A, Approach Delay [s/veh]	278.85		256.03		69.93	
Approach LOS	F		F		E	
d_I, Intersection Delay [s/veh]	251.11					
Intersection LOS	F					
Intersection V/C	1.619					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.166	3.152	2.155
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.01	7.42	45.67
I_b,int, Bicycle LOS Score for Intersection	2.893	2.853	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	76.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.149

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		↵↑↑		↵↵	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1316	981	42	1163	237	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.40	5.30	7.40	9.70	10.30	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1316	981	42	1163	237	138
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	350	261	11	309	63	37
Total Analysis Volume [veh/h]	1400	1044	45	1237	252	147
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	13		0		14	
v_ci, Inbound Pedestrian Volume crossing mi	14		0		13	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	14		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	95	95	4	103	20	20
g / C, Green / Cycle	0.73	0.73	0.03	0.79	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.90	0.71	0.03	0.83	0.14	0.14
s, saturation flow rate [veh/h]	1549	1478	1704	1494	1312	1559
c, Capacity [veh/h]	1138	1085	57	1182	201	239
d1, Uniform Delay [s]	17.24	14.07	62.26	13.55	54.04	54.06
k, delay calibration	0.50	0.50	0.04	0.50	0.27	0.27
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	111.51	19.56	8.38	39.10	27.94	25.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.23	0.96	0.78	1.05	0.91	0.91
d, Delay for Lane Group [s/veh]	128.76	33.63	70.64	52.66	81.98	79.13
Lane Group LOS	F	C	E	F	F	E
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	31.02	25.96	1.59	18.33	7.41	8.63
50th-Percentile Queue Length [ft/ln]	775.40	648.97	39.79	458.32	185.26	215.83
95th-Percentile Queue Length [veh/ln]	47.14	34.31	2.86	26.37	11.87	13.45
95th-Percentile Queue Length [ft/ln]	1178.39	857.87	71.61	659.15	296.87	336.29

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	128.76	33.63	70.64	52.66	81.30	79.13
Movement LOS	F	C	E	F	F	E
d_A, Approach Delay [s/veh]	88.12		53.29		80.43	
Approach LOS	F		D		F	
d_I, Intersection Delay [s/veh]	76.55					
Intersection LOS	E					
Intersection V/C	1.149					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.42
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.441
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.17	3.45	44.18
I_b,int, Bicycle LOS Score for Intersection	3.576	2.617	2.218
Bicycle LOS	D	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	230.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.611

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐			⇐			⇐ ⇐			⇐ ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	143	1863	423	40	1365	7	17	93	421	260	114	305
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	143	1863	423	40	1365	7	17	93	377	260	114	271
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	495	113	11	363	2	5	25	100	69	30	72
Total Analysis Volume [veh/h]	152	1982	450	43	1452	7	18	99	401	277	121	288
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			2			3			3	
v_di, Inbound Pedestrian Volume crossing in		3			3			2			2	
v_co, Outbound Pedestrian Volume crossing		8			12			7			11	
v_ci, Inbound Pedestrian Volume crossing mi		7			11			8			12	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			1			5			14	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	55	55	4	47	47	36	36	36	20	20	20
g / C, Green / Cycle	0.10	0.43	0.43	0.03	0.36	0.36	0.27	0.27	0.27	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.09	0.47	0.50	0.02	0.64	0.64	0.01	0.06	0.30	0.18	0.15	0.43
s, saturation flow rate [veh/h]	1781	3455	1626	1781	1491	781	1420	1577	1322	1536	800	668
c, Capacity [veh/h]	176	1481	697	55	538	281	385	428	359	236	123	103
d1, Uniform Delay [s]	57.69	37.14	37.14	62.54	41.56	41.56	34.95	36.82	46.80	55.02	54.87	54.28
k, delay calibration	0.04	0.50	0.50	0.04	0.50	0.50	0.04	0.04	0.46	0.07	0.40	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.17	52.38	91.74	8.43	358.99	365.90	0.02	0.10	81.80	85.01	69.09	838.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	1.09	1.17	0.78	1.78	1.78	0.05	0.23	1.12	1.17	0.99	2.81
d, Delay for Lane Group [s/veh]	62.85	89.52	128.88	70.97	400.55	407.46	34.97	36.92	128.60	140.02	123.96	892.96
Lane Group LOS	E	F	F	E	F	F	C	D	F	F	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.11	33.27	38.95	1.55	35.42	37.63	0.43	2.48	19.51	6.64	6.30	27.23
50th-Percentile Queue Length [ft/ln]	127.63	831.78	973.74	38.85	885.41	940.85	10.70	61.99	487.83	166.08	157.59	680.79
95th-Percentile Queue Length [veh/ln]	8.81	45.56	54.94	2.80	58.66	62.03	0.77	4.46	28.56	11.58	10.42	45.44
95th-Percentile Queue Length [ft/ln]	220.27	1138.94	1373.43	69.93	1466.51	1550.74	19.25	111.58	714.09	289.54	260.53	1135.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	62.85	96.79	128.88	70.97	402.90	407.46	34.97	36.92	128.60	140.02	123.96	892.96
Movement LOS	E	F	F	E	F	F	C	D	F	F	F	F
d_A, Approach Delay [s/veh]	100.38			393.42			107.82			453.29		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	230.08											
Intersection LOS	F											
Intersection V/C	1.611											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.496	3.057	2.417	2.623
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.33	21.07	38.56	50.34
I_b,int, Bicycle LOS Score for Intersection	2.981	2.386	2.487	2.748
Bicycle LOS	C	B	B	B

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	77.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.172

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩ ↑		↑↩		↩↪	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1387	1211	627	463	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1387	1211	328	463	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	347	303	82	116	0
Total Analysis Volume [veh/h]	65	1387	1211	328	463	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	5	45	36	36	36	36
g / C, Green / Cycle	0.06	0.49	0.40	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.53	0.44	0.27	0.50	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1229	928	1597
c, Capacity [veh/h]	78	1296	1101	489	369	635
d1, Uniform Delay [s]	42.15	22.85	27.29	22.25	27.29	0.00
k, delay calibration	0.04	0.23	0.15	0.23	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.15	39.46	50.08	3.40	135.56	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.83	1.07	1.10	0.67	1.26	0.00
d, Delay for Lane Group [s/veh]	50.30	62.31	77.37	25.66	162.85	0.00
Lane Group LOS	D	F	F	C	F	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.60	19.70	18.64	5.80	21.38	0.00
50th-Percentile Queue Length [ft/ln]	39.96	492.46	465.97	144.97	534.39	0.00
95th-Percentile Queue Length [veh/ln]	2.88	28.36	27.41	9.75	33.23	0.00
95th-Percentile Queue Length [ft/ln]	71.92	709.10	685.14	243.70	830.68	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	50.30	62.31	77.37	25.66	162.85	0.00
Movement LOS	D	F	F	C	F	A
d_A, Approach Delay [s/veh]	61.77		66.35		162.85	
Approach LOS	E		E		F	
d_I, Intersection Delay [s/veh]	77.36					
Intersection LOS	E					
Intersection V/C	1.172					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	34.91
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.450
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	796	796	796
d_b, Bicycle Delay [s]	16.41	16.42	16.41
I_b,int, Bicycle LOS Score for Intersection	2.758	3.076	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	122.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.124

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	22	909	7	36	928	108	67	14	32	59	12	348
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0
Total Hourly Volume [veh/h]	22	909	7	36	928	108	67	14	26	59	12	348
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	237	2	9	242	28	17	4	7	15	3	91
Total Analysis Volume [veh/h]	23	947	7	38	967	113	70	15	27	61	13	363
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing in	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			6			2		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	166	166	166	166	166	166	166	166	166	166
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	4	97	97	7	100	14	14	14	30	30
g / C, Green / Cycle	0.02	0.58	0.58	0.04	0.60	0.08	0.08	0.08	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.29	0.29	0.04	0.70	0.04	0.04	0.02	0.06	0.31
s, saturation flow rate [veh/h]	952	1445	1895	952	1537	952	1396	1335	952	1202
c, Capacity [veh/h]	23	844	1106	42	927	79	116	111	172	217
d1, Uniform Delay [s]	80.83	20.10	20.10	78.94	32.90	72.37	72.35	70.92	59.42	67.90
k, delay calibration	0.11	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	82.44	0.94	0.72	44.69	86.18	3.80	2.57	1.13	1.23	346.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.98	0.49	0.49	0.91	1.17	0.44	0.44	0.24	0.35	1.73
d, Delay for Lane Group [s/veh]	163.27	21.04	20.82	123.63	119.08	76.17	74.92	72.06	60.65	414.57
Lane Group LOS	F	C	C	F	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.53	9.74	12.71	2.16	58.59	1.53	2.18	1.14	2.34	30.24
50th-Percentile Queue Length [ft/ln]	38.27	243.40	317.67	53.89	1464.63	38.25	54.62	28.49	58.55	756.01
95th-Percentile Queue Length [veh/ln]	2.76	14.85	18.55	3.88	80.57	2.75	3.93	2.05	4.22	48.18
95th-Percentile Queue Length [ft/ln]	68.89	371.33	463.82	97.00	2014.21	68.85	98.31	51.29	105.39	1204.48

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	163.27	20.92	20.82	123.63	119.08	119.08	75.56	74.92	72.06	60.65	414.57	414.57
Movement LOS	F	C	C	F	F	F	E	E	E	E	F	F
d_A, Approach Delay [s/veh]	24.27			119.23			74.62			365.16		
Approach LOS	C			F			E			F		
d_I, Intersection Delay [s/veh]	122.90											
Intersection LOS	F											
Intersection V/C	1.124											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	72.20	72.20	72.20	72.20
I_p,int, Pedestrian LOS Score for Intersection	2.574	2.820	2.190	2.104
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	241	241	362	362
d_b, Bicycle Delay [s]	64.11	64.08	55.72	55.61
I_b,int, Bicycle LOS Score for Intersection	2.366	3.404	1.754	2.281
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.925

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue			Coleman Avenue		
Base Volume Input [veh/h]	37	783	7	4	878	168	280	6	64	1	2	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	4.70	0.00	0.00	3.90	3.30	1.00	0.00	0.00	0.00	0.00	20.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	37	783	7	4	878	168	280	6	64	1	2	6
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	206	2	1	231	44	74	2	17	0	1	2
Total Analysis Volume [veh/h]	39	824	7	4	924	177	295	6	67	1	2	6
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		8			20			8			20	
v_di, Inbound Pedestrian Volume crossing in		8			20			8			20	
v_co, Outbound Pedestrian Volume crossing		4			2			2			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			2			2			4	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		6			2			13			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	30.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	109	109	109	109	109	109	41	41	41	0	41	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	105	105	105	105	37	37
g / C, Green / Cycle	0.70	0.70	0.70	0.70	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.08	0.46	0.01	0.62	0.26	0.01
s, saturation flow rate [veh/h]	502	1826	671	1783	1393	1744
c, Capacity [veh/h]	152	1278	342	1248	385	455
d1, Uniform Delay [s]	51.06	12.39	23.78	17.65	57.54	42.92
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.04	2.58	0.06	9.22	35.98	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.26	0.65	0.01	0.88	0.96	0.02
d, Delay for Lane Group [s/veh]	55.10	14.96	23.85	26.88	93.53	42.93
Lane Group LOS	E	B	C	C	F	D
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.45	15.94	0.09	30.92	18.11	0.26
50th-Percentile Queue Length [ft/ln]	36.36	398.50	2.21	772.95	452.87	6.56
95th-Percentile Queue Length [veh/ln]	2.62	22.49	0.16	40.04	25.09	0.47
95th-Percentile Queue Length [ft/ln]	65.45	562.20	3.98	1000.93	627.37	11.81

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	55.10	14.96	14.96	23.85	26.88	26.88	93.53	93.53	93.53	42.93	42.93	42.93
Movement LOS	E	B	B	C	C	C	F	F	F	D	D	D
d_A, Approach Delay [s/veh]	16.76			26.87			93.53			42.93		
Approach LOS	B			C			F			D		
d_I, Intersection Delay [s/veh]	33.62											
Intersection LOS	C											
Intersection V/C	0.925											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.38			64.38			64.38			64.38		
I_p,int, Pedestrian LOS Score for Intersection	2.470			3.109			2.080			1.755		
Crosswalk LOS	B			C			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1399			1399			492			492		
d_b, Bicycle Delay [s]	6.79			6.77			42.89			42.63		
I_b,int, Bicycle LOS Score for Intersection	2.995			3.383			2.167			1.574		
Bicycle LOS	C			C			B			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇑⇐			⇐⇑⇓⇑⇐			⇐⇑⇓⇑⇐			⇐⇑⇓⇑⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	7	686	148	52	914	0	20	103	11	141	96	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.20	10.00	7.40	3.60	0.00	2.70	0.00	0.00	2.60	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	686	148	52	914	0	20	103	11	141	96	93
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	186	40	14	248	0	5	28	3	38	26	25
Total Analysis Volume [veh/h]	8	746	161	57	993	0	22	112	12	153	104	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		6			4			6			3	
v_di, Inbound Pedestrian Volume crossing in		6			3			6			4	
v_co, Outbound Pedestrian Volume crossing		0			2			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			2			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		9			12			11			11	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	68.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	116	116	116	116	116	116	34	34	34	0	34	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		Yes			Yes			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	112	112	112	112	30	30	30	30
g / C, Green / Cycle	0.75	0.75	0.75	0.75	0.20	0.20	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.01	0.52	0.10	0.54	0.02	0.07	0.12	0.12
s, saturation flow rate [veh/h]	576	1757	588	1846	1168	1853	1241	1715
c, Capacity [veh/h]	301	1312	320	1378	137	369	206	341
d1, Uniform Delay [s]	23.94	9.96	23.90	10.43	65.14	51.50	65.11	54.58
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.17	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.16	3.01	1.21	3.29	0.54	0.53	8.01	2.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.03	0.69	0.18	0.72	0.16	0.34	0.74	0.60
d, Delay for Lane Group [s/veh]	24.11	12.97	25.11	13.72	65.69	52.04	73.11	57.00
Lane Group LOS	C	B	C	B	E	D	E	E
Critical Lane Group	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.18	15.92	1.35	18.26	0.82	4.13	6.34	7.37
50th-Percentile Queue Length [ft/ln]	4.54	398.09	33.77	456.44	20.58	103.32	158.38	184.35
95th-Percentile Queue Length [veh/ln]	0.33	22.47	2.43	25.26	1.48	7.44	10.46	11.83
95th-Percentile Queue Length [ft/ln]	8.18	561.70	60.79	631.62	37.05	185.97	261.57	295.68

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	24.11	12.97	12.97	25.11	13.72	13.72	65.69	52.04	52.04	73.11	57.00	57.00
Movement LOS	C	B	B	C	B	B	E	D	D	E	E	E
d_A, Approach Delay [s/veh]	13.07			14.33			54.09			63.89		
Approach LOS	B			B			D			E		
d_I, Intersection Delay [s/veh]	23.40											
Intersection LOS	C											
Intersection V/C	0.694											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	64.35			64.35			64.35			64.35		
I_p,int, Pedestrian LOS Score for Intersection	2.744			2.576			2.046			2.232		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1493			1493			399			399		
d_b, Bicycle Delay [s]	4.84			4.84			48.29			48.29		
I_b,int, Bicycle LOS Score for Intersection	3.069			3.292			1.801			2.150		
Bicycle LOS	C			C			A			B		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	64.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.625

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	27	300	153	374	136	448	132	462	170	344	329	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	3.60	2.60	2.70	3.80	2.50	0.50	5.50	5.30	3.70	13.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	119	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	27	300	34	374	136	0	132	462	170	344	329	20
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	78	9	97	35	0	34	120	44	90	86	5
Total Analysis Volume [veh/h]	28	313	35	390	142	0	138	481	177	358	343	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		10			2			10			2	
v_di, Inbound Pedestrian Volume crossing in		10			2			10			2	
v_co, Outbound Pedestrian Volume crossing		5			3			2			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			2			3			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		29			22			6			20	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	3	0	3	3	3	0	3	0	3	3	3
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			Yes	
Maximum Recall		No			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	20.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	28	28	28	57	57	57	23	23	23	23	25	25	25
g / C, Green / Cycle	0.18	0.18	0.18	0.38	0.38	0.38	0.15	0.15	0.15	0.15	0.16	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.02	0.15	0.15	0.00	0.08	0.12	0.13	0.12	0.14	0.14	0.14
s, saturation flow rate [veh/h]	1810	1825	1448	1772	1817	1567	1774	1892	1892	1491	1734	1803	1634
c, Capacity [veh/h]	333	336	267	670	686	592	268	285	285	225	285	297	269
d1, Uniform Delay [s]	50.69	60.24	51.05	34.06	34.06	0.00	58.62	61.66	62.20	61.06	60.81	60.79	60.89
k, delay calibration	0.11	0.37	0.11	0.50	0.50	0.50	0.11	0.20	0.23	0.18	0.14	0.14	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	28.04	0.22	1.72	1.68	0.00	1.54	10.02	15.11	9.73	8.97	8.54	10.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.08	0.93	0.13	0.39	0.39	0.00	0.52	0.82	0.87	0.79	0.85	0.85	0.85
d, Delay for Lane Group [s/veh]	50.80	88.28	51.27	35.79	35.74	0.00	60.16	71.68	77.31	70.78	69.77	69.33	71.02
Lane Group LOS	D	F	D	D	D	A	E	E	E	E	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.89	14.36	1.13	7.50	7.68	0.00	4.98	9.44	10.46	7.10	9.67	10.00	9.29
50th-Percentile Queue Length [ft/ln]	22.36	359.10	28.24	187.53	191.96	0.00	124.3	235.9	261.4	177.5	241.72	250.00	232.14
95th-Percentile Queue Length [veh/ln]	1.61	20.58	2.03	11.99	12.22	0.00	8.63	14.48	15.76	11.47	14.77	15.19	14.28
95th-Percentile Queue Length [ft/ln]	40.24	514.49	50.83	299.83	305.57	0.00	215.8	361.9	393.9	286.7	369.21	379.66	357.07

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	50.80	88.28	51.27	35.77	35.74	0.00	60.16	74.58	70.78	69.62	70.36	71.02
Movement LOS	D	F	D	D	D	A	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	82.04			35.76			71.24			70.02		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	64.77											
Intersection LOS	E											
Intersection V/C	0.625											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	63.46	63.46	63.46	63.46
I_p,int, Pedestrian LOS Score for Intersection	2.518	4.295	4.335	2.759
Crosswalk LOS	B	E	E	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	383	551	364	457
d_b, Bicycle Delay [s]	49.75	39.81	50.32	45.06
I_b,int, Bicycle LOS Score for Intersection	2.376	4.087	3.041	2.155
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road and US 101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	61.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.110

**Intersection Setup**

Name	Marsh Road		Marsh Road			
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road			
Base Volume Input [veh/h]	1841	0	0	896	771	1256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.50	0.00	0.00	5.20	1.90	4.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1841	0	0	896	771	1256
Peak Hour Factor	0.9700	1.0000	1.0000	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	474	0	0	231	199	324
Total Analysis Volume [veh/h]	1898	0	0	924	795	1295
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	1		0		2	
v_ci, Inbound Pedestrian Volume crossing mi	2		0		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	2		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	10	5	0
Pedestrian Clearance [s]	12	0	0	10	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.54	0.27	0.23	0.47
s, saturation flow rate [veh/h]	3489	3469	3461	2761
c, Capacity [veh/h]	2070	2058	1213	968
d1, Uniform Delay [s]	14.50	9.01	21.88	25.95
k, delay calibration	0.50	0.50	0.04	0.24
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.93	0.71	0.23	155.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.92	0.45	0.66	1.34
d, Delay for Lane Group [s/veh]	22.43	9.72	22.10	181.58
Lane Group LOS	C	A	C	F
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.07	4.07	6.00	29.52
50th-Percentile Queue Length [ft/ln]	376.64	101.80	149.89	738.03
95th-Percentile Queue Length [veh/ln]	21.43	7.33	10.01	45.37
95th-Percentile Queue Length [ft/ln]	535.78	183.25	250.29	1134.13



**Movement, Approach, & Intersection Results**

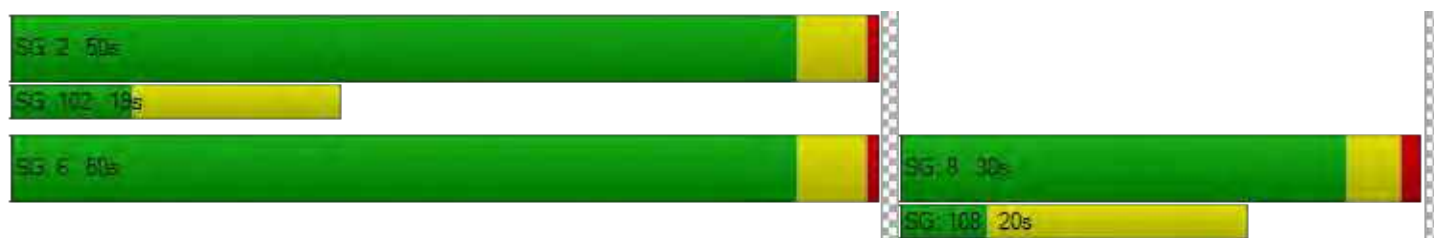
d_M, Delay for Movement [s/veh]	22.43	0.00	0.00	9.72	22.10	181.58
Movement LOS	C			A	C	F
d_A, Approach Delay [s/veh]	22.43		9.72		120.92	
Approach LOS	C		A		F	
d_I, Intersection Delay [s/veh]	61.94					
Intersection LOS	E					
Intersection V/C	1.110					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.130	2.634
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.47	7.47	18.34
I_b,int, Bicycle LOS Score for Intersection	3.125	2.322	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	24.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.833

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	453	10	76	221	45	37	41	21	22	51	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	453	10	76	221	45	37	41	21	22	51	131
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	118	3	24	69	14	12	13	7	6	14	36
Total Analysis Volume [veh/h]	14	473	10	95	276	56	47	52	27	24	56	144
Pedestrian Volume [ped/h]	3			3			9			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	597	587	490	538
Degree of Utilization, x	0.83	0.73	0.26	0.42

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	8.79	6.14	1.02	2.04
95th-Percentile Queue Length [ft]	219.69	153.45	25.41	50.96
Approach Delay [s/veh]	32.12	23.80	12.88	14.40
Approach LOS	D	C	B	B
Intersection Delay [s/veh]	24.31			
Intersection LOS	C			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	65.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	162	27	1389	10	30	7	8	500	296	2094	710	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	0.00	4.60	0.00	0.00	16.70	0.00	18.20	9.10	4.70	4.90	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	27	1389	10	30	7	8	500	296	2094	710	34
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	7	362	3	8	2	2	130	77	545	185	9
Total Analysis Volume [veh/h]	169	28	1447	10	31	7	8	521	308	2181	740	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			1			1			0	
v_di, Inbound Pedestrian Volume crossing in		0			1			1			0	
v_co, Outbound Pedestrian Volume crossing		0			22			0			22	
v_ci, Inbound Pedestrian Volume crossing mi		0			22			0			22	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			13			25			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	7	4	6	4	1	4	1	2	8
Auxiliary Signal Groups		3	2,3									
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	0	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	0	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	0.0	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.0	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	69	11	11	0	32	25	32	48	32	48	69	0
Vehicle Extension [s]	4.5	0.0	0.0	0.0	0.0	3.0	0.0	3.0	0.0	3.0	4.5	0.0
Walk [s]	5	0	0	0	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	0	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		Yes			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	18	87	29	29	36	36	36	67	67
g / C, Green / Cycle	0.11	0.54	0.18	0.18	0.23	0.23	0.23	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.35	0.01	0.01	0.17	0.17	0.21	0.43	0.43
s, saturation flow rate [veh/h]	1822	4114	1863	1610	1624	1480	1444	5075	1805
c, Capacity [veh/h]	208	2142	339	293	368	335	327	2120	754
d1, Uniform Delay [s]	70.41	28.24	54.28	54.32	57.70	57.70	60.25	46.58	46.58
k, delay calibration	0.50	0.50	0.04	0.04	0.18	0.18	0.30	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	50.35	1.73	0.03	0.04	5.14	5.61	26.41	27.34	40.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.95	0.68	0.07	0.08	0.75	0.75	0.94	1.03	1.03
d, Delay for Lane Group [s/veh]	120.77	29.97	54.31	54.36	62.84	63.31	86.66	73.92	86.77
Lane Group LOS	F	C	D	D	E	E	F	F	F
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	10.97	14.00	0.86	0.78	11.03	10.10	14.61	33.25	38.15
50th-Percentile Queue Length [ft/ln]	274.27	350.08	21.43	19.47	275.80	252.44	365.20	831.14	953.77
95th-Percentile Queue Length [veh/ln]	16.40	20.14	1.54	1.40	16.48	15.31	20.88	43.64	49.34
95th-Percentile Queue Length [ft/ln]	410.07	503.50	38.58	35.04	411.98	382.72	521.90	1091.11	1233.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	120.77	120.77	29.97	54.31	54.34	54.36	62.84	63.07	86.66	73.92	86.77	86.77
Movement LOS	F	F	C	D	D	D	E	E	F	F	F	F
d_A, Approach Delay [s/veh]	40.85			54.33			71.75			77.29		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	65.32											
Intersection LOS	E											
Intersection V/C	0.847											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.007			2.587			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			555			791		
d_b, Bicycle Delay [s]	73.76			54.89			42.29			29.24		
I_b,int, Bicycle LOS Score for Intersection	4.272			1.599			2.250			6.437		
Bicycle LOS	E			A			B			F		

**Sequence**

Ring 1	-	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	96.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.711

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1360	623	0	1264	888	0	0	0	1143	0	415
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	3.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1360	623	0	1264	888	0	0	0	1143	0	415
Peak Hour Factor	1.0000	0.9700	1.0000	1.0000	0.9700	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	351	156	0	326	229	0	0	0	286	0	115
Total Analysis Volume [veh/h]	0	1402	623	0	1303	915	0	0	0	1143	0	461
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	6			1			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	4	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	42	42	42		30	30
g / C, Green / Cycle	0.52	0.52	0.52		0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.28	0.26	1.04		0.33	0.16
s, saturation flow rate [veh/h]	5053	5053	877		3514	2859
c, Capacity [veh/h]	2650	2650	460		1319	1073
d1, Uniform Delay [s]	12.49	12.16	18.55		23.07	18.56
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.76	0.66	452.75		1.86	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.53	0.49	1.99		0.87	0.43
d, Delay for Lane Group [s/veh]	13.25	12.82	471.31		24.93	18.83
Lane Group LOS	B	B	F		C	B
Critical Lane Group	No	No	Yes		Yes	No
50th-Percentile Queue Length [veh/ln]	5.16	4.66	65.12		9.63	3.05
50th-Percentile Queue Length [ft/ln]	128.91	116.45	1628.11		240.67	76.34
95th-Percentile Queue Length [veh/ln]	8.88	8.20	108.99		14.72	5.50
95th-Percentile Queue Length [ft/ln]	222.02	204.93	2724.68		367.88	137.42

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	13.25	0.00	0.00	12.82	471.31	0.00	0.00	0.00	24.93	0.00	18.83
Movement LOS		B			B	F				C		B
d_A, Approach Delay [s/veh]	13.25		201.96				0.00		23.18			
Approach LOS	B		F				A		C			
d_I, Intersection Delay [s/veh]	96.42											
Intersection LOS	F											
Intersection V/C	1.711											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.030	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.10	12.07	39.95	12.06
I_b,int, Bicycle LOS Score for Intersection	2.331	2.780	4.132	1.560
Bicycle LOS	B	C	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	129.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.569

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1787	738	0	1831	424	0	0	0	395	0	789
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	2.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1787	738	0	1831	424	0	0	0	395	0	789
Peak Hour Factor	1.0000	0.9700	0.9700	1.0000	0.9700	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	461	190	0	472	106	0	0	0	99	0	219
Total Analysis Volume [veh/h]	0	1842	761	0	1888	424	0	0	0	395	0	877
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			3			0			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	40	0	0	40	0	0	0	0	40	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	C	L	R
C, Cycle Length [s]	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	36	36	36
g / C, Green / Cycle	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.37	0.49	0.70	0.11	0.56
s, saturation flow rate [veh/h]	5012	1551	2715	3514	1567
c, Capacity [veh/h]	2253	697	1220	1582	706
d1, Uniform Delay [s]	19.12	21.54	21.97	13.58	21.71
k, delay calibration	0.50	0.50	0.50	0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.44	61.75	250.39	0.08	113.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	1.09	1.55	0.25	1.24
d, Delay for Lane Group [s/veh]	22.56	83.30	272.36	13.66	135.29
Lane Group LOS	C	F	F	B	F
Critical Lane Group	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	9.77	23.54	35.18	2.09	17.06
50th-Percentile Queue Length [ft/ln]	244.34	588.58	879.52	52.29	426.40
95th-Percentile Queue Length [veh/ln]	14.90	33.55	57.06	3.76	27.23
95th-Percentile Queue Length [ft/ln]	372.52	838.65	1426.42	94.12	680.82

**Movement, Approach, & Intersection Results**

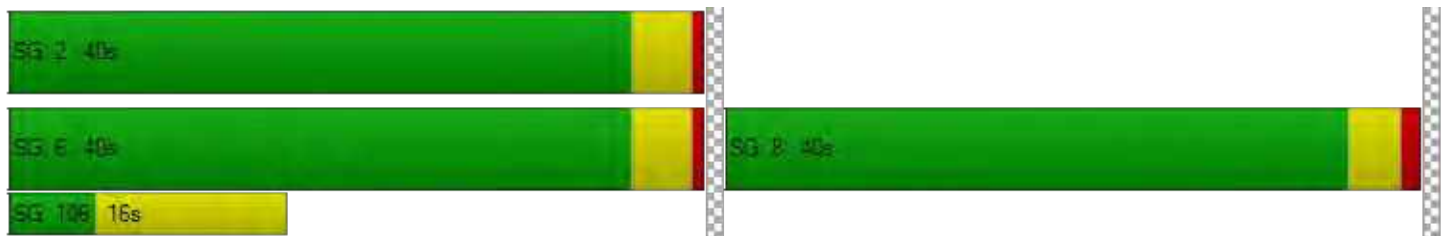
d_M, Delay for Movement [s/veh]	0.00	22.56	83.30	0.00	272.36	0.00	0.00	0.00	0.00	13.66	0.00	135.29
Movement LOS		C	F		F					B		F
d_A, Approach Delay [s/veh]	40.32			272.36			0.00			97.52		
Approach LOS	D			F			A			F		
d_I, Intersection Delay [s/veh]	128.96											
Intersection LOS	F											
Intersection V/C	1.569											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	1.419	0.000
Crosswalk LOS	F	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	901	901	0	901
d_b, Bicycle Delay [s]	12.09	12.08	39.95	12.07
I_b,int, Bicycle LOS Score for Intersection	2.991	2.598	4.132	1.560
Bicycle LOS	C	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	45.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.038

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←↔→		↑↑↑↔		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		50.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	276	283	1268	778	616	1963
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	23.10	5.10	5.30	6.30	3.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	276	283	1268	778	616	1963
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	74	334	205	162	517
Total Analysis Volume [veh/h]	291	298	1335	819	648	2066
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	25	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	109	109	109	109	109	109
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	79	79
g / C, Green / Cycle	0.18	0.18	0.46	0.46	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.09	0.23	0.27	0.53	0.76	0.41
s, saturation flow rate [veh/h]	3420	1320	4967	1547	849	5020
c, Capacity [veh/h]	627	242	2278	710	635	3643
d1, Uniform Delay [s]	39.71	44.50	21.84	29.50	29.58	6.97
k, delay calibration	0.04	0.50	0.04	0.50	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	134.20	0.09	84.76	41.13	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.46	1.23	0.59	1.15	1.02	0.57
d, Delay for Lane Group [s/veh]	39.91	178.70	21.93	114.26	70.71	7.02
Lane Group LOS	D	F	C	F	F	A
Critical Lane Group	No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.49	15.51	7.68	33.23	12.02	5.57
50th-Percentile Queue Length [ft/ln]	87.26	387.75	192.11	830.74	300.51	139.13
95th-Percentile Queue Length [veh/ln]	6.28	24.18	12.23	47.28	18.01	9.43
95th-Percentile Queue Length [ft/ln]	157.06	604.44	305.76	1182.03	450.18	235.85

**Movement, Approach, & Intersection Results**

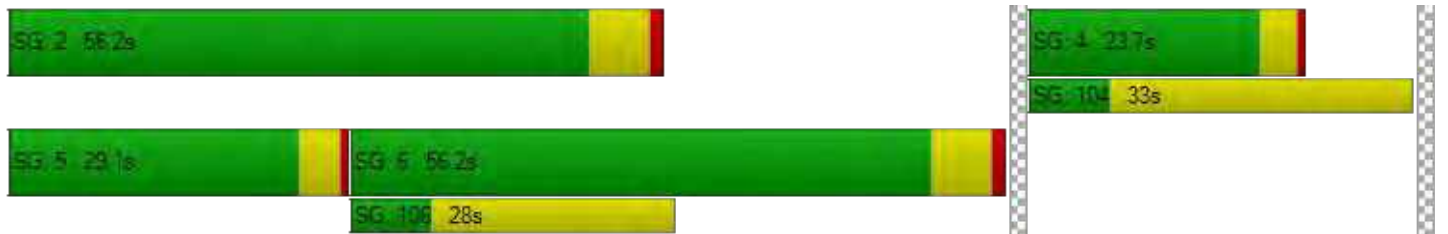
d_M, Delay for Movement [s/veh]	39.91	178.70	21.93	114.26	70.71	7.02
Movement LOS	D	F	C	F	F	A
d_A, Approach Delay [s/veh]	110.13		57.03		22.23	
Approach LOS	F		E		C	
d_I, Intersection Delay [s/veh]	45.45					
Intersection LOS	D					
Intersection V/C	1.038					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.06	44.06	44.06
I_p,int, Pedestrian LOS Score for Intersection	3.236	3.651	3.511
Crosswalk LOS	C	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	367	917	917
d_b, Bicycle Delay [s]	36.33	15.97	15.97
I_b,int, Bicycle LOS Score for Intersection	1.560	2.744	3.052
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	12.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	



**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	442	93	1821	459	164	2217
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.30	8.30	5.30	7.10	0.00	3.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	442	93	1821	459	164	2217
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	24	469	118	42	571
Total Analysis Volume [veh/h]	456	96	1877	473	169	2286
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	50	50	50	50	50	50
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	9	9	20	20	6	30
g / C, Green / Cycle	0.18	0.18	0.40	0.40	0.12	0.61
(v / s)_i Volume / Saturation Flow Rate	0.14	0.06	0.38	0.32	0.09	0.45
s, saturation flow rate [veh/h]	3173	1509	4959	1493	1810	5024
c, Capacity [veh/h]	568	270	2008	604	216	3044
d1, Uniform Delay [s]	19.75	18.06	14.30	12.88	21.47	7.15
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.02	0.29	0.99	0.85	2.36	0.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.80	0.36	0.93	0.78	0.78	0.75
d, Delay for Lane Group [s/veh]	20.78	18.36	15.29	13.73	23.83	7.30
Lane Group LOS	C	B	B	B	C	A
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.41	0.92	4.93	3.38	1.76	2.73
50th-Percentile Queue Length [ft/ln]	60.34	23.01	123.26	84.39	44.01	68.14
95th-Percentile Queue Length [veh/ln]	4.34	1.66	8.57	6.08	3.17	4.91
95th-Percentile Queue Length [ft/ln]	108.60	41.41	214.30	151.90	79.22	122.65

**Movement, Approach, & Intersection Results**

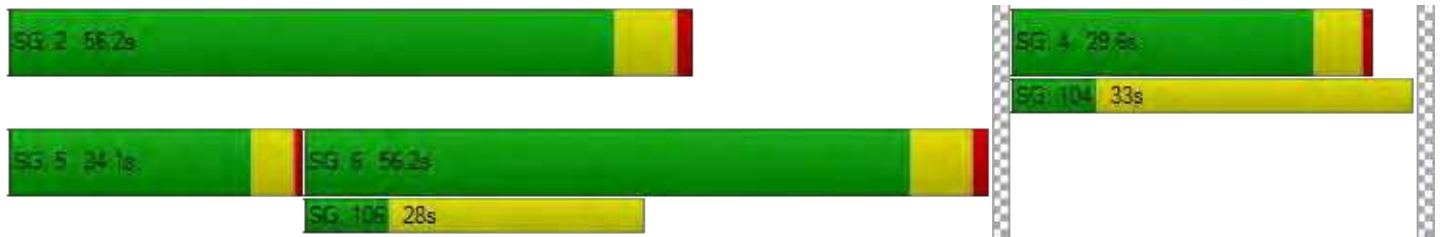
d_M, Delay for Movement [s/veh]	20.78	18.36	15.29	13.73	23.83	7.30
Movement LOS	C	B	B	B	C	A
d_A, Approach Delay [s/veh]	20.35		14.98		8.43	
Approach LOS	C		B		A	
d_I, Intersection Delay [s/veh]	12.53					
Intersection LOS	B					
Intersection V/C	0.751					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	15.24	15.24	15.24
I_p,int, Pedestrian LOS Score for Intersection	2.340	3.623	3.486
Crosswalk LOS	B	D	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	999	1998	1998
d_b, Bicycle Delay [s]	6.27	0.00	0.00
I_b,int, Bicycle LOS Score for Intersection	1.560	2.852	2.910
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bayfront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	5.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

**Intersection Setup**

Name	Bldg 21		Bayfront Expwy		Bayfront Expwy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑⇐		⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	66	51	1135	396	247	2441
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	35.50	35.50	11.60	11.60	4.40	4.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	51	1135	396	247	2441
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	13	296	103	64	636
Total Analysis Volume [veh/h]	69	53	1182	413	257	2543
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	25	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	5	5	41	41	50	50
g / C, Green / Cycle	0.08	0.08	0.63	0.63	0.77	0.77
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.28	0.31	0.23	0.57
s, saturation flow rate [veh/h]	1172	1058	4231	1320	1134	4496
c, Capacity [veh/h]	92	83	2656	829	953	3457
d1, Uniform Delay [s]	29.06	29.16	6.23	6.53	2.99	3.98
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.26	4.28	0.04	0.17	0.06	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.68	0.72	0.45	0.50	0.27	0.74
d, Delay for Lane Group [s/veh]	32.33	33.44	6.27	6.71	3.05	4.10
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.99	0.96	1.71	1.90	0.09	1.16
50th-Percentile Queue Length [ft/ln]	24.64	24.06	42.69	47.62	2.21	29.03
95th-Percentile Queue Length [veh/ln]	1.77	1.73	3.07	3.43	0.16	2.09
95th-Percentile Queue Length [ft/ln]	44.35	43.30	76.84	85.72	3.97	52.26



**Movement, Approach, & Intersection Results**

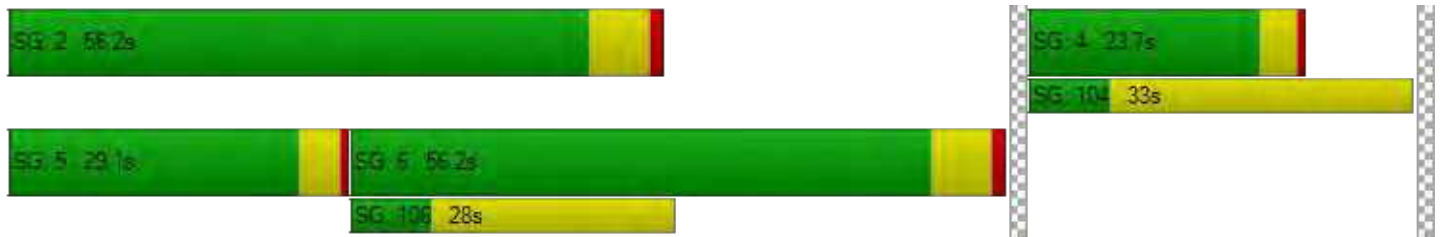
d_M, Delay for Movement [s/veh]	32.45	33.44	6.27	6.71	3.05	4.10
Movement LOS	C	C	A	A	A	A
d_A, Approach Delay [s/veh]	32.87		6.39		4.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	5.62					
Intersection LOS	A					
Intersection V/C	0.722					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.26	22.26	22.26
I_p,int, Pedestrian LOS Score for Intersection	2.547	3.455	3.445
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	619	1547	1547
d_b, Bicycle Delay [s]	15.42	1.66	1.66
I_b,int, Bicycle LOS Score for Intersection	1.761	2.437	3.100
Bicycle LOS	A	B	C

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	266.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.983

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	646	270	74	384	210	257
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	646	270	74	384	210	257
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	184	77	21	109	60	73
Total Analysis Volume [veh/h]	734	307	84	436	239	292
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	1041	520	531
Degree of Utilization, x	1.98	1.02	1.00

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	70.09	14.64	14.19
95th-Percentile Queue Length [ft]	1752.14	366.11	354.77
Approach Delay [s/veh]	465.78	71.94	65.71
Approach LOS	F	F	F
Intersection Delay [s/veh]	266.34		
Intersection LOS	F		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.933

**Intersection Setup**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	980.00	760.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	15.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	

**Volumes**

Name	Bldg 20		Bayfront Expy (SR 84)		Bayfront Expy (SR 84)	
Base Volume Input [veh/h]	0	48	989	234	86	2729
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	88.60	11.70	11.70	6.30	6.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	48	989	234	86	2729
Peak Hour Factor	0.9500	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	263	62	23	726
Total Analysis Volume [veh/h]	0	51	1052	249	91	2903
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	25	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	52	52	52	52	52
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	3	31	31	39	39
g / C, Green / Cycle	0.06	0.59	0.59	0.75	0.75
(v / s)_i Volume / Saturation Flow Rate	0.12	0.25	0.19	0.14	0.66
s, saturation flow rate [veh/h]	436	4227	1319	640	4426
c, Capacity [veh/h]	29	2485	775	611	3301
d1, Uniform Delay [s]	24.50	5.93	5.49	2.39	4.92
k, delay calibration	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	366.15	0.04	0.09	0.04	0.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.79	0.42	0.32	0.15	0.88
d, Delay for Lane Group [s/veh]	390.66	5.97	5.58	2.44	5.24
Lane Group LOS	F	A	A	A	A
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.25	1.14	0.76	0.02	0.45
50th-Percentile Queue Length [ft/ln]	81.16	28.55	19.08	0.48	11.25
95th-Percentile Queue Length [veh/ln]	5.84	2.06	1.37	0.03	0.81
95th-Percentile Queue Length [ft/ln]	146.10	51.39	34.35	0.86	20.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	390.66	5.97	5.58	2.44	5.24
Movement LOS		F	A	A	A	A
d_A, Approach Delay [s/veh]	390.66		5.90		5.15	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	9.90					
Intersection LOS	A					
Intersection V/C	0.933					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	16.31	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.441	0.000
Crosswalk LOS	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	765	1912	1912
d_b, Bicycle Delay [s]	9.97	0.05	0.05
I_b,int, Bicycle LOS Score for Intersection	1.560	2.275	3.206
Bicycle LOS	A	B	C

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	86.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

**Intersection Setup**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Constitution Drive			Constitution Drive		
Base Volume Input [veh/h]	274	347	196	766	312	423	80	10	116	42	24	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	274	347	196	766	312	423	80	10	116	42	24	84
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	89	50	195	80	108	20	3	30	11	6	21
Total Analysis Volume [veh/h]	280	354	200	782	318	432	82	10	118	43	24	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	76			0			0			76		
v_di, Inbound Pedestrian Volume crossing in	76			0			0			76		
v_co, Outbound Pedestrian Volume crossing	11			0			10			0		
v_ci, Inbound Pedestrian Volume crossing mi	10			0			11			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	16	53	0	38	75	0	0	19	0	0	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	49	34	71	15	15	16	16
g / C, Green / Cycle	0.09	0.38	0.26	0.55	0.12	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.16	0.34	0.23	0.45	0.05	0.08	0.04	0.05
s, saturation flow rate [veh/h]	1767	1653	3431	1684	1776	1433	1760	1577
c, Capacity [veh/h]	163	623	897	920	205	165	217	194
d1, Uniform Delay [s]	59.00	37.95	45.91	24.14	53.64	54.98	52.33	52.45
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	347.22	17.22	11.37	7.90	6.96	23.01	4.68	5.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.72	0.89	0.87	0.82	0.45	0.71	0.36	0.38
d, Delay for Lane Group [s/veh]	406.22	55.18	57.28	32.04	60.61	77.99	57.01	58.07
Lane Group LOS	F	E	E	C	E	E	E	E
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	21.10	19.33	13.46	20.28	3.22	4.76	2.66	2.54
50th-Percentile Queue Length [ft/ln]	527.47	483.16	336.53	507.05	80.40	119.08	66.43	63.57
95th-Percentile Queue Length [veh/ln]	33.58	26.54	19.48	27.67	5.79	8.34	4.78	4.58
95th-Percentile Queue Length [ft/ln]	839.45	663.40	486.96	691.69	144.72	208.57	119.57	114.43

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	406.22	55.18	55.18	57.28	32.04	32.04	60.61	60.61	77.99	57.01	57.01	57.95
Movement LOS	F	E	E	E	C	C	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	173.03			44.93			70.37			57.52		
Approach LOS	F			D			E			E		
d_I, Intersection Delay [s/veh]	86.74											
Intersection LOS	F											
Intersection V/C	0.733											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	56.31	56.31
I_p,int, Pedestrian LOS Score for Intersection	2.386	2.719	2.267	2.429
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	754	1092	231	246
d_b, Bicycle Delay [s]	25.23	13.39	50.87	49.98
I_b,int, Bicycle LOS Score for Intersection	2.936	4.087	1.906	1.812
Bicycle LOS	C	D	A	A

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	325.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.586

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chrysler Drive						Constitution Drive					
Base Volume Input [veh/h]	176	332	115	192	314	305	39	34	190	0	255	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	13.00	8.50	8.30	21.10	0.80	3.10	5.30	40.00	9.80	0.00	17.90	100.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	332	115	192	314	305	39	34	190	0	255	25
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	92	32	53	87	85	11	9	53	0	71	7
Total Analysis Volume [veh/h]	196	369	128	213	349	339	43	38	211	0	283	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		13			14			5			5	
v_di, Inbound Pedestrian Volume crossing in		14			13			5			5	
v_co, Outbound Pedestrian Volume crossing		0			1			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			1	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	25	0	0	19	0	0	46	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30	30	30	30
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.86	0.16	0.44	0.28	0.12	0.12
s, saturation flow rate [veh/h]	804	1357	1560	1031	1371	1289
c, Capacity [veh/h]	282	399	459	302	439	380
d1, Uniform Delay [s]	42.73	30.09	35.94	35.49	28.43	28.75
k, delay calibration	0.50	0.11	0.50	0.42	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	665.98	1.11	235.27	39.70	0.50	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.46	0.53	1.50	0.97	0.36	0.40
d, Delay for Lane Group [s/veh]	708.70	31.19	271.22	75.19	28.93	29.43
Lane Group LOS	F	C	F	E	C	C
Critical Lane Group	Yes	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	59.36	4.44	41.15	10.31	3.11	3.02
50th-Percentile Queue Length [ft/ln]	1484.12	111.08	1028.72	257.70	77.68	75.53
95th-Percentile Queue Length [veh/ln]	97.33	7.90	63.38	15.57	5.59	5.44
95th-Percentile Queue Length [ft/ln]	2433.35	197.51	1584.41	389.33	139.83	135.95

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	708.70	708.70	708.70	31.19	271.22	271.22	75.19	75.19	75.19	28.93	29.15	29.43
Movement LOS	F	F	F	C	F	F	E	E	E	C	C	C
d_A, Approach Delay [s/veh]	708.70			214.47			75.19			29.18		
Approach LOS	F			F			E			C		
d_I, Intersection Delay [s/veh]	325.63											
Intersection LOS	F											
Intersection V/C	1.586											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	40.56	40.56	40.56	40.56
I_p,int, Pedestrian LOS Score for Intersection	2.401	2.293	2.421	2.291
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	824	412	294	824
d_b, Bicycle Delay [s]	17.62	32.13	37.07	17.62
I_b,int, Bicycle LOS Score for Intersection	2.703	3.046	2.041	1.816
Bicycle LOS	B	C	B	A

**Sequence**




Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	285.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.915

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	33	72	149	336	738	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	72	149	336	738	110
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	23	48	109	240	36
Total Analysis Volume [veh/h]	43	94	194	436	958	143
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.92	0.34	0.31	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	285.62	221.85	13.38	0.00	0.00	0.00
Movement LOS	F	F	B	A	A	A
95th-Percentile Queue Length [veh/ln]	9.09	9.09	1.33	1.33	0.00	0.00
95th-Percentile Queue Length [ft/ln]	227.30	227.30	33.13	33.13	0.00	0.00
d_A, Approach Delay [s/veh]	241.86		4.12		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	19.13					
Intersection LOS	F					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.047

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	184	42	60	128	13	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	12.50	12.50	15.60	15.60	46.80	46.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	184	42	60	128	13	68
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	12	18	38	4	20
Total Analysis Volume [veh/h]	216	49	71	151	15	80
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.17	0.00	0.00	0.00	0.05	0.10
d_M, Delay for Movement [s/veh]	8.36	0.00	0.00	0.00	17.34	10.50
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.60	0.60	0.00	0.00	0.52	0.52
95th-Percentile Queue Length [ft/ln]	15.05	15.05	0.00	0.00	12.93	12.93
d_A, Approach Delay [s/veh]	6.81		0.00		11.58	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.99					
Intersection LOS	C					

**Intersection Level Of Service Report**  
**Intersection 267: Willow Road(SR114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	1046	352	54	1362	280	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1046	352	54	1362	280	25
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	262	88	14	341	70	6
Total Analysis Volume [veh/h]	1046	352	54	1362	280	25
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	8	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	90	0	10	100	60	0
Amber [s]	3.5	0.0	3.5	3.5	3.5	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	81	0	24	105	55	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	11	0	0	11	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.5	0.0	2.5	2.5	2.5	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C
C, Cycle Length [s]	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	77	77	20	101	51	51
g / C, Green / Cycle	0.48	0.48	0.12	0.63	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.37	0.41	0.02	0.38	0.09	0.09
s, saturation flow rate [veh/h]	1870	1717	3459	3560	1781	1746
c, Capacity [veh/h]	894	821	422	2236	562	551
d1, Uniform Delay [s]	34.79	36.74	62.67	17.92	41.01	41.02
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.75	10.80	0.63	1.24	1.20	1.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.78	0.85	0.13	0.61	0.27	0.27
d, Delay for Lane Group [s/veh]	41.54	47.55	63.29	19.16	42.21	42.25
Lane Group LOS	D	D	E	B	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	23.84	25.87	1.02	14.93	4.82	4.75
50th-Percentile Queue Length [ft/ln]	596.04	646.78	25.39	373.35	120.56	118.64
95th-Percentile Queue Length [veh/ln]	31.85	34.21	1.83	21.27	8.42	8.32
95th-Percentile Queue Length [ft/ln]	796.23	855.32	45.70	531.79	210.60	207.96

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.54	47.55	63.29	19.16	42.23	42.25
Movement LOS	D	D	E	B	D	D
d_A, Approach Delay [s/veh]	44.55		20.85		42.23	
Approach LOS	D		C		D	
d_I, Intersection Delay [s/veh]	33.56					
Intersection LOS	C					
Intersection V/C	0.509					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38
I_p,int, Pedestrian LOS Score for Intersection	3.146	3.019	2.332
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	956	1256	631
d_b, Bicycle Delay [s]	21.79	11.06	37.47
I_b,int, Bicycle LOS Score for Intersection	2.713	2.728	2.063
Bicycle LOS	B	B	B

**Sequence**

Ring 1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 269: O'Brien Drive/Loop Road**

Control Type:	Roundabout	Delay (sec / veh):	8.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	13	311	222	60	68	28	119	68	67	94	26	272
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	311	222	60	68	28	119	68	67	94	26	272
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	78	56	15	17	7	30	17	17	24	7	68
Total Analysis Volume [veh/h]	13	311	222	60	68	28	119	68	67	94	26	272
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	252			136			226			452		
Exiting Flow Rate [veh/h]	234			716			68			357		
Demand Flow Rate [veh/h]	13	311	222	60	68	28	119	68	67	94	26	272
Adjusted Demand Flow Rate [veh/h]	13	311	222	60	68	28	119	68	67	94	26	272

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.98			0.98		
Entry Flow Rate [veh/h]	557			160			260			400		
Capacity of Entry and Bypass Lanes [veh/h]	1068			1202			1096			871		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	1047			1179			1074			854		
X, volume / capacity	0.52			0.13			0.24			0.46		

**Movement, Approach, & Intersection Results**

Lane LOS	A			A			A			B		
95th-Percentile Queue Length [veh]	3.12			0.46			0.92			2.45		
95th-Percentile Queue Length [ft]	77.96			11.41			23.03			61.14		
Approach Delay [s/veh]	9.74			4.18			5.57			10.05		
Approach LOS	A			A			A			B		
Intersection Delay [s/veh]	8.40											
Intersection LOS	A											

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**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	1038		1462		1343	532	4375

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	42	1307	7	448	1225	328	13	4	68	341	19	0	3802

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	224	974	126	29	1014	413	611	77	224	38	21	25	3776

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	0	839	82	425	755	47	334	69	2	44	53	339	2989

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	87	590	520	507	501	104	2309

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	6	11	9	129	28	342	21	675	211	301	756	56	2545

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	834	67	1319	2912	241	416	5789

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	247	596	277	35	75	72	386	423	213	1160	2475	72	6031

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	100	897	77	466	1351	48	47	15	48	17	6	153	3225

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	266	1221	1418	25	172	95	3197

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1316	981	42	1163	237	138	3877

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	143	1863	423	40	1365	7	17	93	421	260	114	305	5051

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1387	1211	627	463	60	3813

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	22	909	7	36	928	108	67	14	32	59	12	348	2542

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	37	783	7	4	878	168	280	6	64	1	2	6	2236

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	7	686	148	52	914	0	20	103	11	141	96	93	2271

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	27	300	153	374	136	448	132	462	170	344	329	20	2895

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road and US 101 NB Ramps	1841		896		771	1256	4764

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	453	10	76	221	45	37	41	21	22	51	131	1121

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	162	27	1389	10	30	7	8	500	296	2094	710	34	5267

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	1360	623	1264	888	1143	415	5693

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1787	738	1831	424	395	789	5964

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	276	283	1268	778	616	1963	5184



ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	442	93	1821	459	164	2217	5196

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	66	51	1135	396	247	2441	4336

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	646	270	74	384	210	257	1841

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	48		989	234	86	2729	4086

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	274	347	196	766	312	423	80	10	116	42	24	84	2674

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	176	332	115	192	314	305	39	34	190	0	255	25	1977

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	33	72	149	336	738	110	1438

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	184	42	60	128	13	68	495

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
267	Willow Road(SR114)/Park Street	1046	352	54	1362	280	25	3119

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	O'Brien Drive/Loop Road	13	311	222	60	68	28	119	68	67	94	26	272	1348

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**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	1038		1462		1343	532	4375
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1038</b>		<b>1462</b>		<b>1343</b>	<b>532</b>	<b>4375</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	42	1307	7	448	1225	328	13	4	68	341	19	0	3802
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>42</b>	<b>1307</b>	<b>7</b>	<b>448</b>	<b>1225</b>	<b>328</b>	<b>13</b>	<b>4</b>	<b>68</b>	<b>341</b>	<b>19</b>	<b>0</b>	<b>3802</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	224	974	126	29	1014	413	611	77	224	38	21	25	3776
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>224</b>	<b>974</b>	<b>126</b>	<b>29</b>	<b>1014</b>	<b>413</b>	<b>611</b>	<b>77</b>	<b>224</b>	<b>38</b>	<b>21</b>	<b>25</b>	<b>3776</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	Final Base	0	839	82	425	755	47	334	69	2	44	53	339	2989
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>0</b>	<b>839</b>	<b>82</b>	<b>425</b>	<b>755</b>	<b>47</b>	<b>334</b>	<b>69</b>	<b>2</b>	<b>44</b>	<b>53</b>	<b>339</b>	<b>2989</b>

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	87	590	520	507	501	104	2309
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>87</b>	<b>590</b>	<b>520</b>	<b>507</b>	<b>501</b>	<b>104</b>	<b>2309</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringswood Ave	Final Base	6	11	9	129	28	342	21	675	211	301	756	56	2545
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>6</b>	<b>11</b>	<b>9</b>	<b>129</b>	<b>28</b>	<b>342</b>	<b>21</b>	<b>675</b>	<b>211</b>	<b>301</b>	<b>756</b>	<b>56</b>	<b>2545</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	834	67	1319	2912	241	416	5789
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>834</b>	<b>67</b>	<b>1319</b>	<b>2912</b>	<b>241</b>	<b>416</b>	<b>5789</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	247	596	277	35	75	72	386	423	213	1160	2475	72	6031
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>247</b>	<b>596</b>	<b>277</b>	<b>35</b>	<b>75</b>	<b>72</b>	<b>386</b>	<b>423</b>	<b>213</b>	<b>1160</b>	<b>2475</b>	<b>72</b>	<b>6031</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	100	897	77	466	1351	48	47	15	48	17	6	153	3225
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>100</b>	<b>897</b>	<b>77</b>	<b>466</b>	<b>1351</b>	<b>48</b>	<b>47</b>	<b>15</b>	<b>48</b>	<b>17</b>	<b>6</b>	<b>153</b>	<b>3225</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	266	1221	1418	25	172	95	3197
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>266</b>	<b>1221</b>	<b>1418</b>	<b>25</b>	<b>172</b>	<b>95</b>	<b>3197</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1316	981	42	1163	237	138	3877
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1316</b>	<b>981</b>	<b>42</b>	<b>1163</b>	<b>237</b>	<b>138</b>	<b>3877</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	143	1863	423	40	1365	7	17	93	421	260	114	305	5051
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>143</b>	<b>1863</b>	<b>423</b>	<b>40</b>	<b>1365</b>	<b>7</b>	<b>17</b>	<b>93</b>	<b>421</b>	<b>260</b>	<b>114</b>	<b>305</b>	<b>5051</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1387	1211	627	463	60	3813
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1387</b>	<b>1211</b>	<b>627</b>	<b>463</b>	<b>60</b>	<b>3813</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	22	909	7	36	928	108	67	14	32	59	12	348	2542
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>909</b>	<b>7</b>	<b>36</b>	<b>928</b>	<b>108</b>	<b>67</b>	<b>14</b>	<b>32</b>	<b>59</b>	<b>12</b>	<b>348</b>	<b>2542</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	37	783	7	4	878	168	280	6	64	1	2	6	2236
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>37</b>	<b>783</b>	<b>7</b>	<b>4</b>	<b>878</b>	<b>168</b>	<b>280</b>	<b>6</b>	<b>64</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>2236</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	7	686	148	52	914	0	20	103	11	141	96	93	2271
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>7</b>	<b>686</b>	<b>148</b>	<b>52</b>	<b>914</b>	<b>0</b>	<b>20</b>	<b>103</b>	<b>11</b>	<b>141</b>	<b>96</b>	<b>93</b>	<b>2271</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd- Willow Rd	Final Base	27	300	153	374	136	448	132	462	170	344	329	20	2895
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>27</b>	<b>300</b>	<b>153</b>	<b>374</b>	<b>136</b>	<b>448</b>	<b>132</b>	<b>462</b>	<b>170</b>	<b>344</b>	<b>329</b>	<b>20</b>	<b>2895</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road and US 101 NB Ramps	Final Base	1841		896		771	1256	4764
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1841</b>		<b>896</b>		<b>771</b>	<b>1256</b>	<b>4764</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	13	453	10	76	221	45	37	41	21	22	51	131	1121
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>453</b>	<b>10</b>	<b>76</b>	<b>221</b>	<b>45</b>	<b>37</b>	<b>41</b>	<b>21</b>	<b>22</b>	<b>51</b>	<b>131</b>	<b>1121</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	162	27	1389	10	30	7	8	500	296	2094	710	34	5267
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>162</b>	<b>27</b>	<b>1389</b>	<b>10</b>	<b>30</b>	<b>7</b>	<b>8</b>	<b>500</b>	<b>296</b>	<b>2094</b>	<b>710</b>	<b>34</b>	<b>5267</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	Left	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1360	623	1264	888	1143	415	5693
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1360</b>	<b>623</b>	<b>1264</b>	<b>888</b>	<b>1143</b>	<b>415</b>	<b>5693</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1787	738	1831	424	395	789	5964
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1787</b>	<b>738</b>	<b>1831</b>	<b>424</b>	<b>395</b>	<b>789</b>	<b>5964</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	276	283	1268	778	616	1963	5184
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>276</b>	<b>283</b>	<b>1268</b>	<b>778</b>	<b>616</b>	<b>1963</b>	<b>5184</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	442	93	1821	459	164	2217	5196
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>442</b>	<b>93</b>	<b>1821</b>	<b>459</b>	<b>164</b>	<b>2217</b>	<b>5196</b>



ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bayfront Expwy/Bldg 21	Final Base	66	51	1135	396	247	2441	4336
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>66</b>	<b>51</b>	<b>1135</b>	<b>396</b>	<b>247</b>	<b>2441</b>	<b>4336</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	646	270	74	384	210	257	1841
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>646</b>	<b>270</b>	<b>74</b>	<b>384</b>	<b>210</b>	<b>257</b>	<b>1841</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	48	989	234	86	2729	4086	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>48</b>	<b>989</b>	<b>234</b>	<b>86</b>	<b>2729</b>	<b>4086</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	274	347	196	766	312	423	80	10	116	42	24	84	2674
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>274</b>	<b>347</b>	<b>196</b>	<b>766</b>	<b>312</b>	<b>423</b>	<b>80</b>	<b>10</b>	<b>116</b>	<b>42</b>	<b>24</b>	<b>84</b>	<b>2674</b>

ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	176	332	115	192	314	305	39	34	190	0	255	25	1977
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>176</b>	<b>332</b>	<b>115</b>	<b>192</b>	<b>314</b>	<b>305</b>	<b>39</b>	<b>34</b>	<b>190</b>	<b>0</b>	<b>255</b>	<b>25</b>	<b>1977</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	33	72	149	336	738	110	1438
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>33</b>	<b>72</b>	<b>149</b>	<b>336</b>	<b>738</b>	<b>110</b>	<b>1438</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/Adams Drive	Final Base	184	42	60	128	13	68	495
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>184</b>	<b>42</b>	<b>60</b>	<b>128</b>	<b>13</b>	<b>68</b>	<b>495</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
267	Willow Road (SR114)/Park Street	Final Base	1046	352	54	1362	280	25	3119
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1046</b>	<b>352</b>	<b>54</b>	<b>1362</b>	<b>280</b>	<b>25</b>	<b>3119</b>

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ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	O'Brien Drive/Loop Road	Final Base	13	311	222	60	68	28	119	68	67	94	26	272	1348
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>311</b>	<b>222</b>	<b>60</b>	<b>68</b>	<b>28</b>	<b>119</b>	<b>68</b>	<b>67</b>	<b>94</b>	<b>26</b>	<b>272</b>	<b>1348</b>

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## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	476	342	204	99
2	462	332	198	96
3	452	325	194	94
4	424	304	182	88
5	376	270	161	78
6	371	267	159	77
7	367	263	157	76
8	333	239	143	69
9	328	236	141	68
10	324	233	139	67
11	281	202	120	58
12	262	188	112	54
13	257	185	110	53
14	190	137	82	40
15	190	137	82	40
16	133	96	57	28
17	76	55	33	16
18	76	55	33	16
19	43	31	18	9
20	24	17	10	5
21	14	10	6	3
22	5	3	2	1
23	5	3	2	1
24	5	3	2	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	818	1	204	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	794	1	198	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	777	1	194	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	728	1	182	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
5	1	646	1	161	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
6	1	638	1	159	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
7	1	630	1	157	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
8	1	572	1	143	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
9	1	564	1	141	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
10	1	557	1	139	No	Yes	Yes	Yes	No	No	Yes	Yes	No	No
11	1	483	1	120	No	Yes	Yes	Yes	No	No	No	Yes	No	No
12	1	450	1	112	No	No	Yes	Yes	No	No	No	Yes	No	No
13	1	442	1	110	No	No	Yes	Yes	No	No	No	Yes	No	No
14	1	327	1	82	No	No	No	No	No	No	No	No	No	No
15	1	327	1	82	No	No	No	No	No	No	No	No	No	No
16	1	229	1	57	No	No	No	No	No	No	No	No	No	No
17	1	131	1	33	No	No	No	No	No	No	No	No	No	No
18	1	131	1	33	No	No	No	No	No	No	No	No	No	No
19	1	74	1	18	No	No	No	No	No	No	No	No	No	No
20	1	41	1	10	No	No	No	No	No	No	No	No	No	No
21	1	24	1	6	No	No	No	No	No	No	No	No	No	No
22	1	8	1	2	No	No	No	No	No	No	No	No	No	No
23	1	8	1	2	No	No	No	No	No	No	No	No	No	No
24	1	8	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					7	11	13	13	3	7	10	13	4	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	14.4	12.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:48	0:21
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	204	99
High Minor Volume Condition Met	Yes	No
Total Entering Volume on All Approaches During Same Hour	1121	1121
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	458	916	467
2	444	889	453
3	435	870	444
4	408	815	416
5	362	724	369
6	357	714	364
7	353	705	360
8	321	641	327
9	316	632	322
10	311	623	318
11	270	540	276
12	252	504	257
13	247	495	252
14	183	366	187
15	183	366	187
16	128	256	131
17	73	147	75
18	73	147	75
19	41	82	42
20	23	46	23
21	14	27	14
22	5	9	5
23	5	9	5
24	5	9	5

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1374	1	467	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1333	1	453	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1305	1	444	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1223	1	416	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	1086	1	369	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	1071	1	364	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	1058	1	360	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	962	1	327	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	1	948	1	322	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	1	934	1	318	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	1	810	1	276	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	1	756	1	257	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
13	1	742	1	252	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	549	1	187	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
15	1	549	1	187	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
16	1	384	1	131	No	No	Yes	Yes	No	No	No	No	No	No
17	1	220	1	75	No	No	No	No	No	No	No	No	No	No
18	1	220	1	75	No	No	No	No	No	No	No	No	No	No
19	1	123	1	42	No	No	No	No	No	No	No	No	No	No
20	1	69	1	23	No	No	No	No	No	No	No	No	No	No
21	1	41	1	14	No	No	No	No	No	No	No	No	No	No
22	1	14	1	5	No	No	No	No	No	No	No	No	No	No
23	1	14	1	5	No	No	No	No	No	No	No	No	No	No
24	1	14	1	5	No	No	No	No	No	No	No	No	No	No
Hours Met					15	15	16	16	12	13	15	15	13	10

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	65.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	8:31
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	467
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1841
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	848	485	105
2	823	470	102
3	806	461	100
4	755	432	93
5	670	383	83
6	661	378	82
7	653	373	81
8	594	340	74
9	585	335	72
10	577	330	71
11	500	286	62
12	466	267	58
13	458	262	57
14	339	194	42
15	339	194	42
16	237	136	29
17	136	78	17
18	136	78	17
19	76	44	9
20	42	24	5
21	25	15	3
22	8	5	1
23	8	5	1
24	8	5	1



## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1333	1	105	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1293	1	102	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1267	1	100	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	1187	1	93	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	1053	1	83	No	No	No	No	Yes	Yes	Yes	Yes	No	No
6	1	1039	1	82	No	No	No	No	Yes	Yes	Yes	Yes	No	No
7	1	1026	1	81	No	No	No	No	Yes	Yes	Yes	Yes	No	No
8	1	934	1	74	No	No	No	No	No	Yes	Yes	Yes	No	No
9	1	920	1	72	No	No	No	No	No	Yes	Yes	Yes	No	No
10	1	907	1	71	No	No	No	No	No	Yes	Yes	Yes	No	No
11	1	786	1	62	No	No	No	No	No	Yes	Yes	Yes	No	No
12	1	733	1	58	No	No	No	No	No	No	Yes	Yes	No	No
13	1	720	1	57	No	No	No	No	No	No	Yes	Yes	No	No
14	1	533	1	42	No	No	No	No	No	No	No	Yes	No	No
15	1	533	1	42	No	No	No	No	No	No	No	Yes	No	No
16	1	373	1	29	No	No	No	No	No	No	No	No	No	No
17	1	214	1	17	No	No	No	No	No	No	No	No	No	No
18	1	214	1	17	No	No	No	No	No	No	No	No	No	No
19	1	120	1	9	No	No	No	No	No	No	No	No	No	No
20	1	66	1	5	No	No	No	No	No	No	No	No	No	No
21	1	40	1	3	No	No	No	No	No	No	No	No	No	No
22	1	13	1	1	No	No	No	No	No	No	No	No	No	No
23	1	13	1	1	No	No	No	No	No	No	No	No	No	No
24	1	13	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	1	4	7	11	13	15	4	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	241.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	7:03
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	105
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1438
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>

## Signal Warrants Report For Intersection 265: Adam Court/Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	226	188	81
2	219	182	79
3	215	179	77
4	201	167	72
5	179	149	64
6	176	147	63
7	174	145	62
8	158	132	57
9	156	130	56
10	154	128	55
11	133	111	48
12	124	103	45
13	122	102	44
14	90	75	32
15	90	75	32
16	63	53	23
17	36	30	13
18	36	30	13
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22	2	2	1
23	2	2	1
24	2	2	1

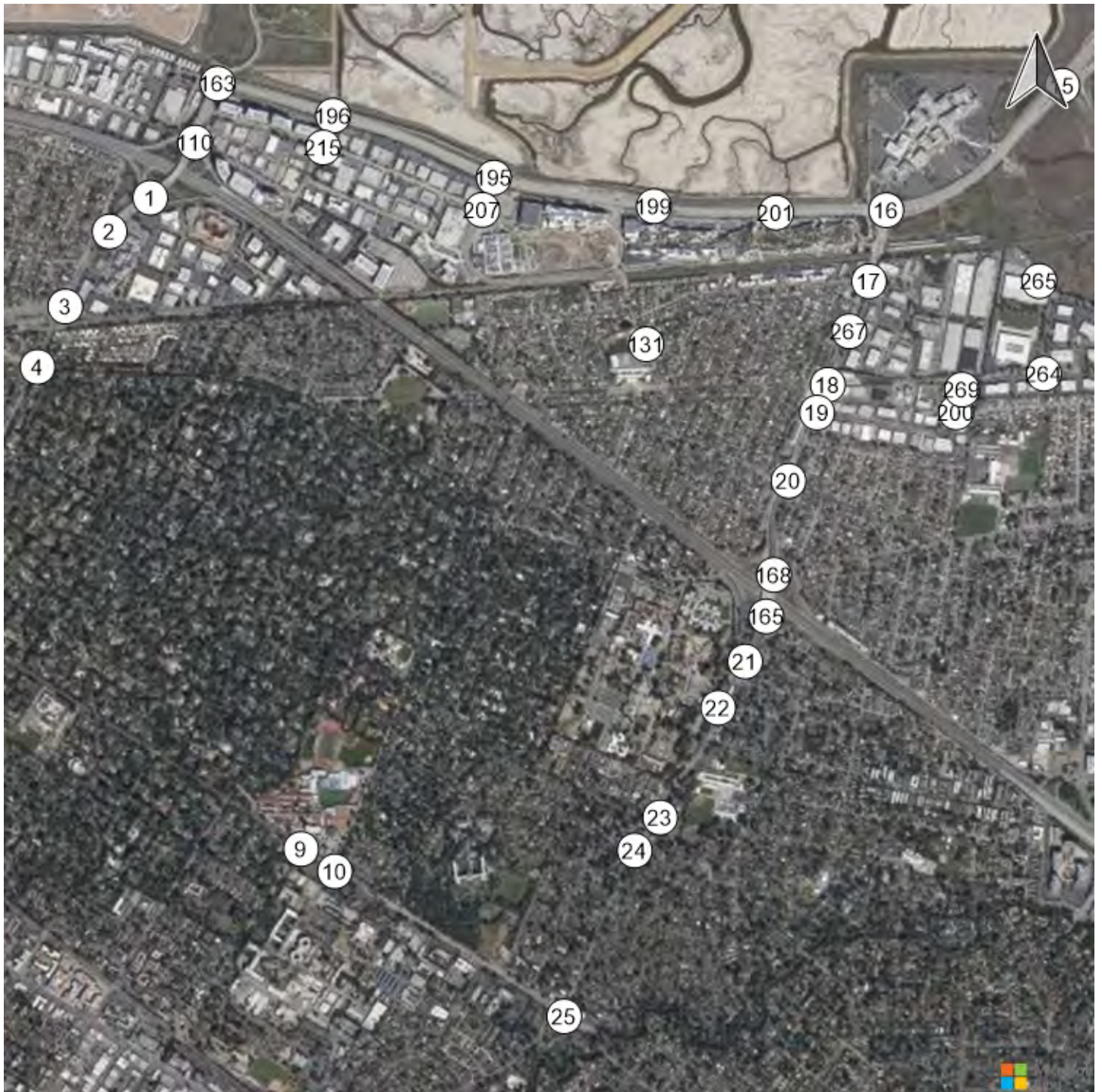
## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	414	1	81	No	No	No	No	No	No	No	No	No	No
2	1	401	1	79	No	No	No	No	No	No	No	No	No	No
3	1	394	1	77	No	No	No	No	No	No	No	No	No	No
4	1	368	1	72	No	No	No	No	No	No	No	No	No	No
5	1	328	1	64	No	No	No	No	No	No	No	No	No	No
6	1	323	1	63	No	No	No	No	No	No	No	No	No	No
7	1	319	1	62	No	No	No	No	No	No	No	No	No	No
8	1	290	1	57	No	No	No	No	No	No	No	No	No	No
9	1	286	1	56	No	No	No	No	No	No	No	No	No	No
10	1	282	1	55	No	No	No	No	No	No	No	No	No	No
11	1	244	1	48	No	No	No	No	No	No	No	No	No	No
12	1	227	1	45	No	No	No	No	No	No	No	No	No	No
13	1	224	1	44	No	No	No	No	No	No	No	No	No	No
14	1	165	1	32	No	No	No	No	No	No	No	No	No	No
15	1	165	1	32	No	No	No	No	No	No	No	No	No	No
16	1	116	1	23	No	No	No	No	No	No	No	No	No	No
17	1	66	1	13	No	No	No	No	No	No	No	No	No	No
18	1	66	1	13	No	No	No	No	No	No	No	No	No	No
19	1	37	1	7	No	No	No	No	No	No	No	No	No	No
20	1	20	1	4	No	No	No	No	No	No	No	No	No	No
21	1	13	1	2	No	No	No	No	No	No	No	No	No	No
22	1	4	1	1	No	No	No	No	No	No	No	No	No	No
23	1	4	1	1	No	No	No	No	No	No	No	No	No	No
24	1	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:15
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	81
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	495
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections

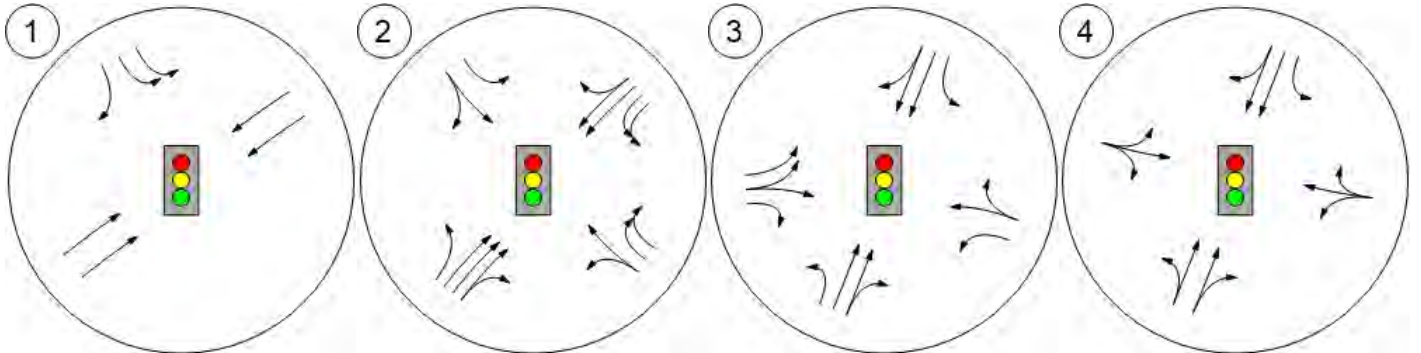


Lane Configuration and Traffic Control

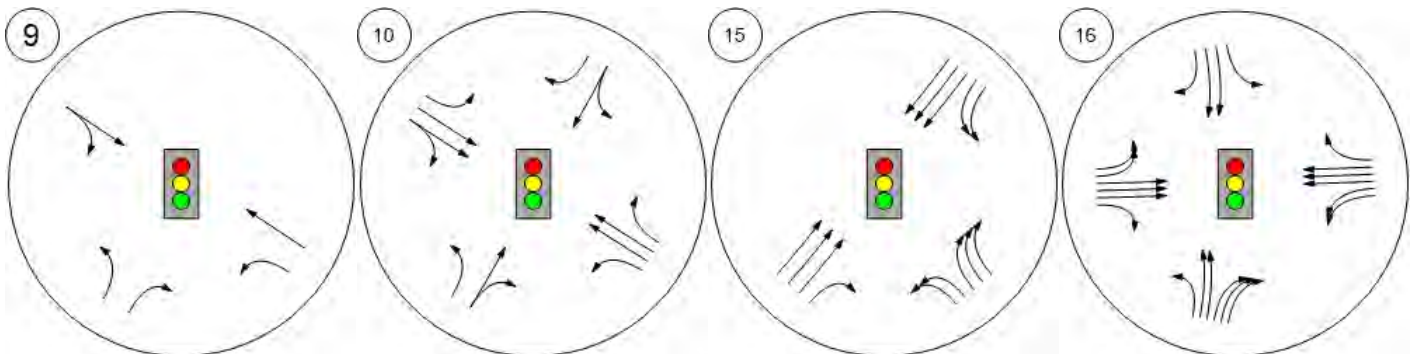


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



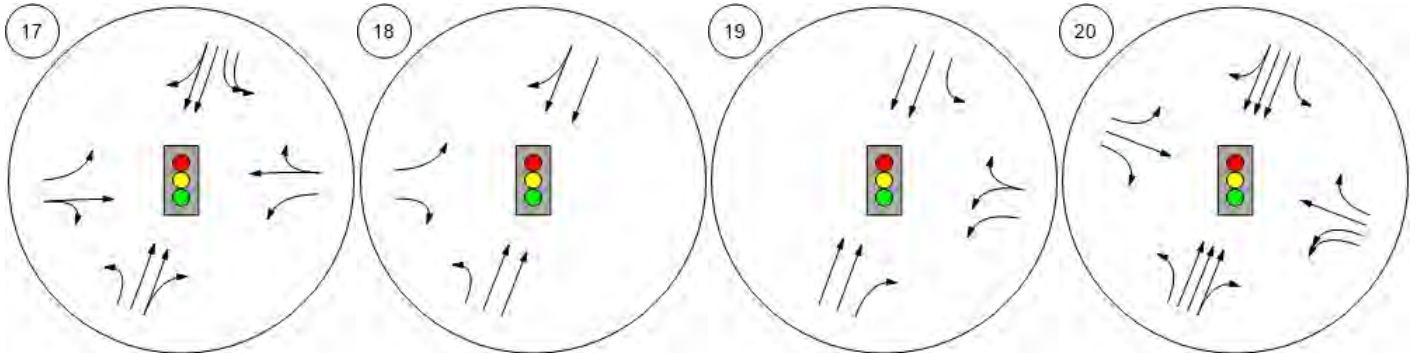
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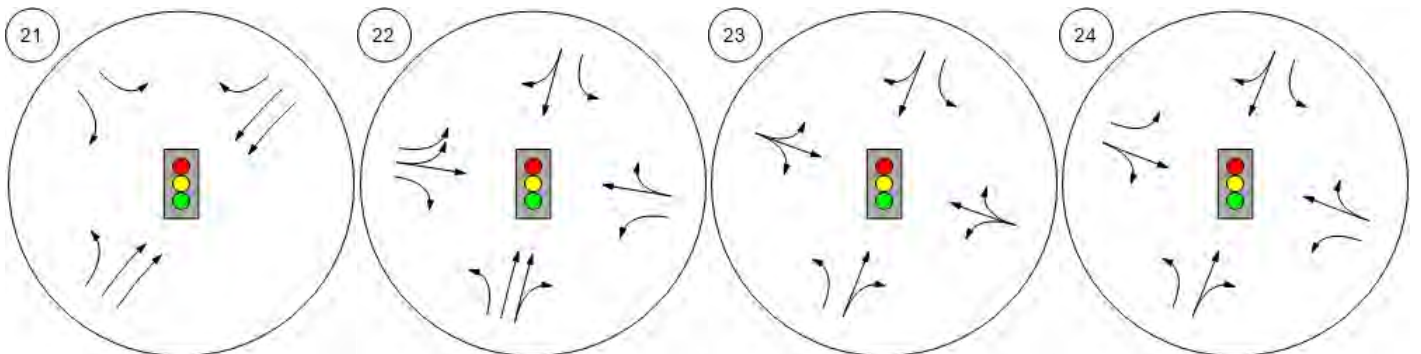
Lane Configuration and Traffic Control



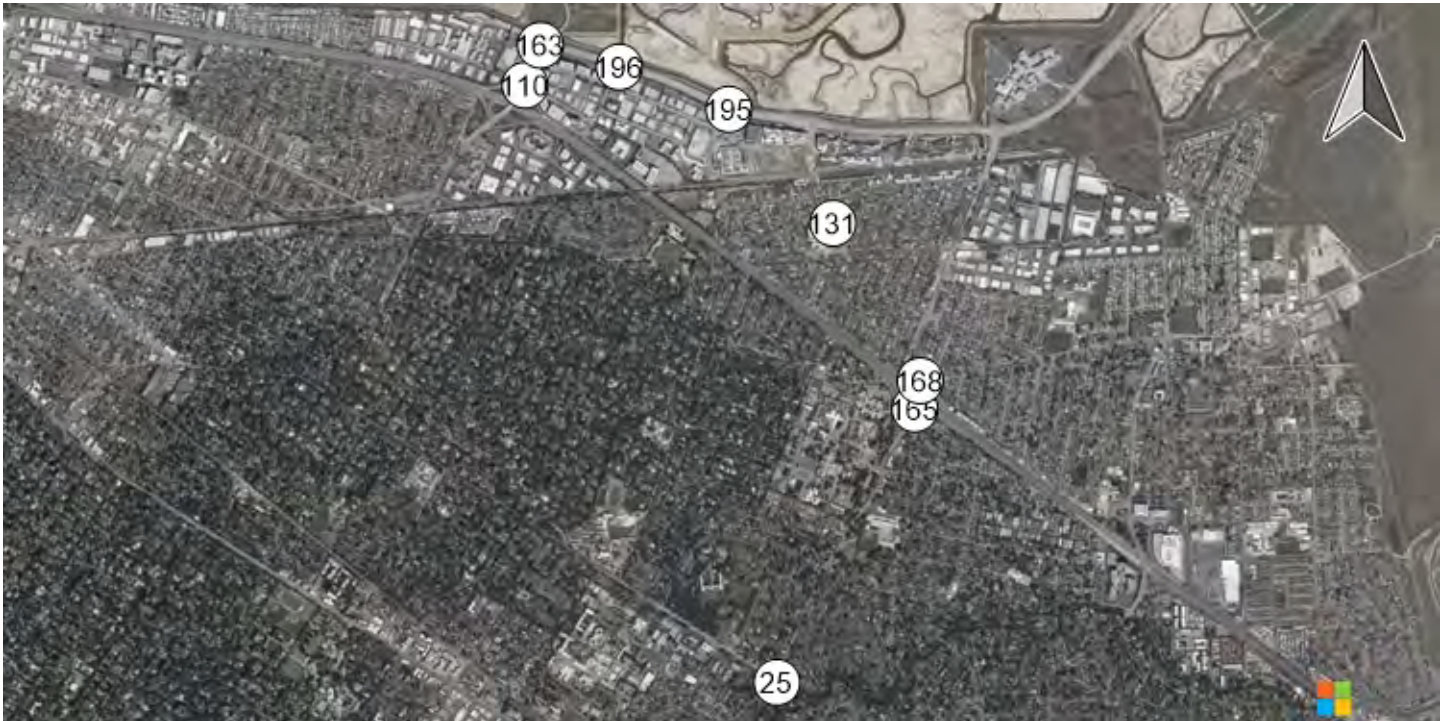
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



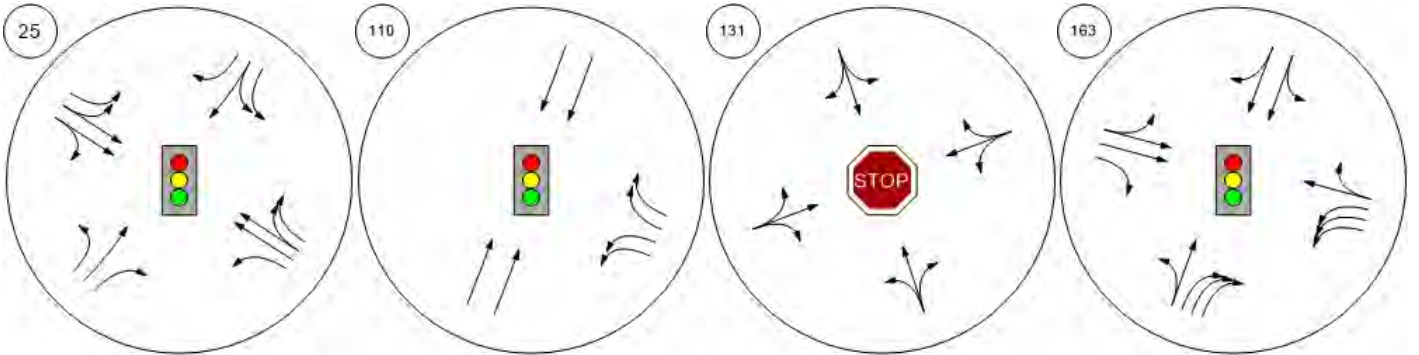
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



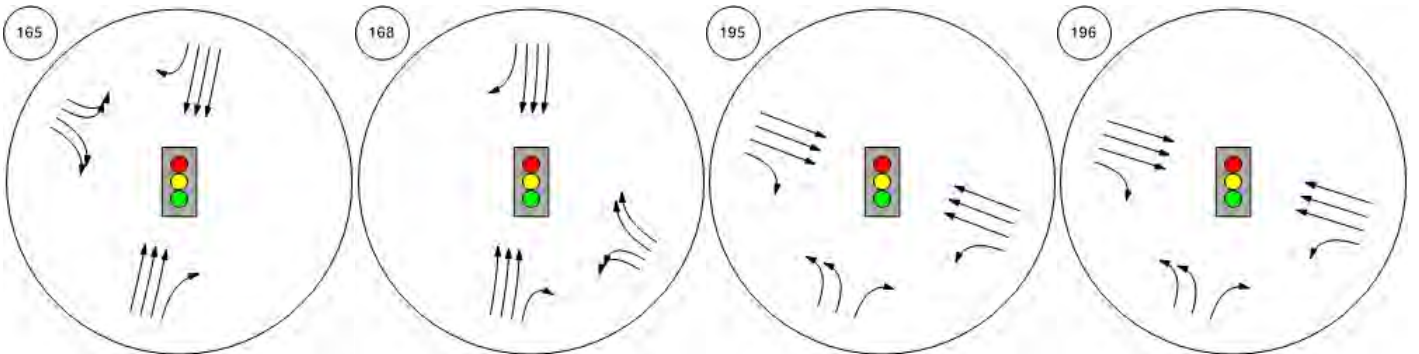
Lane Configuration and Traffic Control



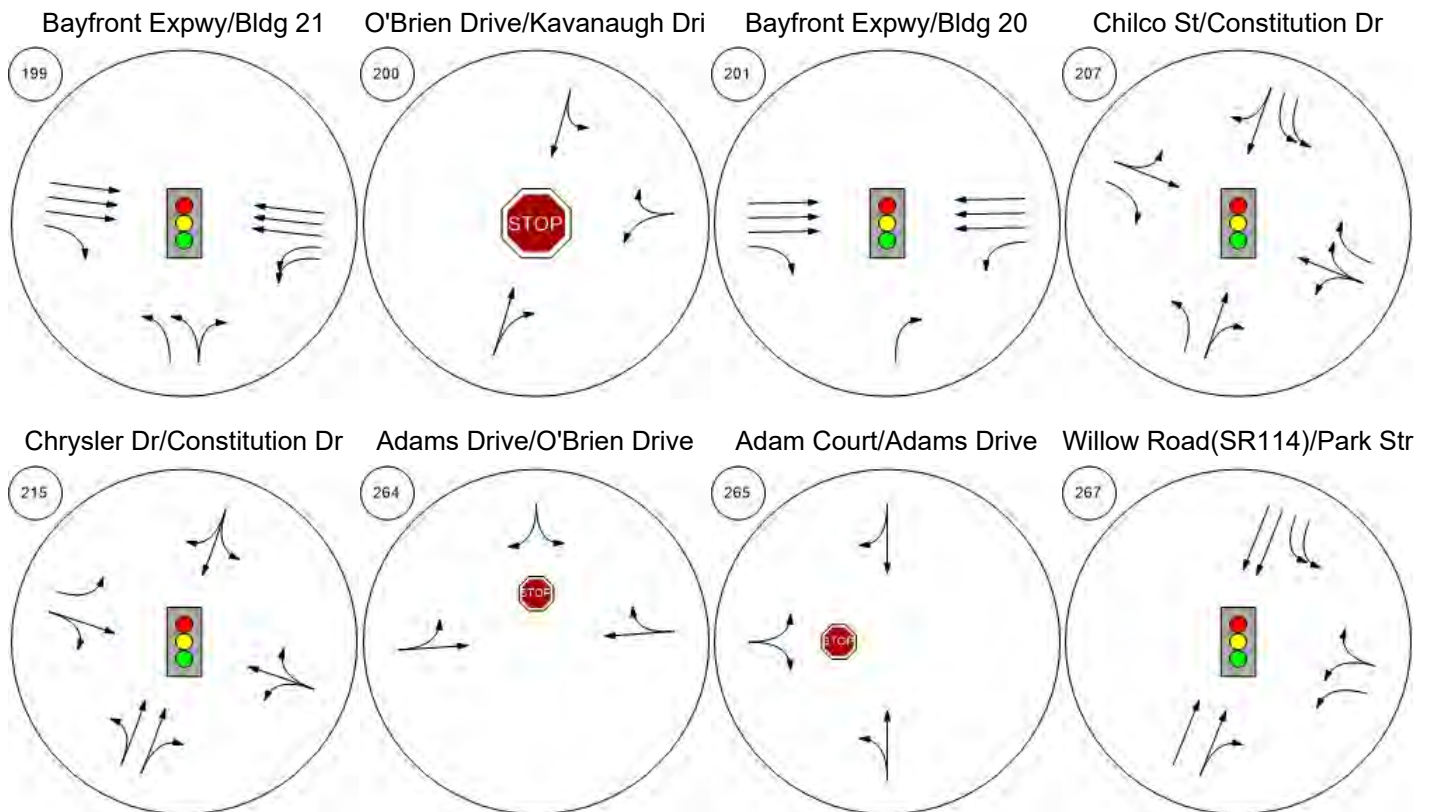
Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



Lane Configuration and Traffic Control

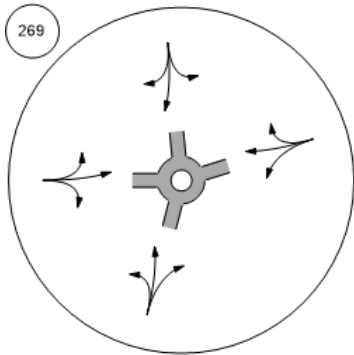




Lane Configuration and Traffic Control



O'Brien Drive/Loop Road

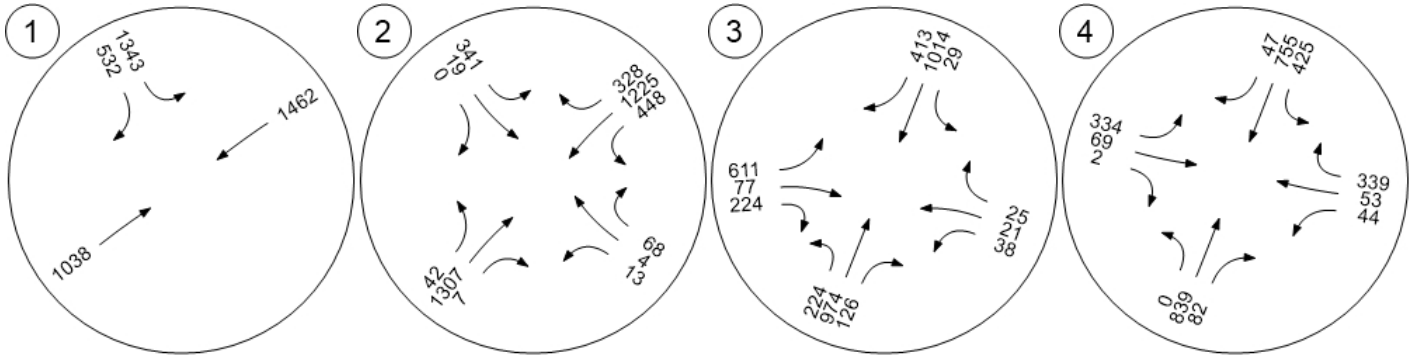


Traffic Volume - Base Volume

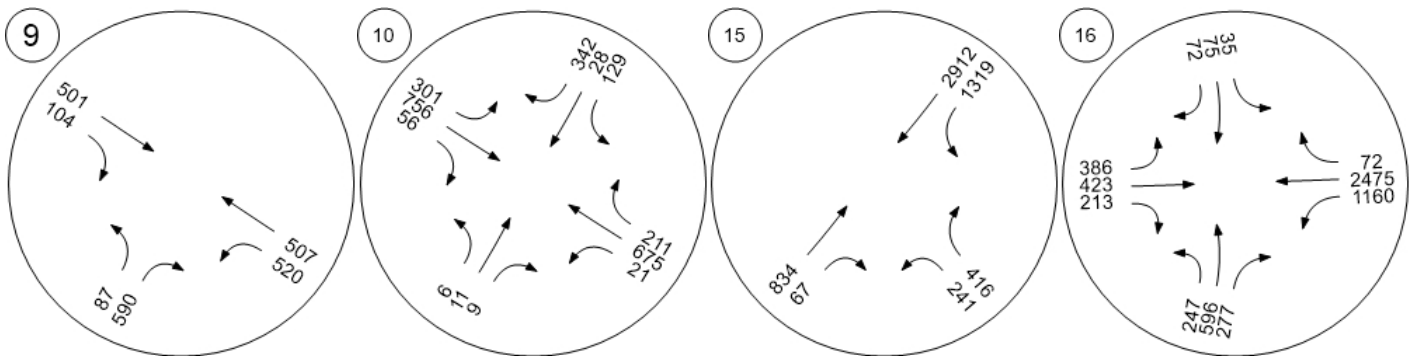


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



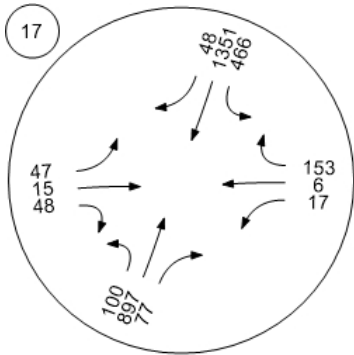
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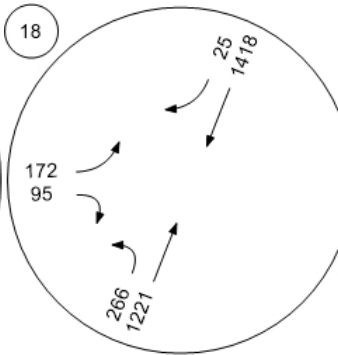
Traffic Volume - Base Volume



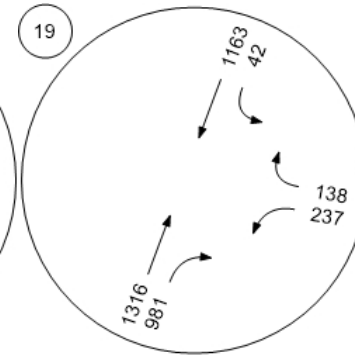
Willow Rd (SR 114)/Hamilton



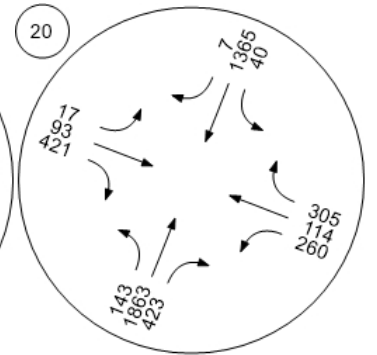
Willow Rd (SR 114)/Ivy Dr



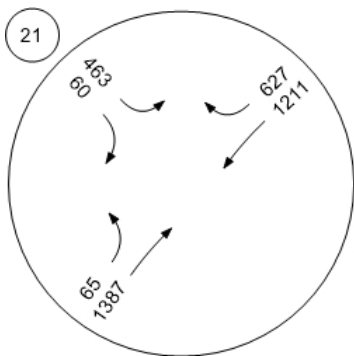
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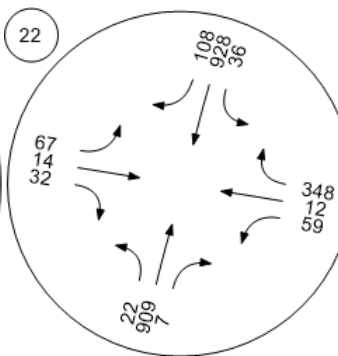
Willow Rd (SR 114)/Newbrid



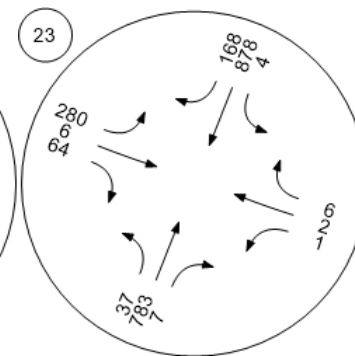
Willow Rd/Bay Rd



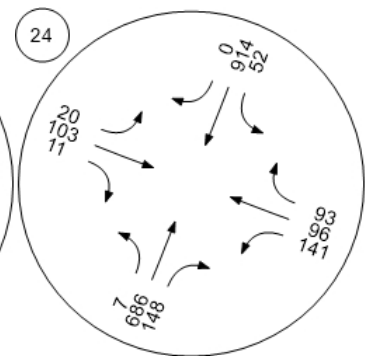
Willow Rd/Durham St-VA Me



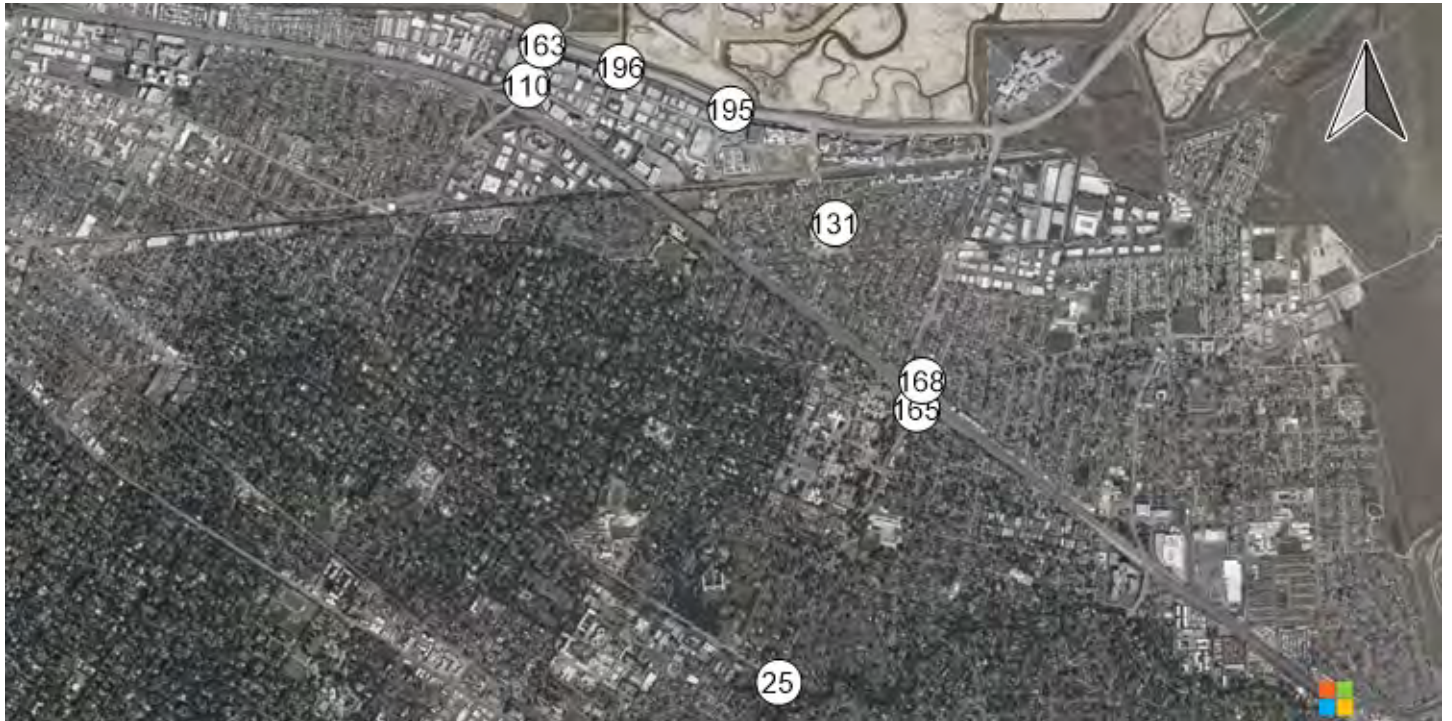
Willow Rd/Coleman Ave



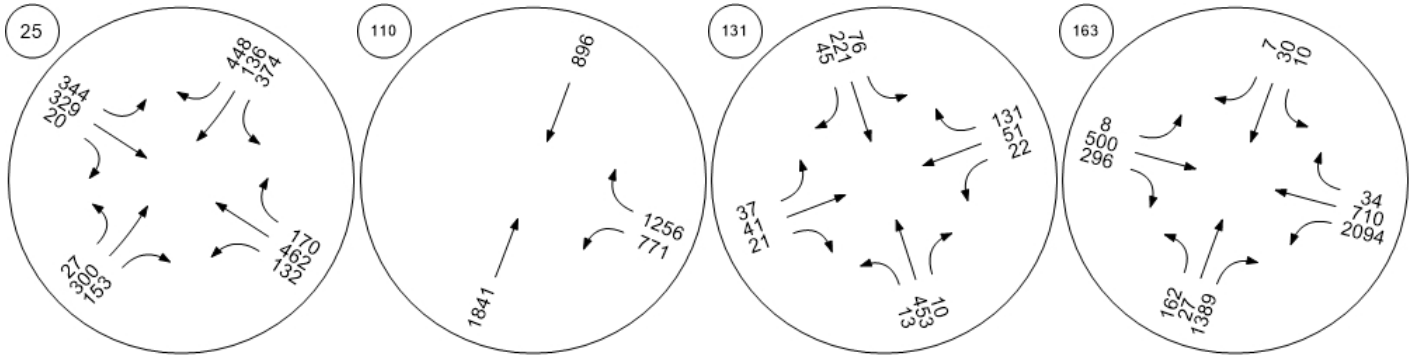
Willow Rd/Gilbert Ave



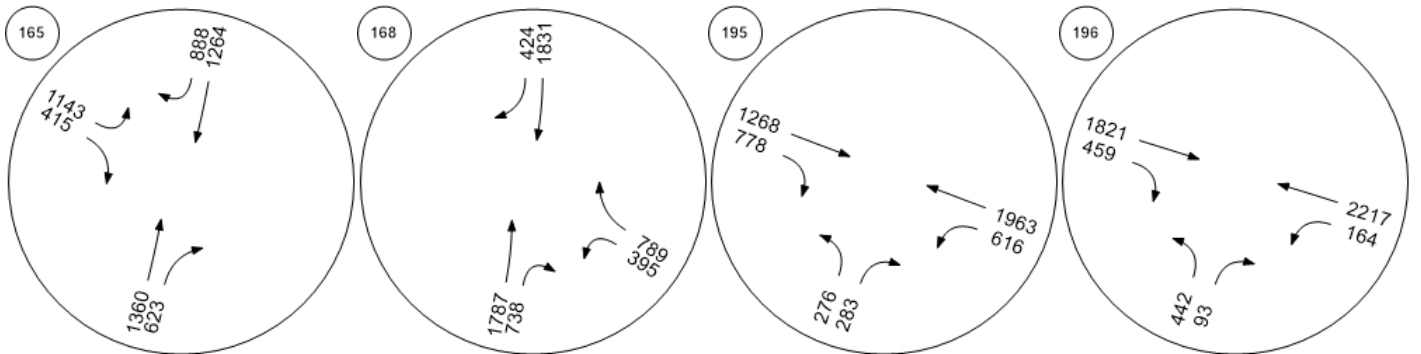
Traffic Volume - Base Volume



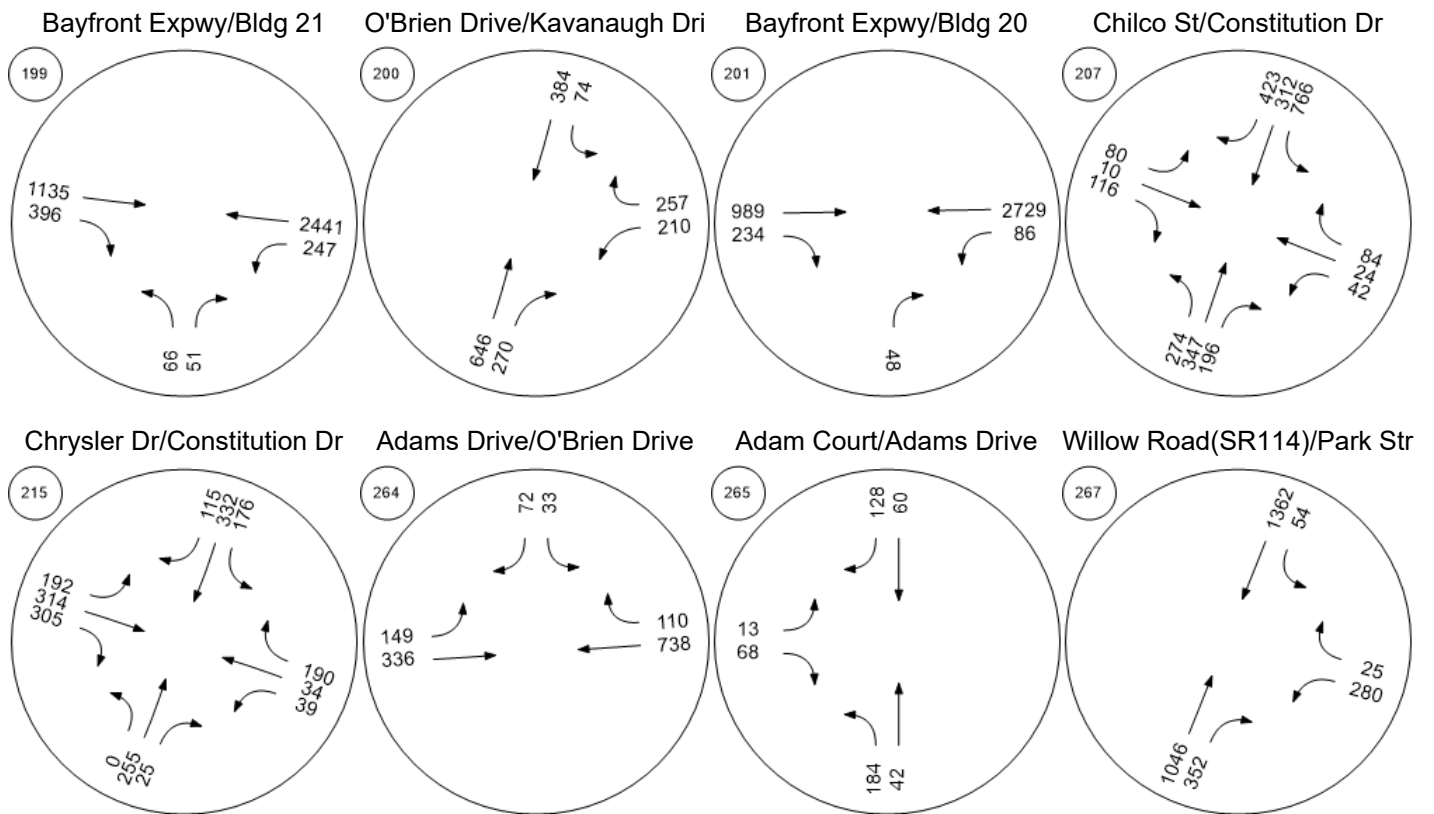
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Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive



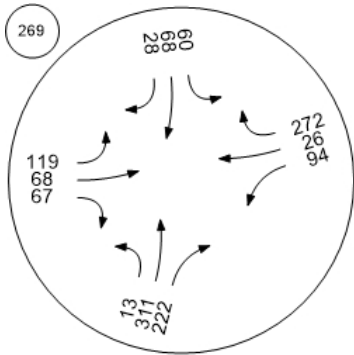
Traffic Volume - Base Volume



Traffic Volume - Base Volume



O'Brien Drive/Loop Road

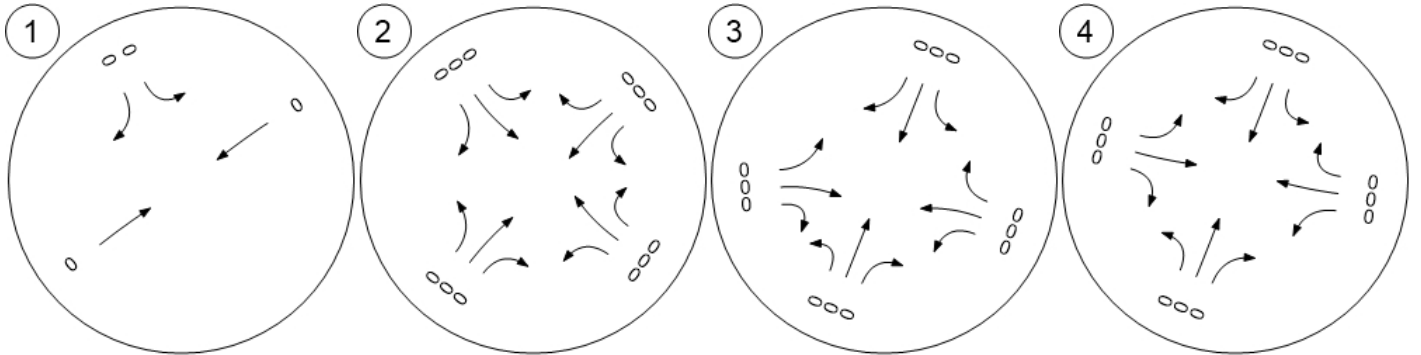


Traffic Volume - In-Process Volume

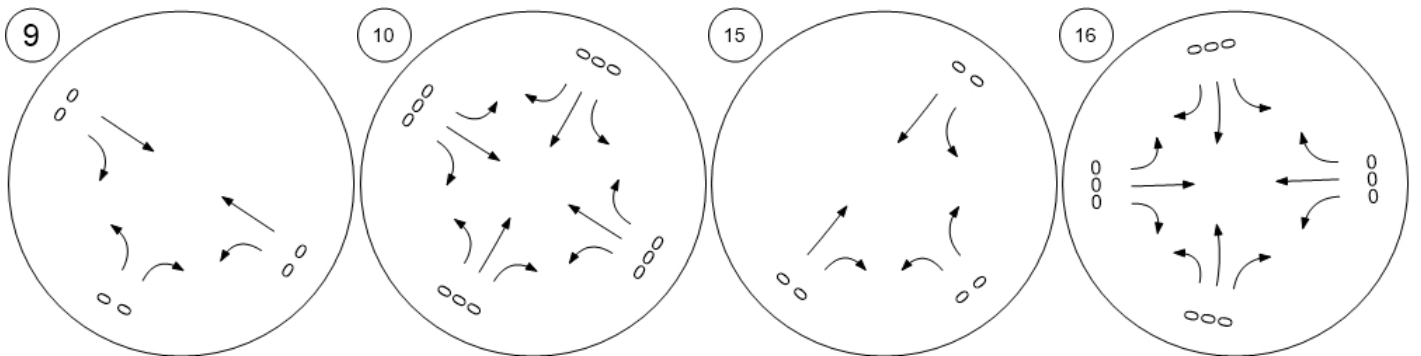


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



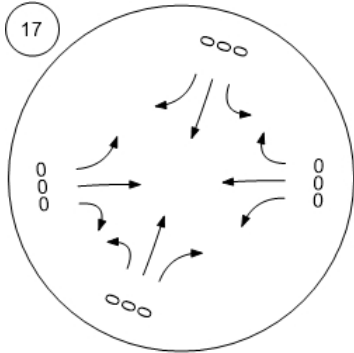
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



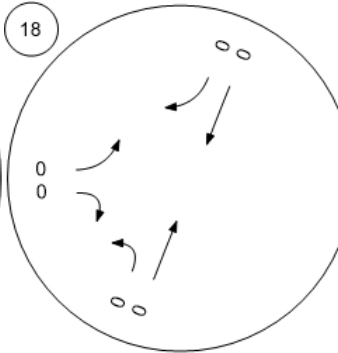
Traffic Volume - In-Process Volume



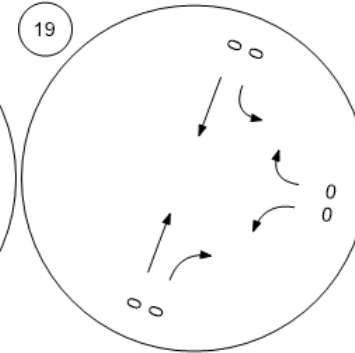
Willow Rd (SR 114)/Hamilton



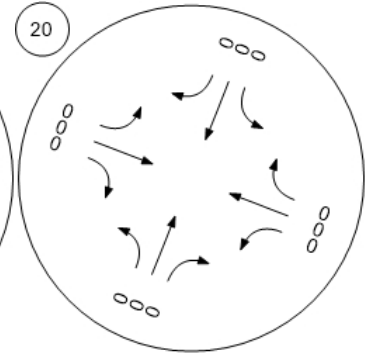
Willow Rd (SR 114)/Ivy Dr



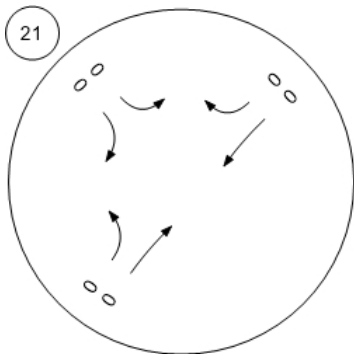
Willow Rd (SR 114)/O'Brien



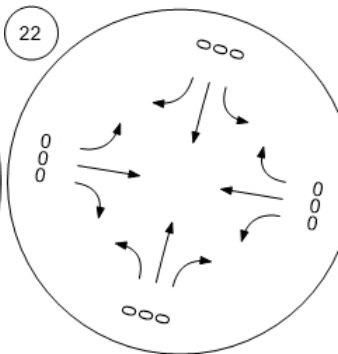
Willow Rd (SR 114)/Newbrid



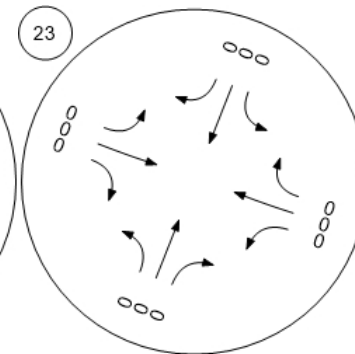
Willow Rd/Bay Rd



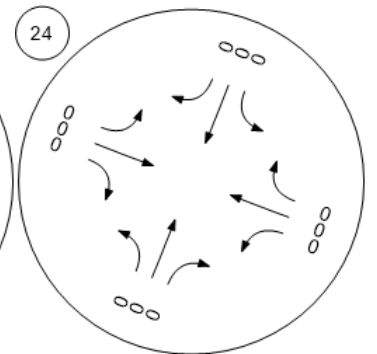
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave

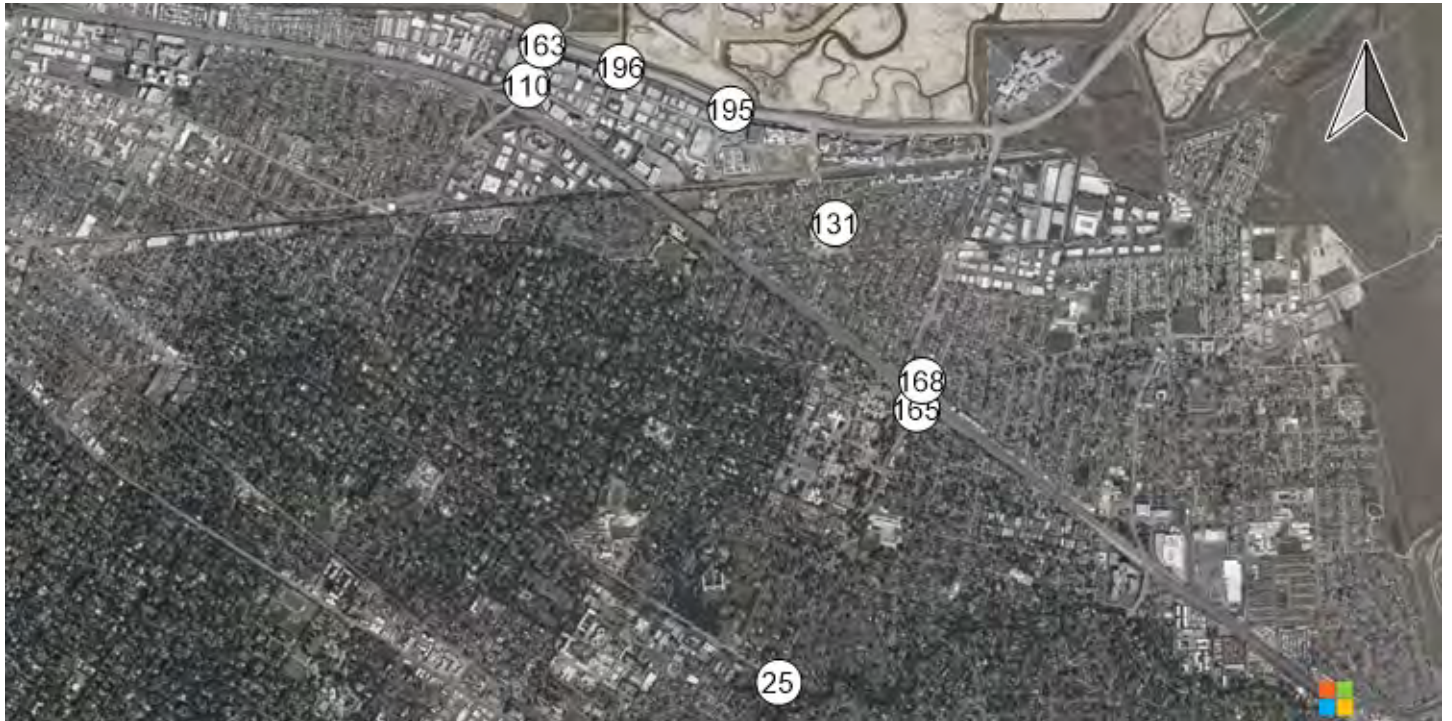


Willow Rd/Gilbert Ave

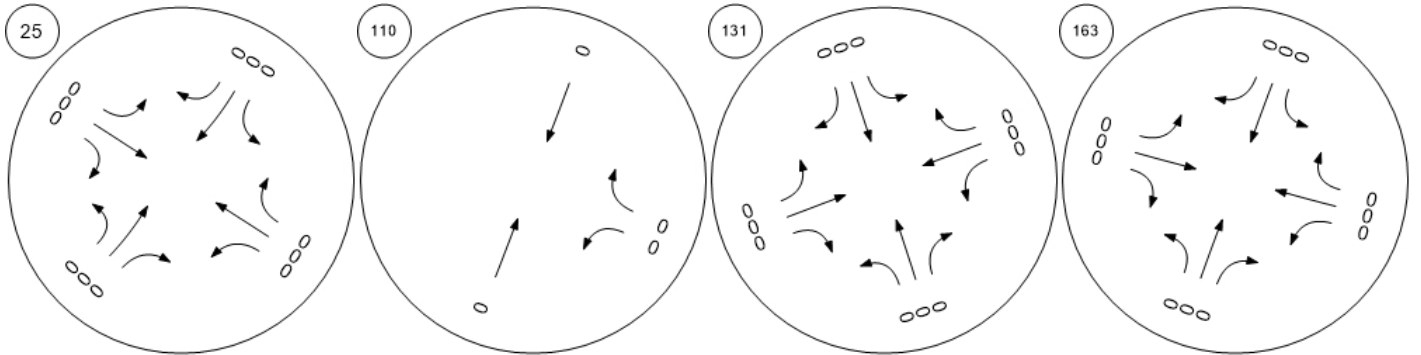




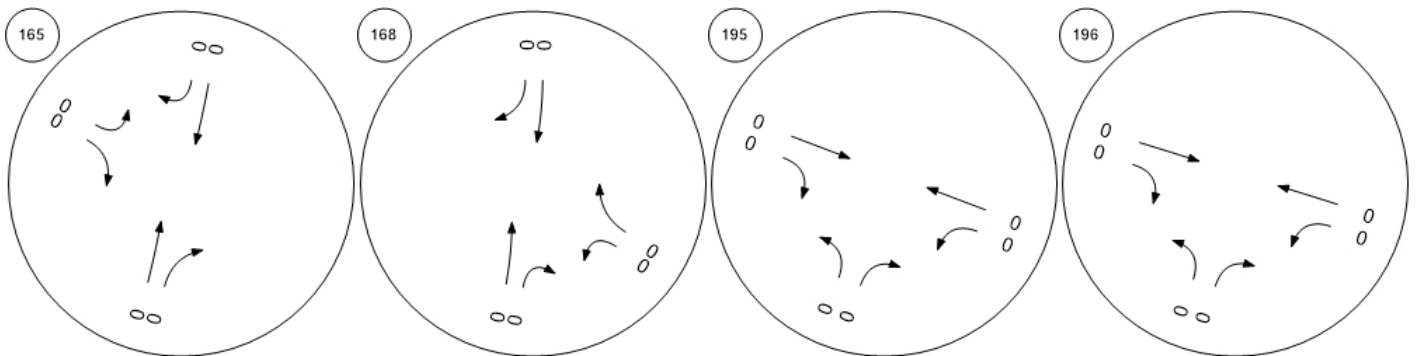
Traffic Volume - In-Process Volume



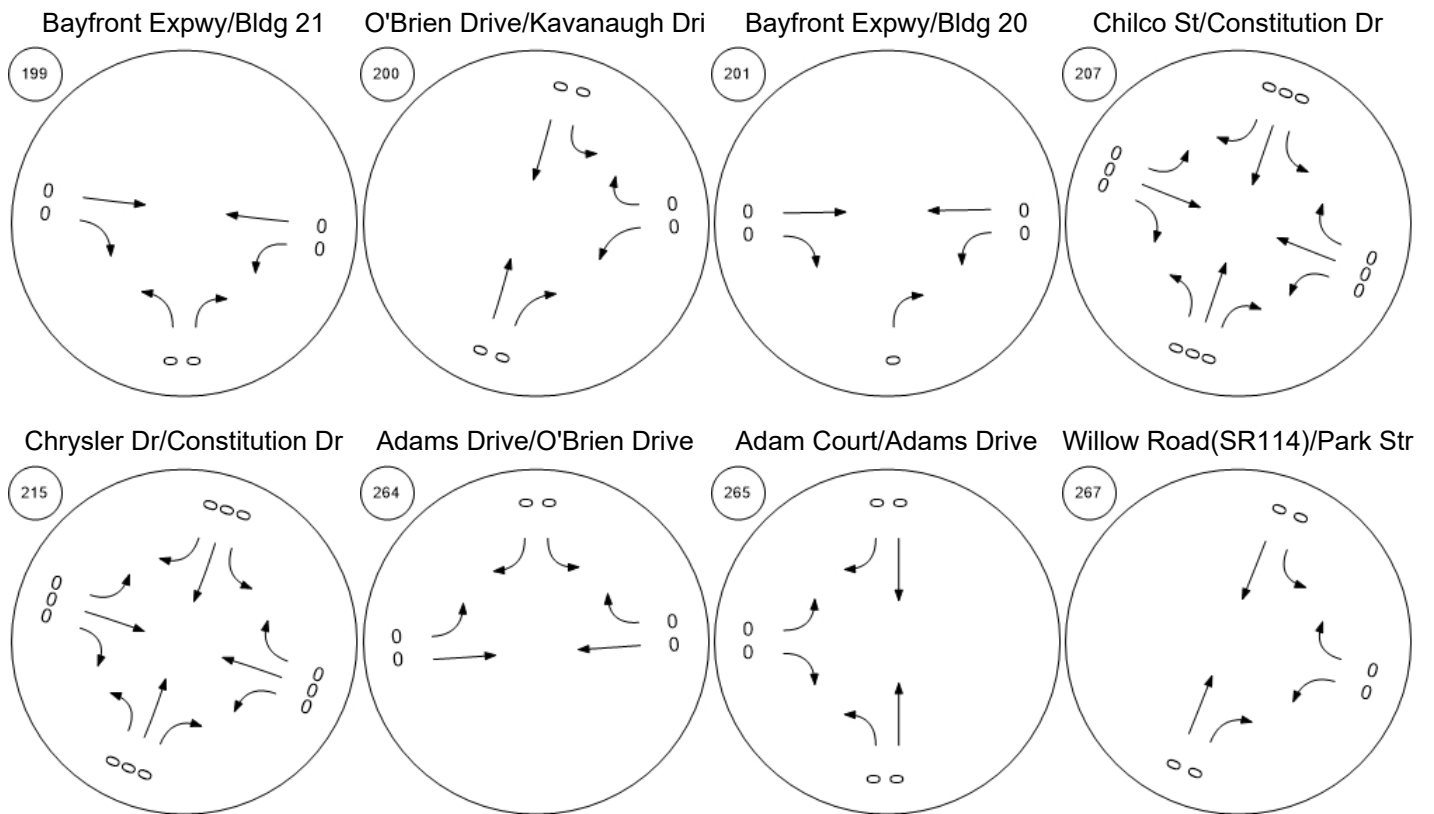
Middlefield Rd-Willow Rd   Marsh Road and US 101 NB   Chilco Street/Hamilton Avenue   Bayfront Expy/Marsh Rd



Willow Rd/US-101 SB Ramps   Willow Rd/US-101 NB Ramp   Bayfront Expy/Chilco St   Bayfront Expy/Chrysler Drive



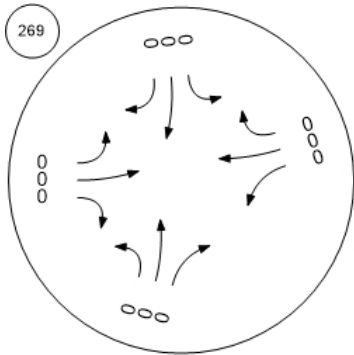
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

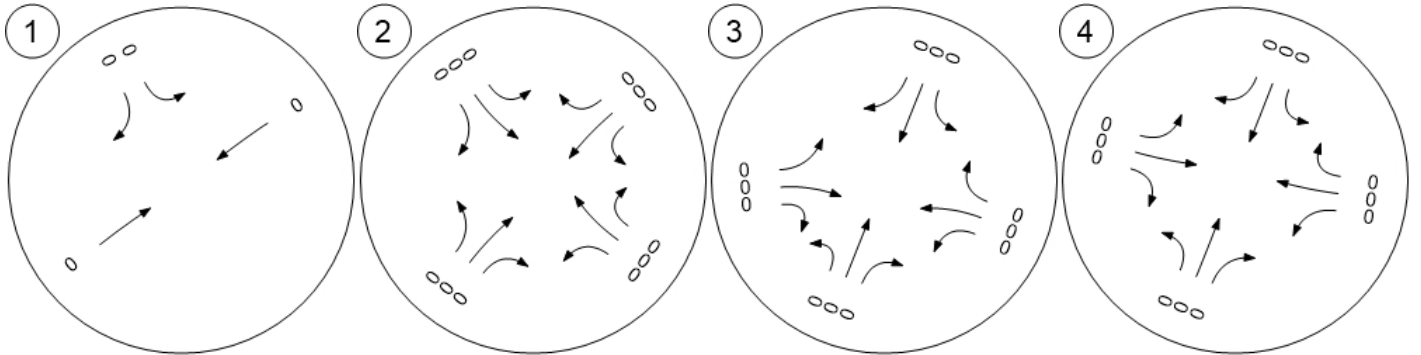


Traffic Volume - Net New Site Trips

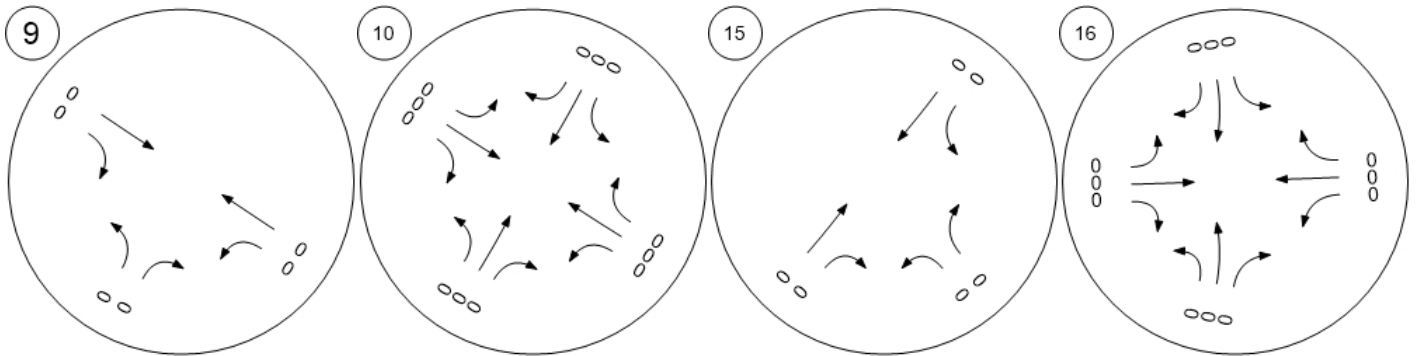


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



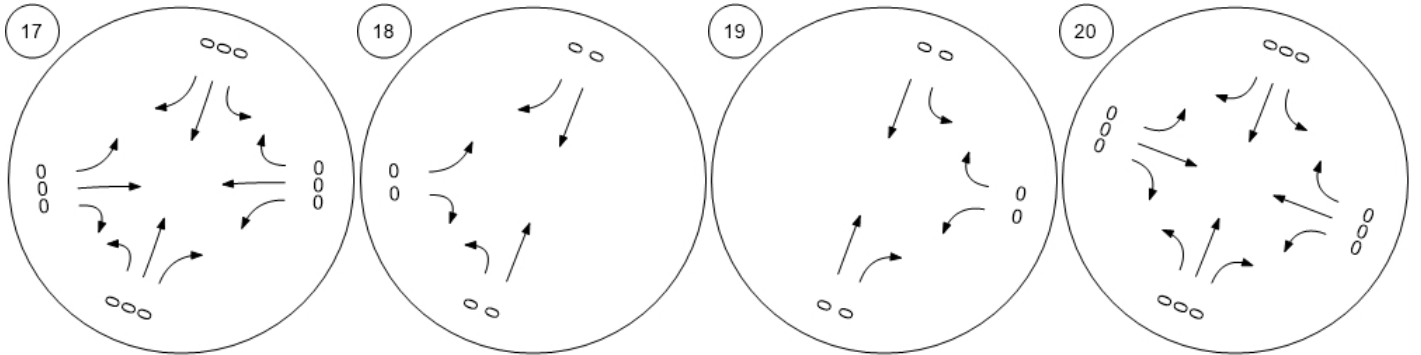
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



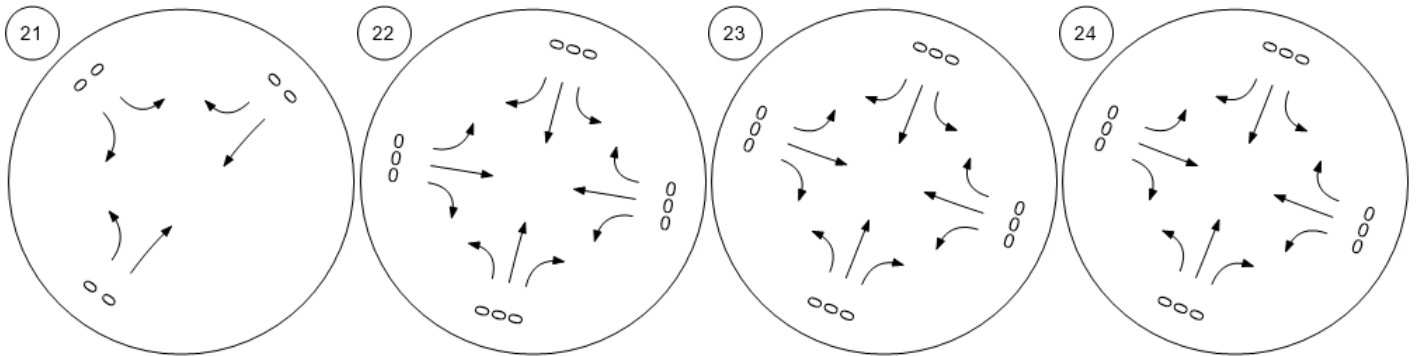
Traffic Volume - Net New Site Trips



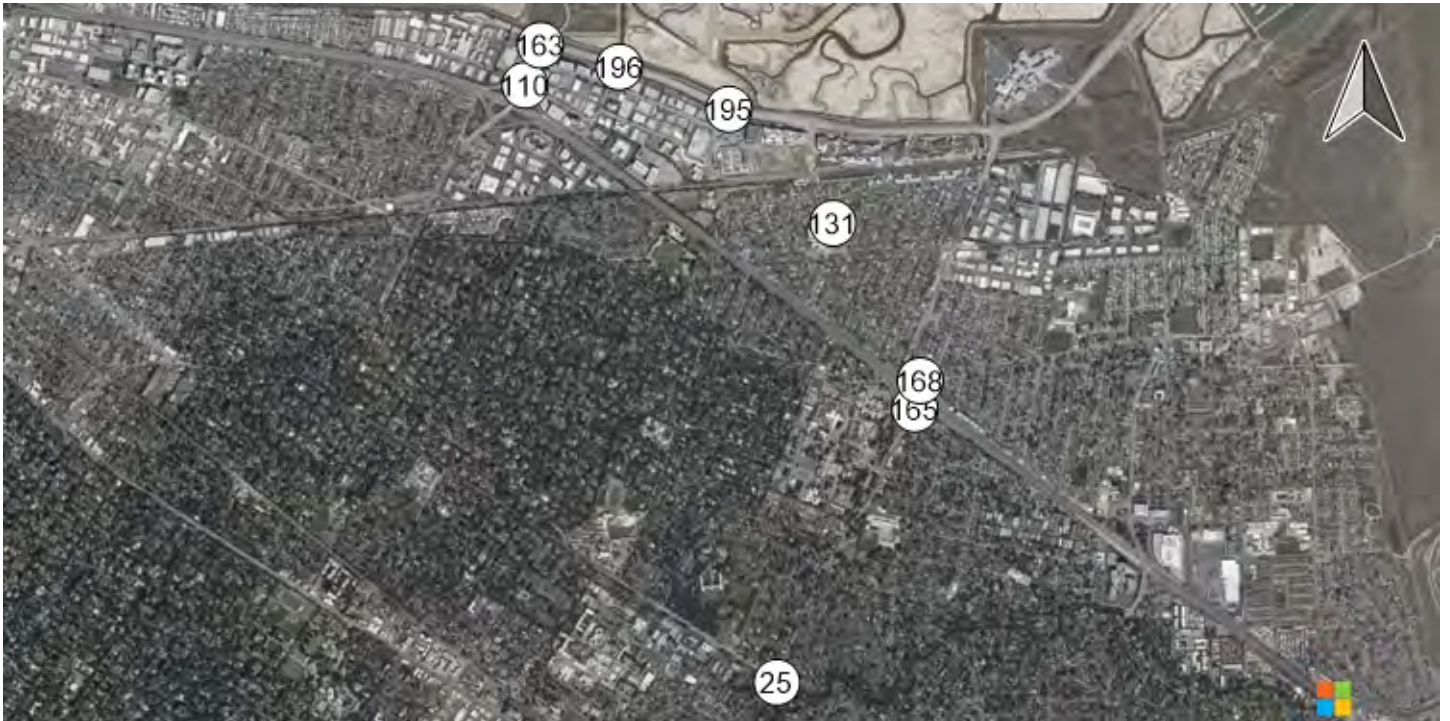
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



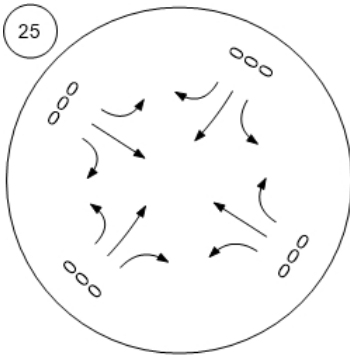
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



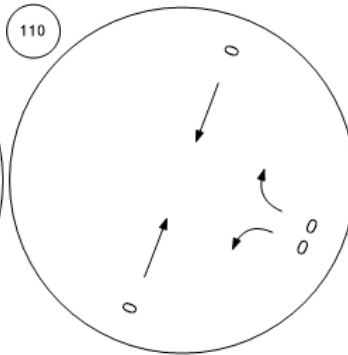
Traffic Volume - Net New Site Trips



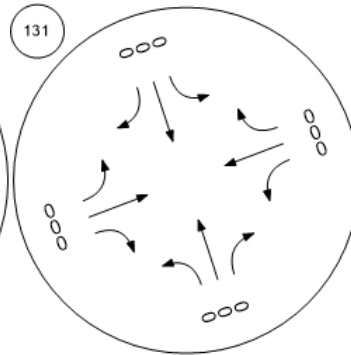
Middlefield Rd-Willow Rd



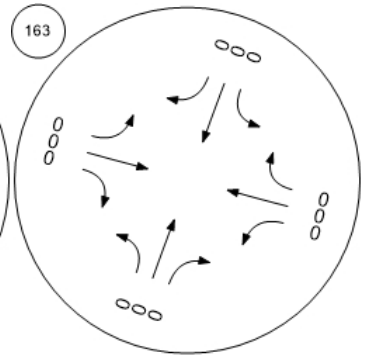
Marsh Road and US 101 NB



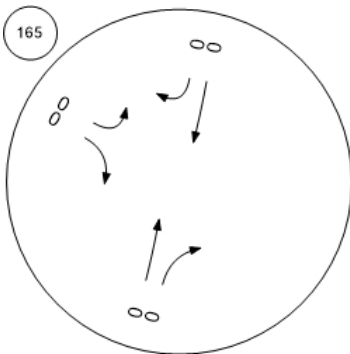
Chilco Street/Hamilton Avenue



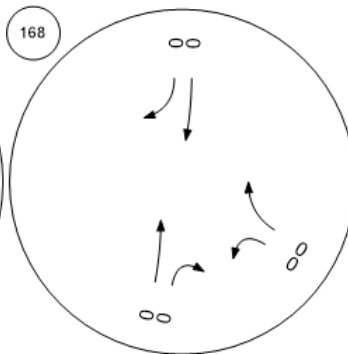
Bayfront Expy/Marsh Rd



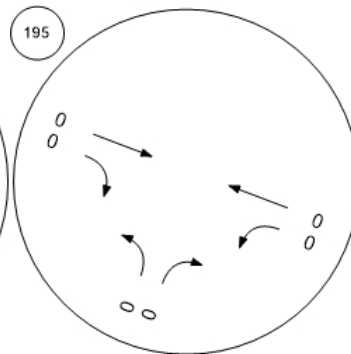
Willow Rd/US-101 SB Ramps



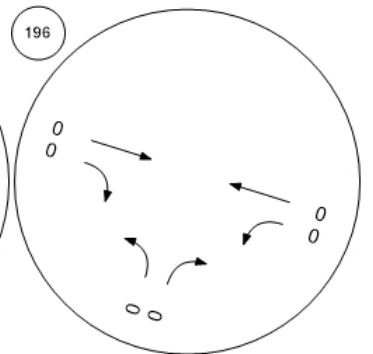
Willow Rd/US-101 NB Ramp



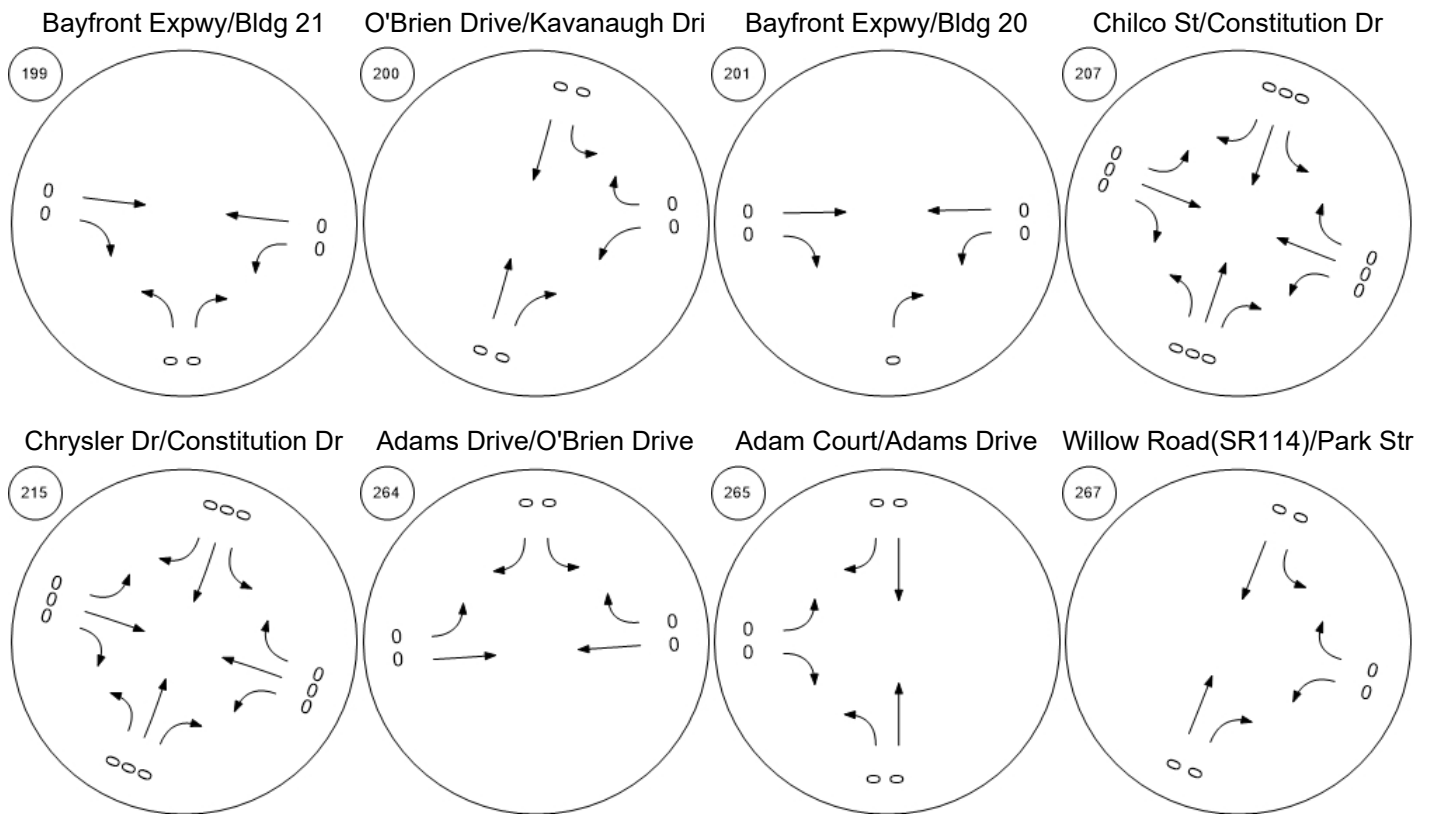
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



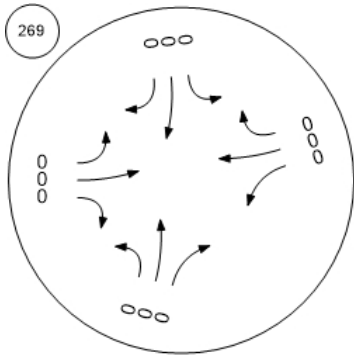
Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road



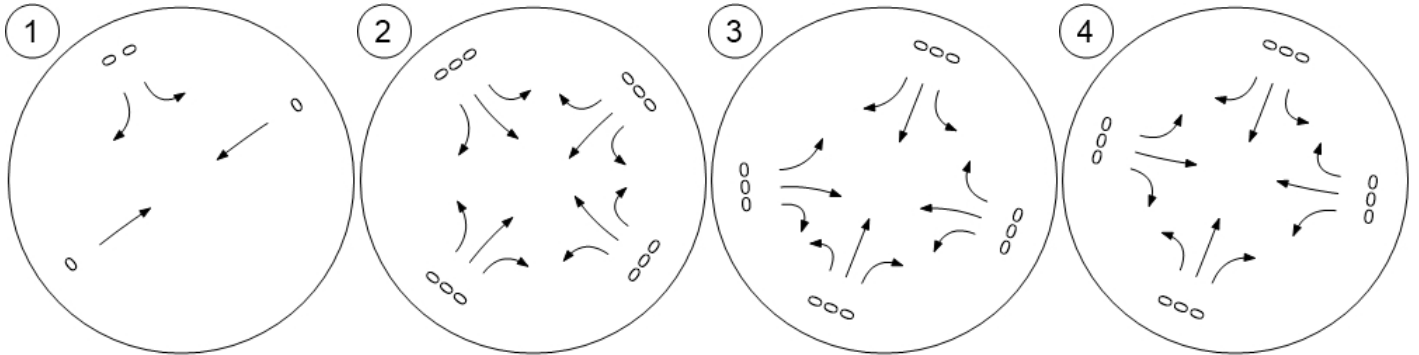


Traffic Volume - Other Volume

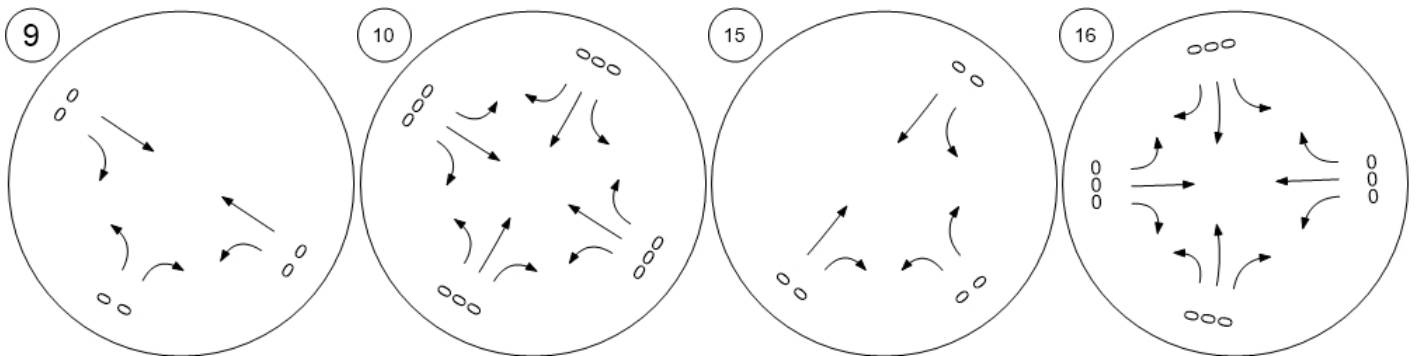


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



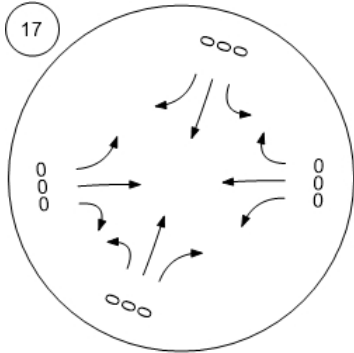
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



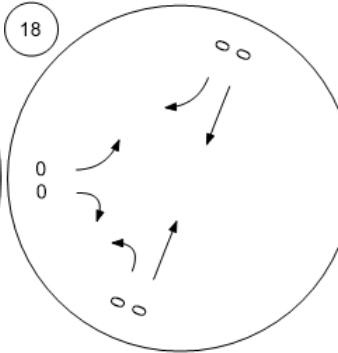
Traffic Volume - Other Volume



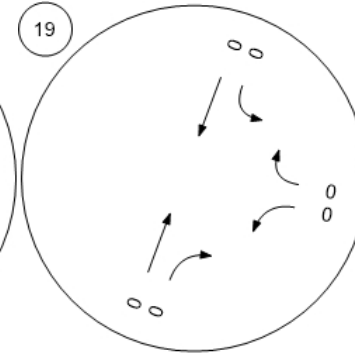
Willow Rd (SR 114)/Hamilton



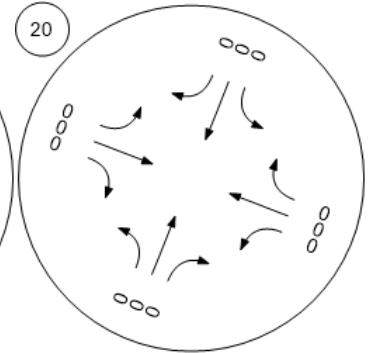
Willow Rd (SR 114)/Ivy Dr



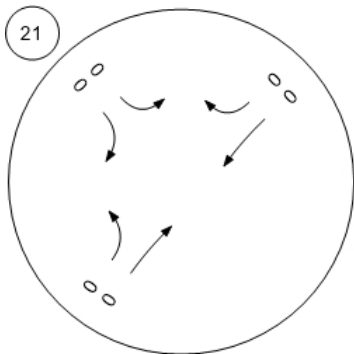
Willow Rd (SR 114)/O'Brien



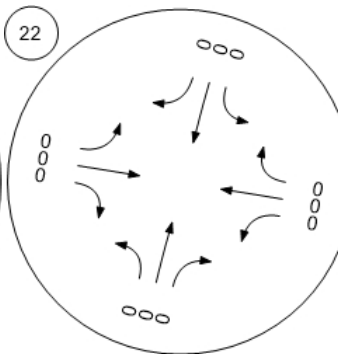
Willow Rd (SR 114)/Newbrid



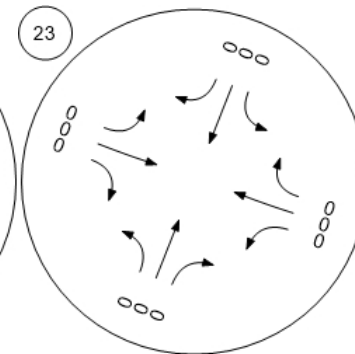
Willow Rd/Bay Rd



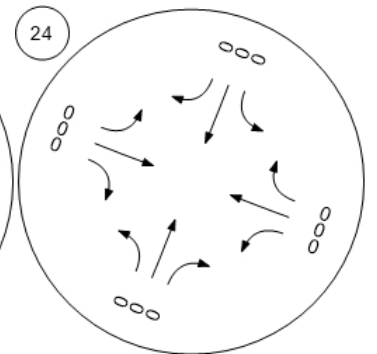
Willow Rd/Durham St-VA Me



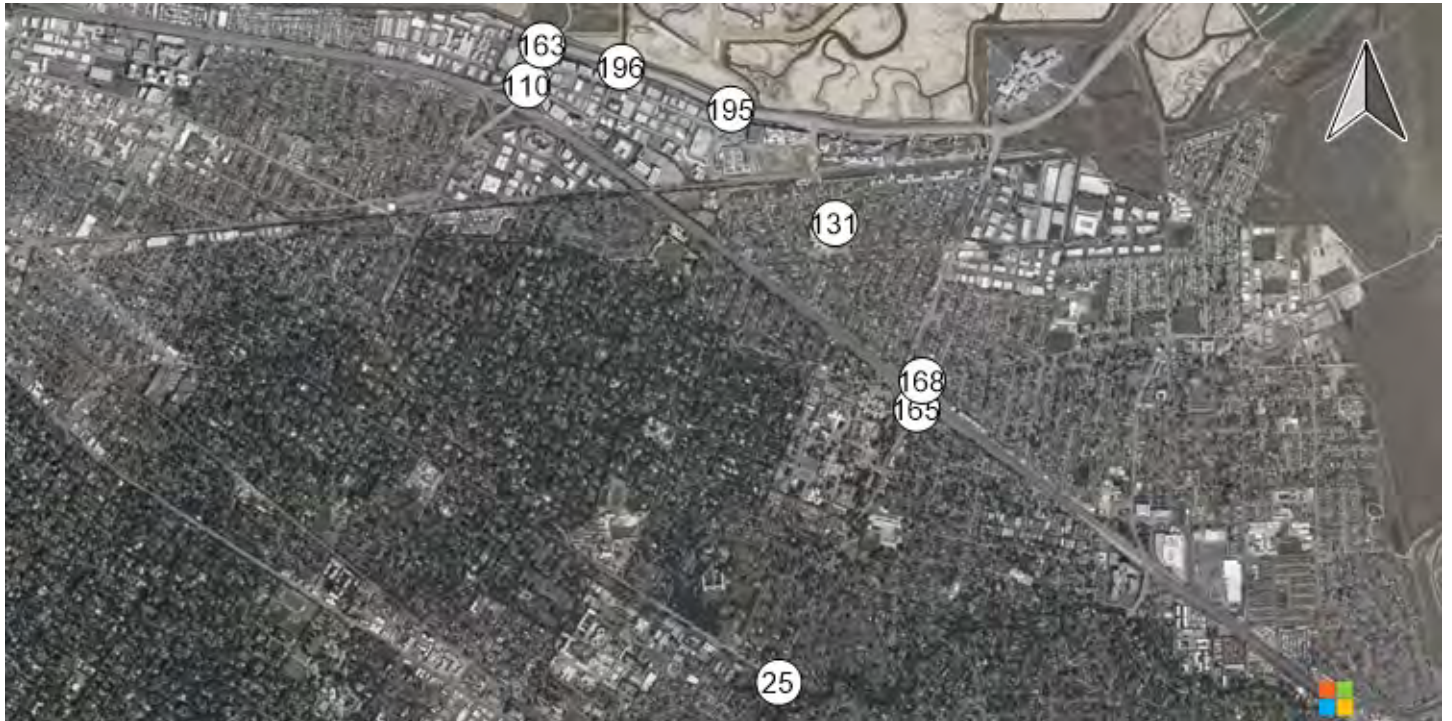
Willow Rd/Coleman Ave



Willow Rd/Gilbert Ave



Traffic Volume - Other Volume

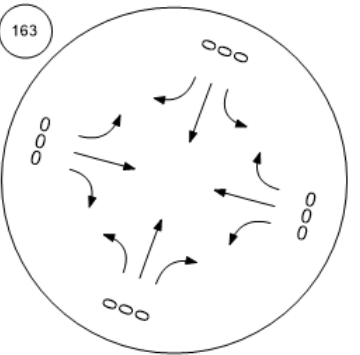
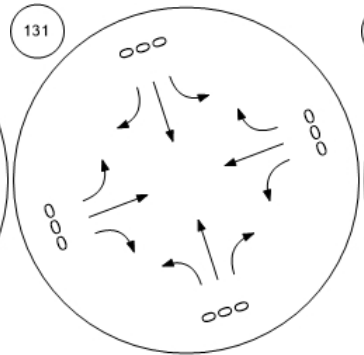
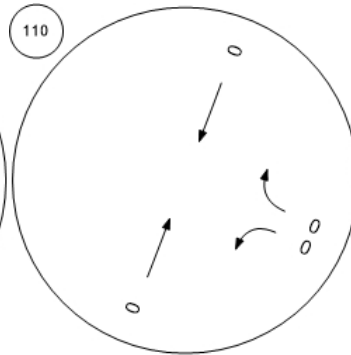
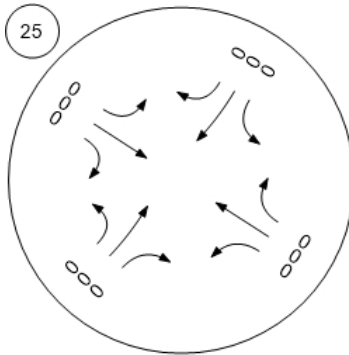


Middlefield Rd-Willow Rd

Marsh Road and US 101 NB

Chilco Street/Hamilton Avenue

Bayfront Expy/Marsh Rd

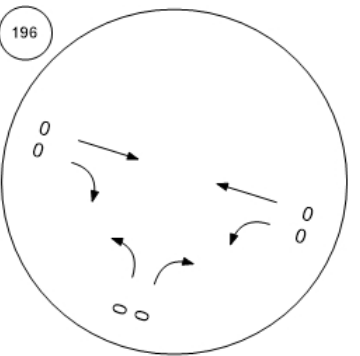
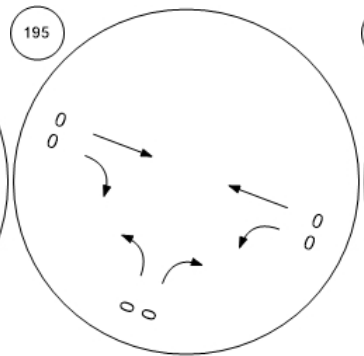
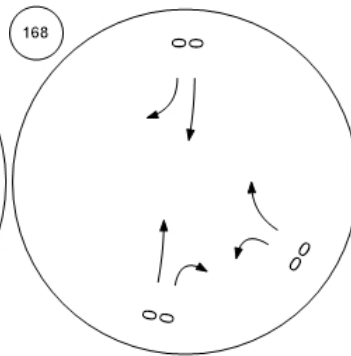
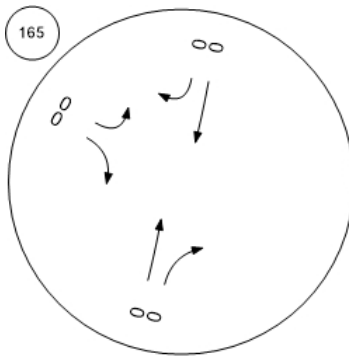


Willow Rd/US-101 SB Ramps

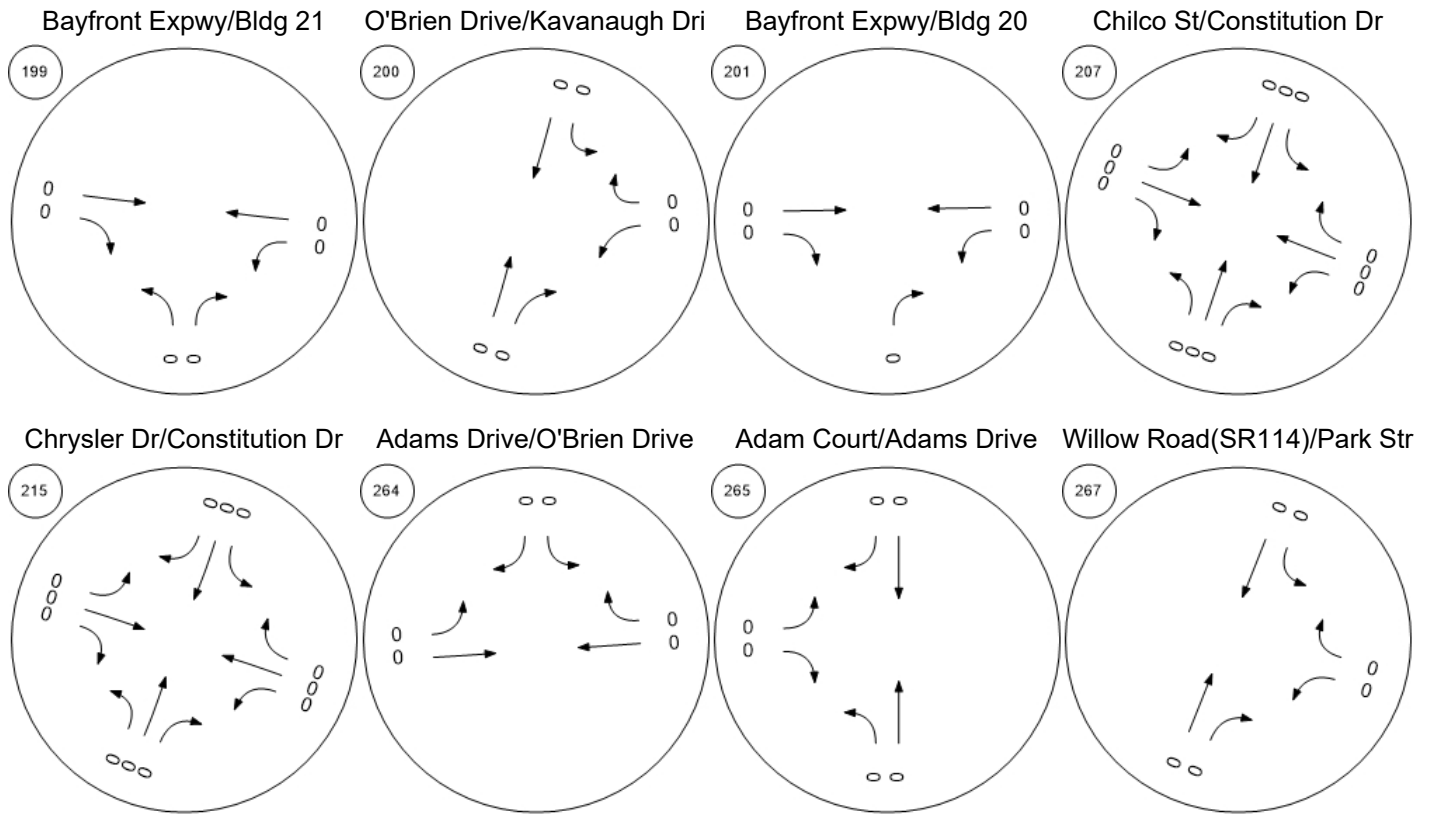
Willow Rd/US-101 NB Ramp

Bayfront Expy/Chilco St

Bayfront Expy/Chrysler Drive



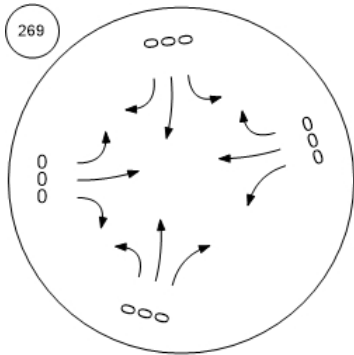
Traffic Volume - Other Volume



Traffic Volume - Other Volume



O'Brien Drive/Loop Road

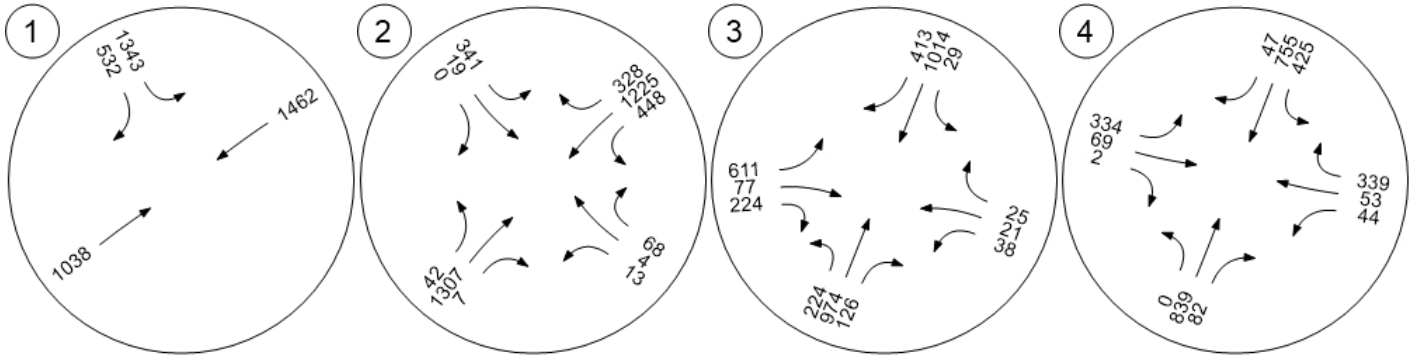


Traffic Volume - Future Total Volume

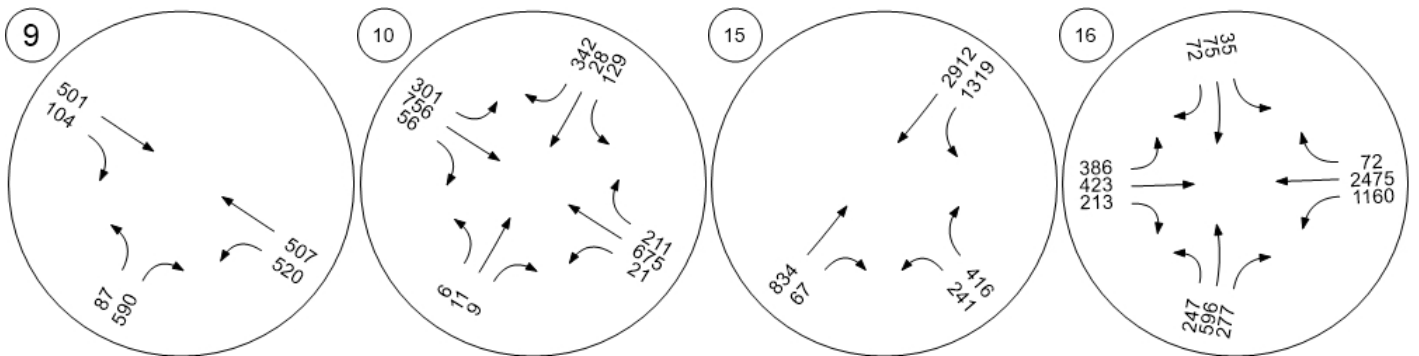


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



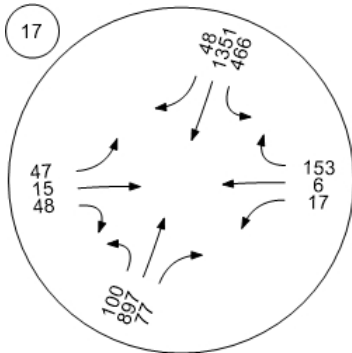
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



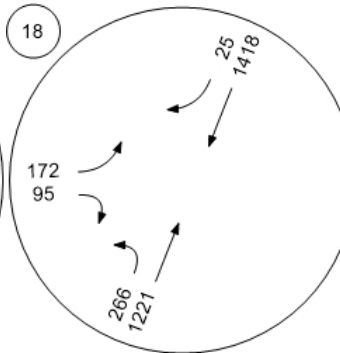
Traffic Volume - Future Total Volume



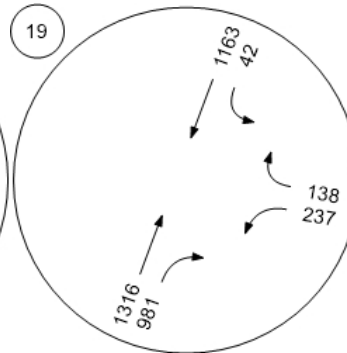
Willow Rd (SR 114)/Hamilton



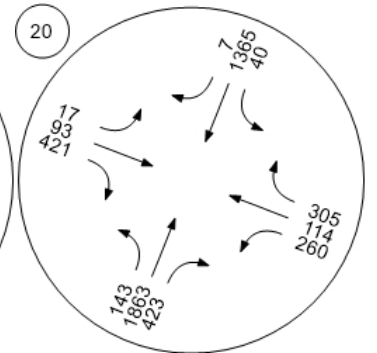
Willow Rd (SR 114)/Ivy Dr



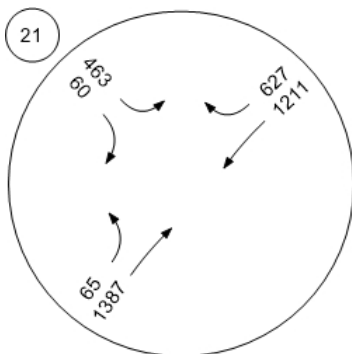
Willow Rd (SR 114)/O'Brien



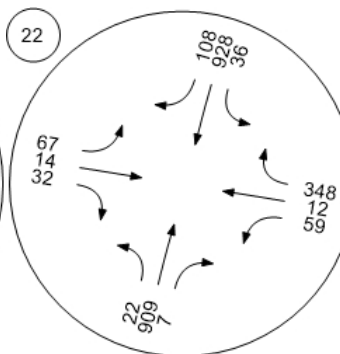
Willow Rd (SR 114)/Newbrid



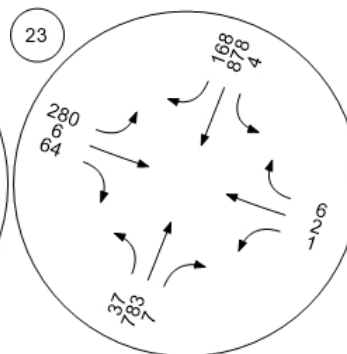
Willow Rd/Bay Rd



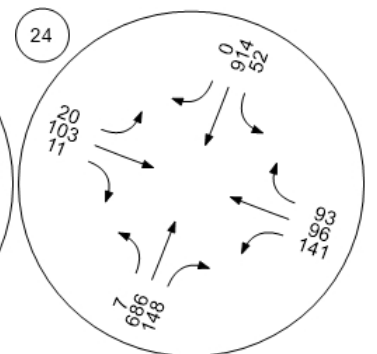
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



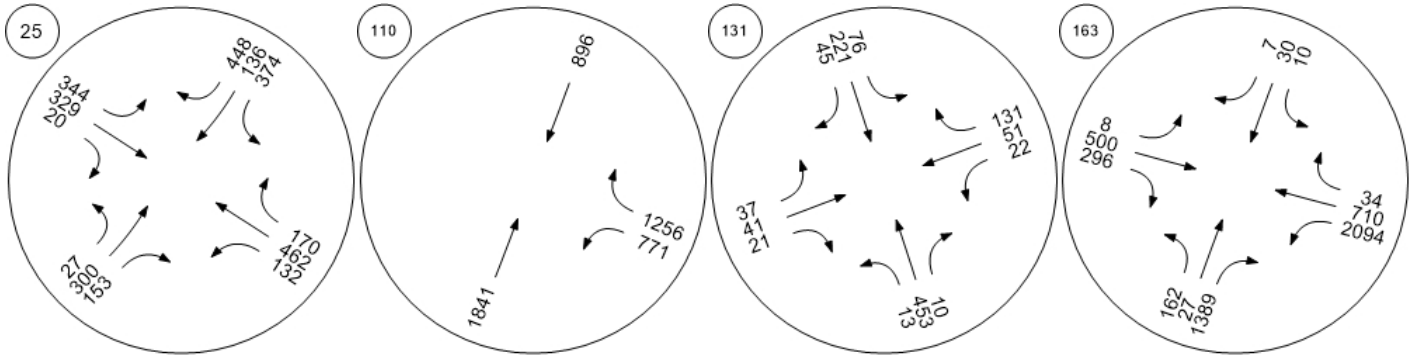
Willow Rd/Gilbert Ave



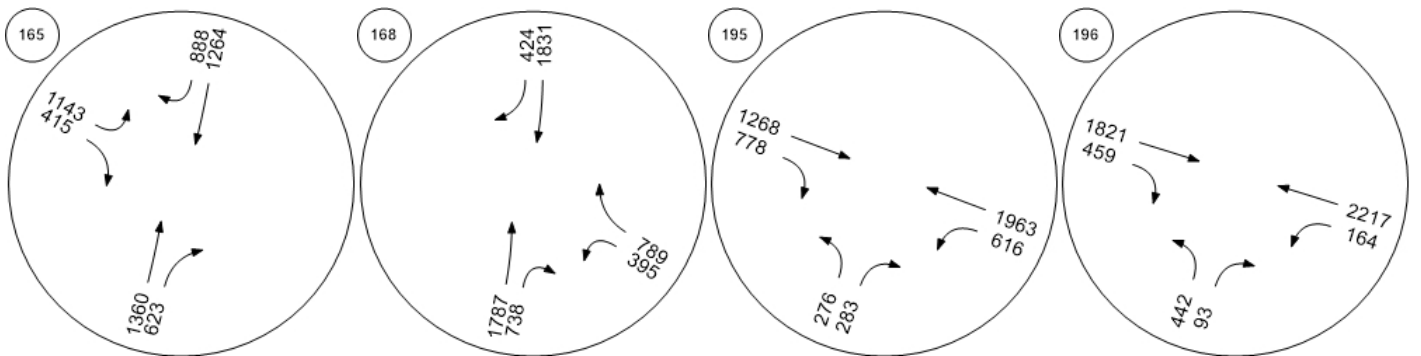
Traffic Volume - Future Total Volume



Middlefield Rd-Willow Rd    Marsh Road and US 101 NB    Chilco Street/Hamilton Avenue    Bayfront Expy/Marsh Rd

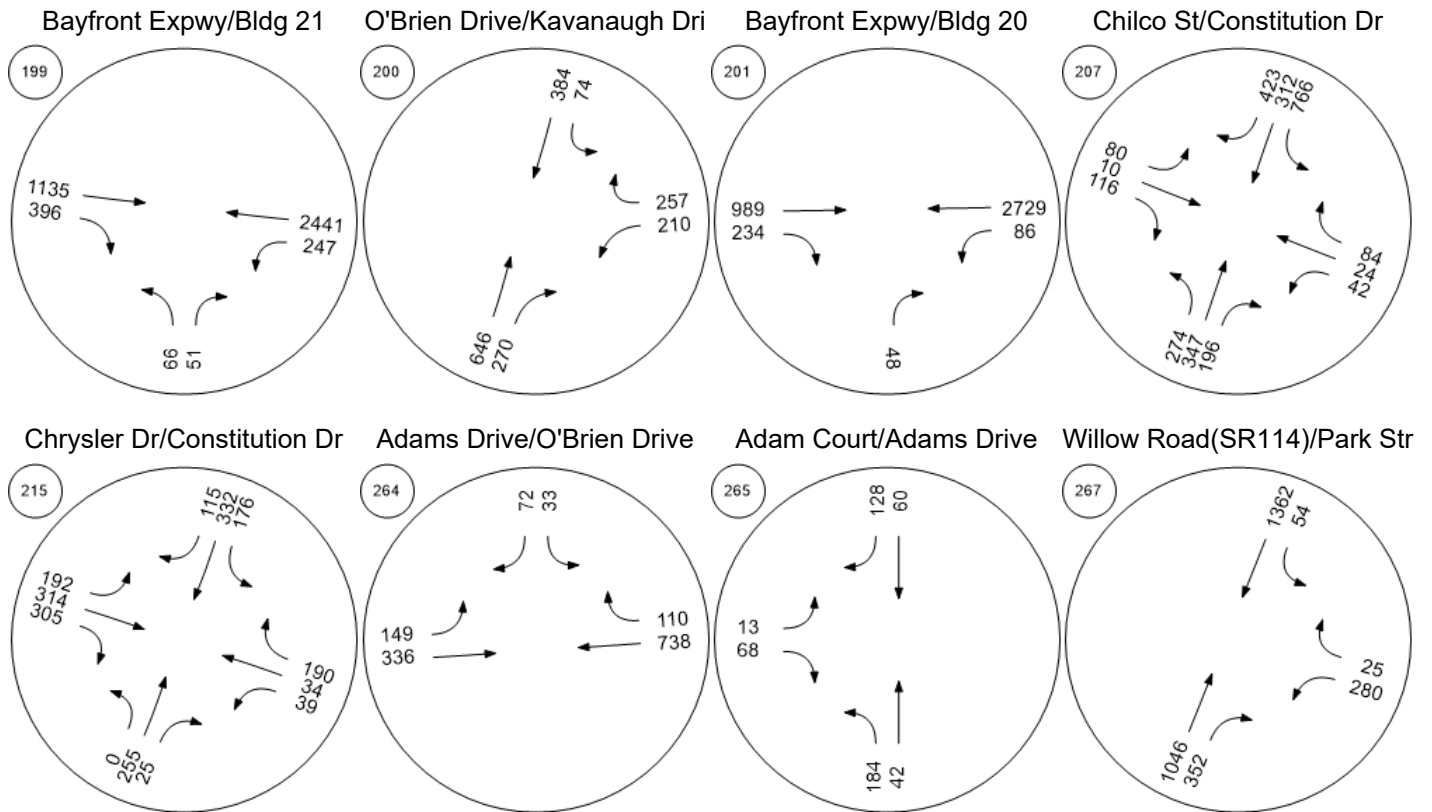


Willow Rd/US-101 SB Ramps    Willow Rd/US-101 NB Ramp    Bayfront Expy/Chilco St    Bayfront Expy/Chrysler Drive





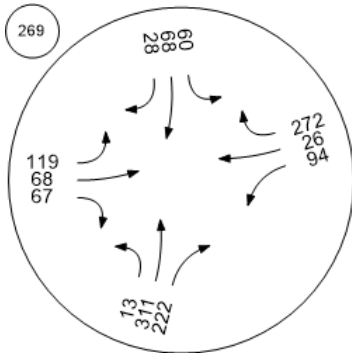
Traffic Volume - Future Total Volume



Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road

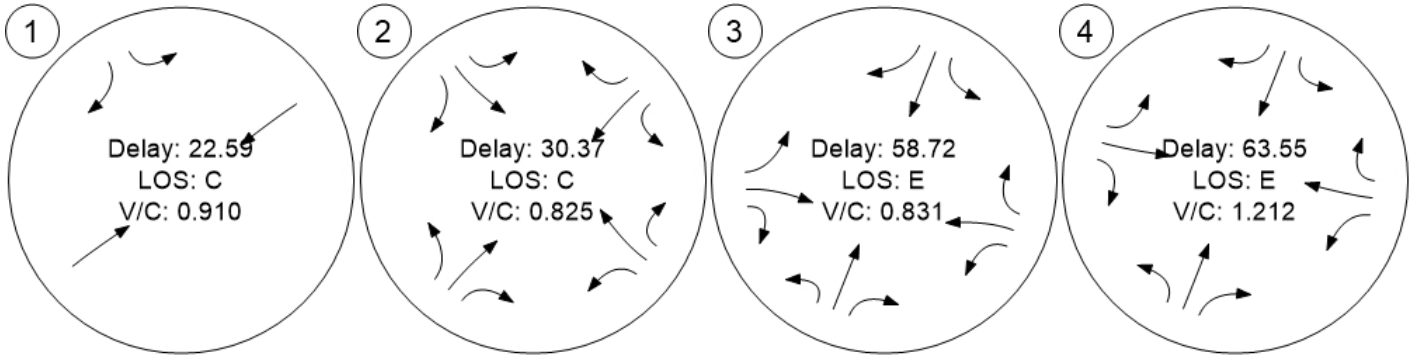


Traffic Conditions

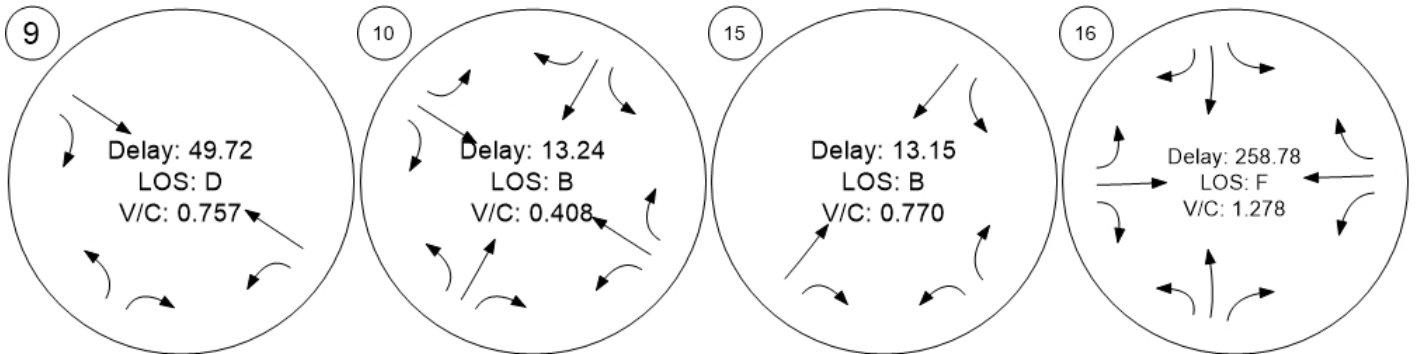


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



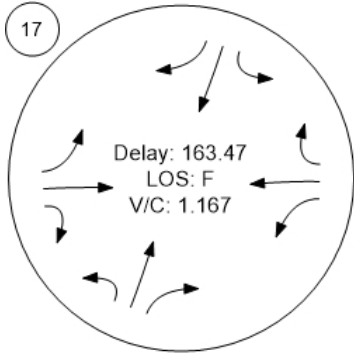
Middlefield Rd/Ravenswood Middlefield Rd/Ringswood Av Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



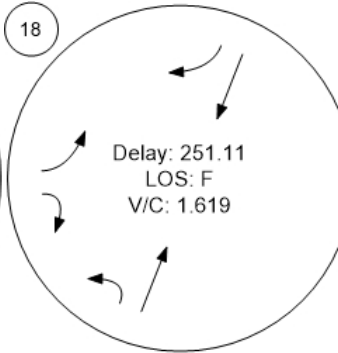
Traffic Conditions



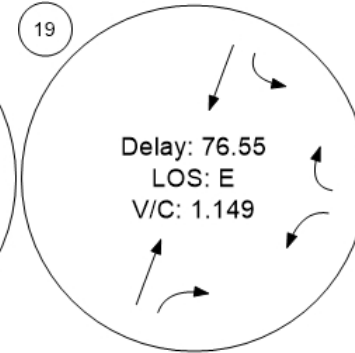
Willow Rd (SR 114)/Hamilton



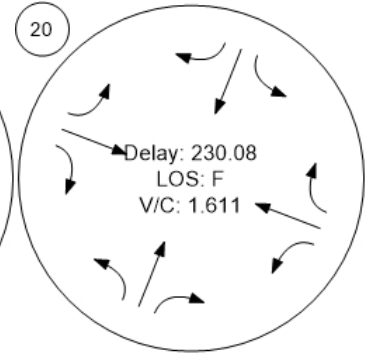
Willow Rd (SR 114)/Ivy Dr



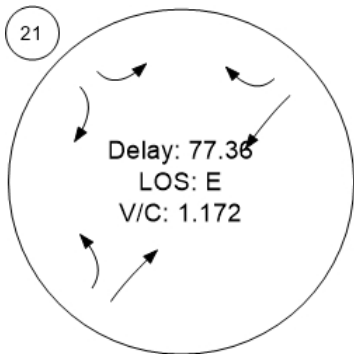
Willow Rd (SR 114)/O'Brien



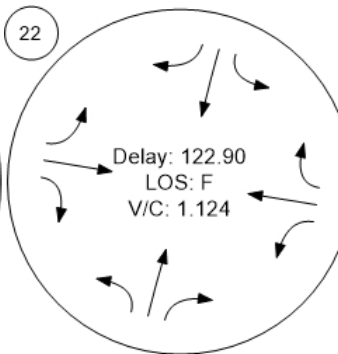
Willow Rd (SR 114)/Newbrid



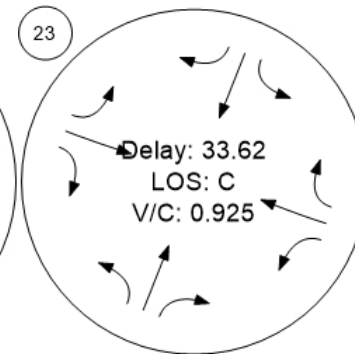
Willow Rd/Bay Rd



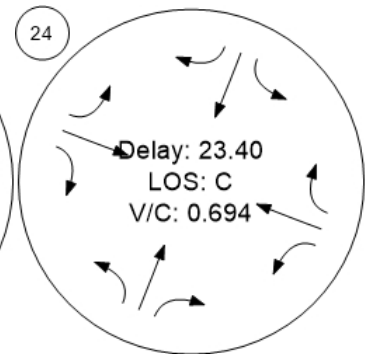
Willow Rd/Durham St-VA Me



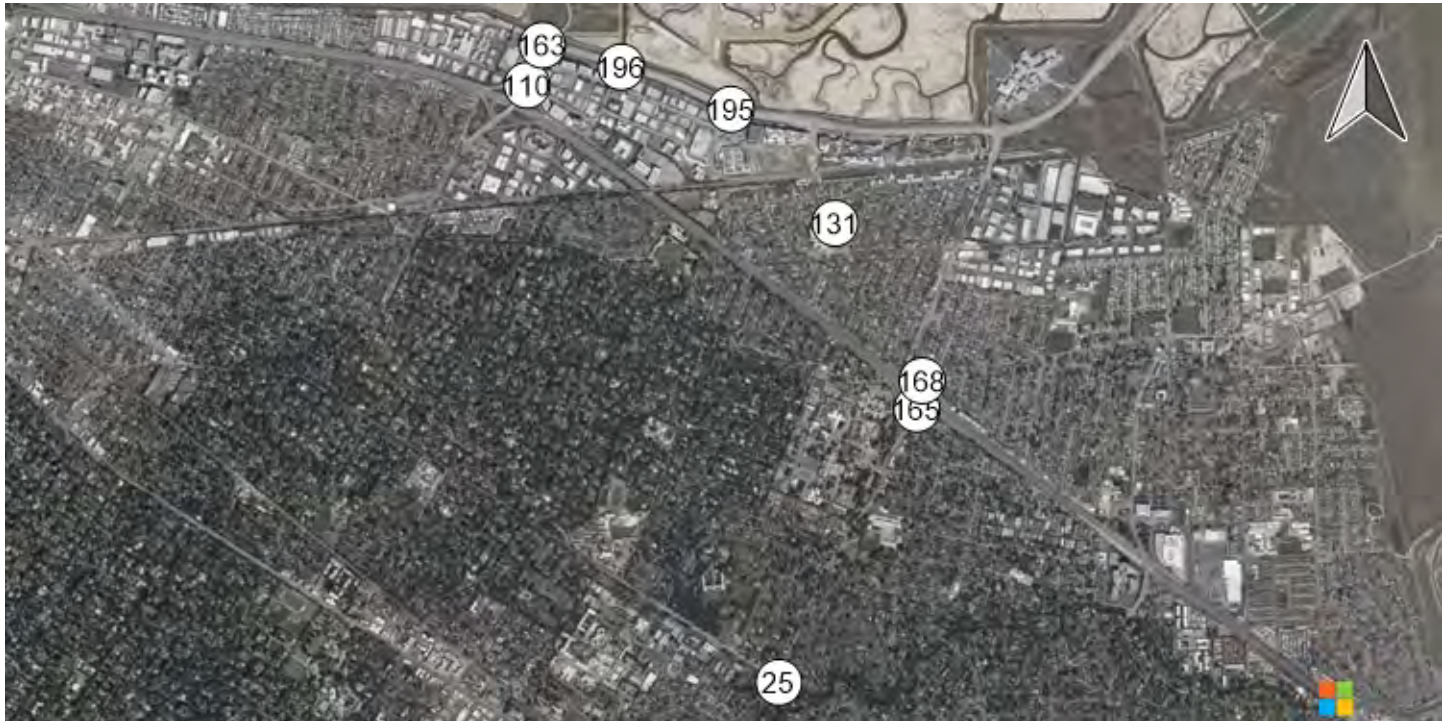
Willow Rd/Coleman Ave



Willow Rd/Gilbert Ave



Traffic Conditions

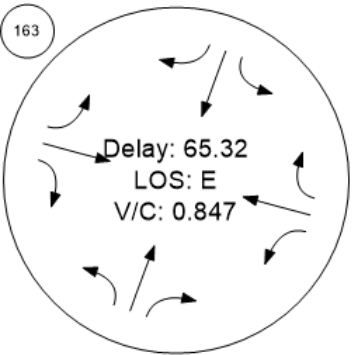
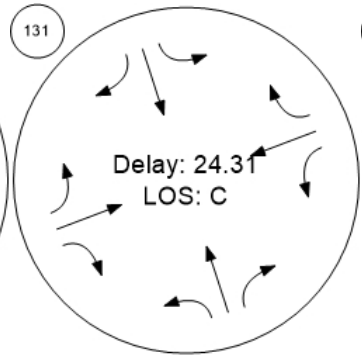
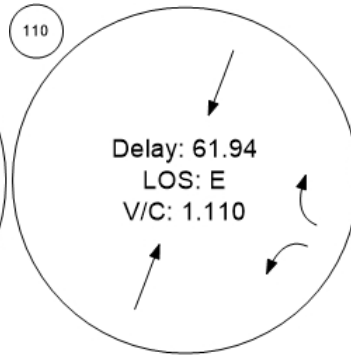
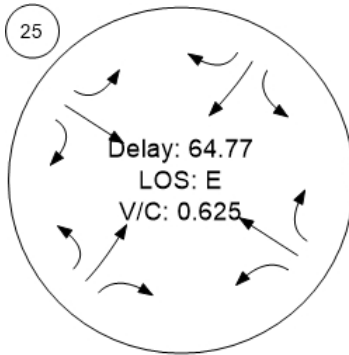


Middlefield Rd-Willow Rd

Marsh Road and US 101 NB

Chilco Street/Hamilton Avenue

Bayfront Expy/Marsh Rd

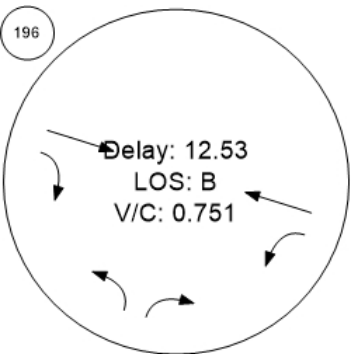
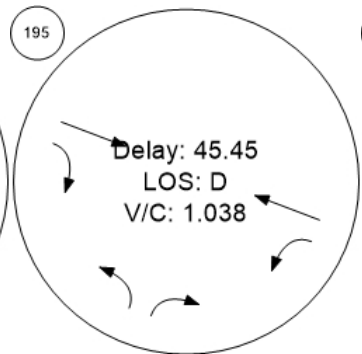
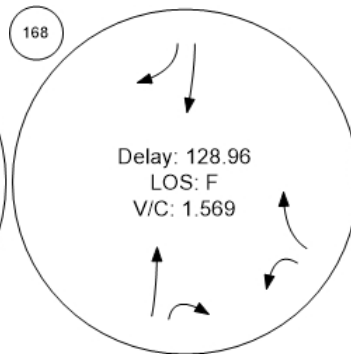
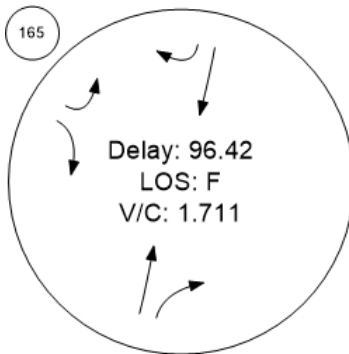


Willow Rd/US-101 SB Ramps

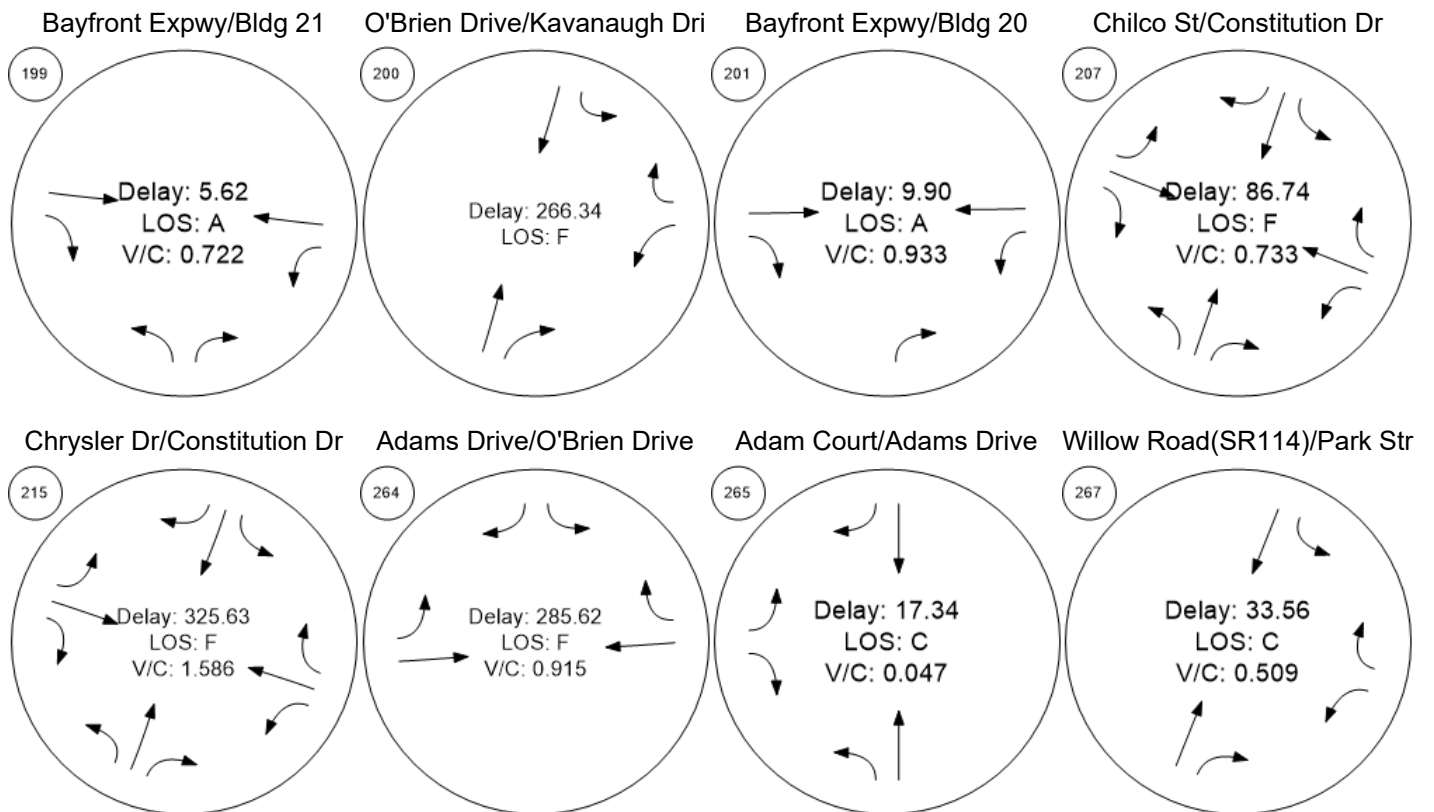
Willow Rd/US-101 NB Ramp

Bayfront Expy/Chilco St

Bayfront Expy/Chrysler Drive



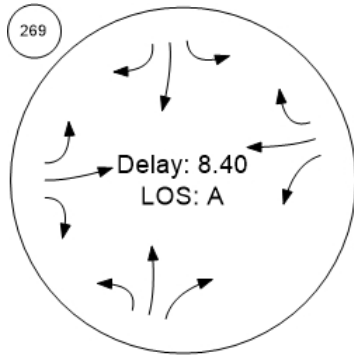
Traffic Conditions



Traffic Conditions

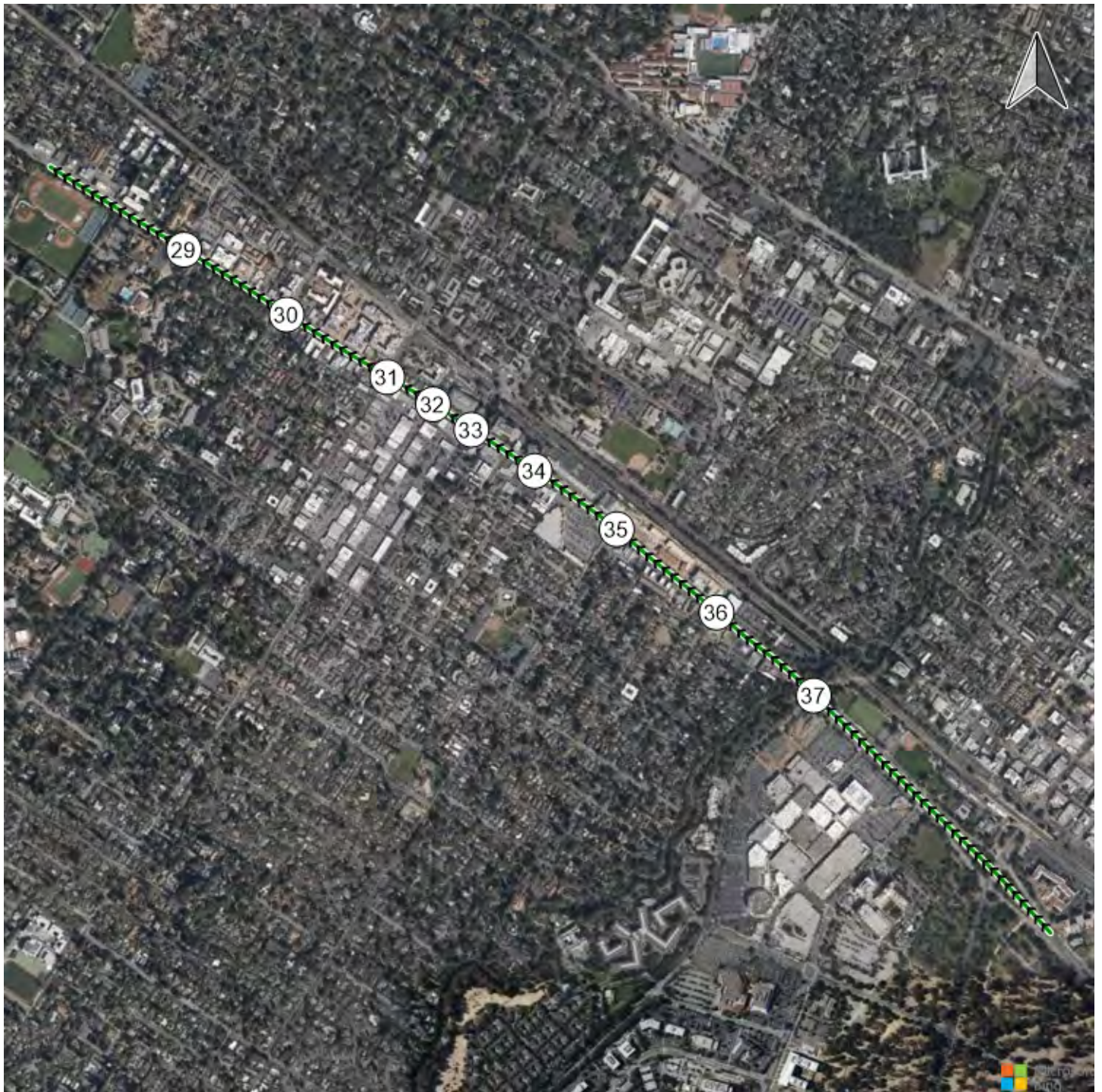


O'Brien Drive/Loop Road



Time Space Diagram - Flowing Off

Route 1: ECR NB





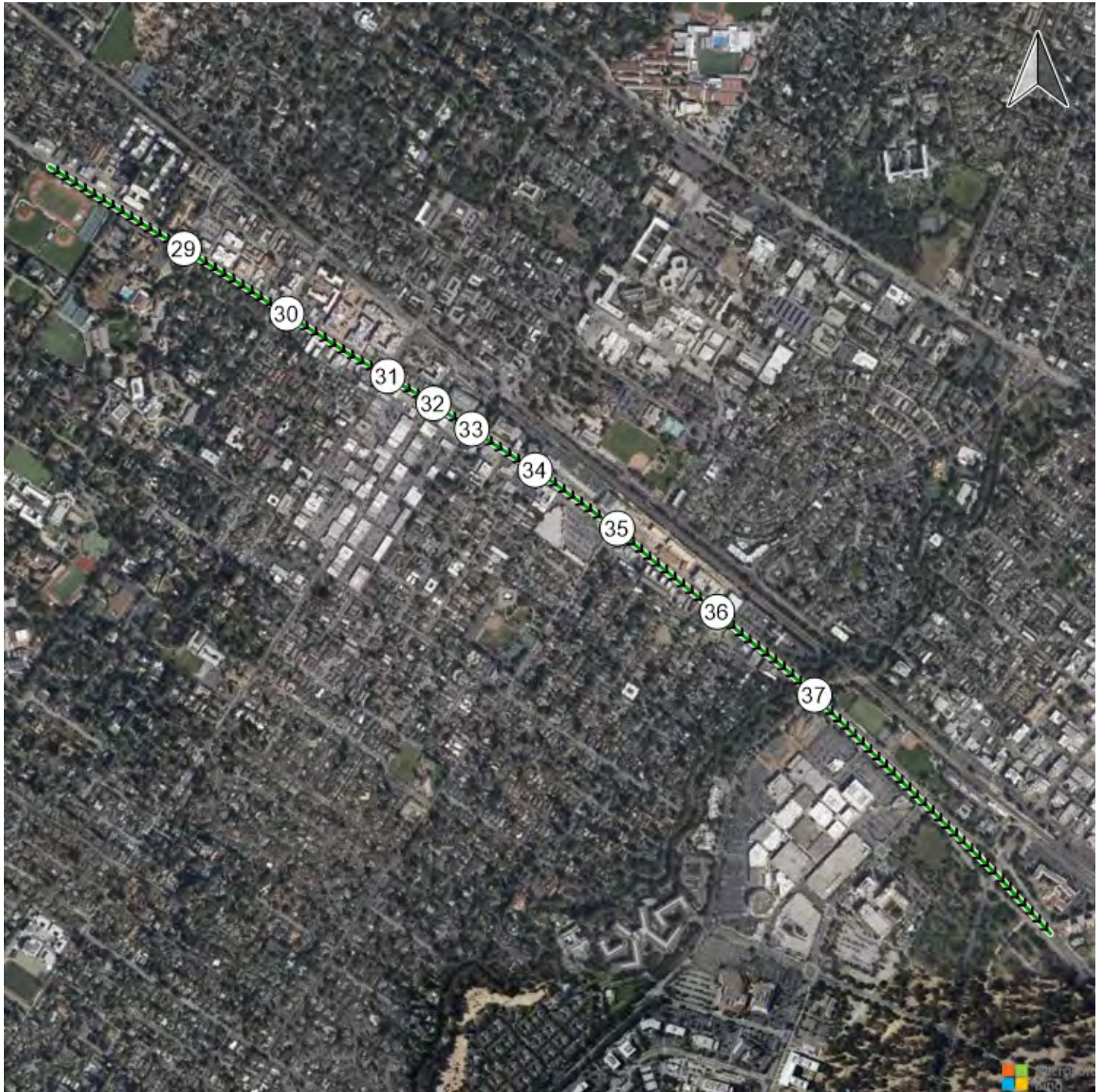
Generated with 

Version 2021 (SP 0-4)

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Route 1: ECR NB

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Version 2021 (SP 0-4)

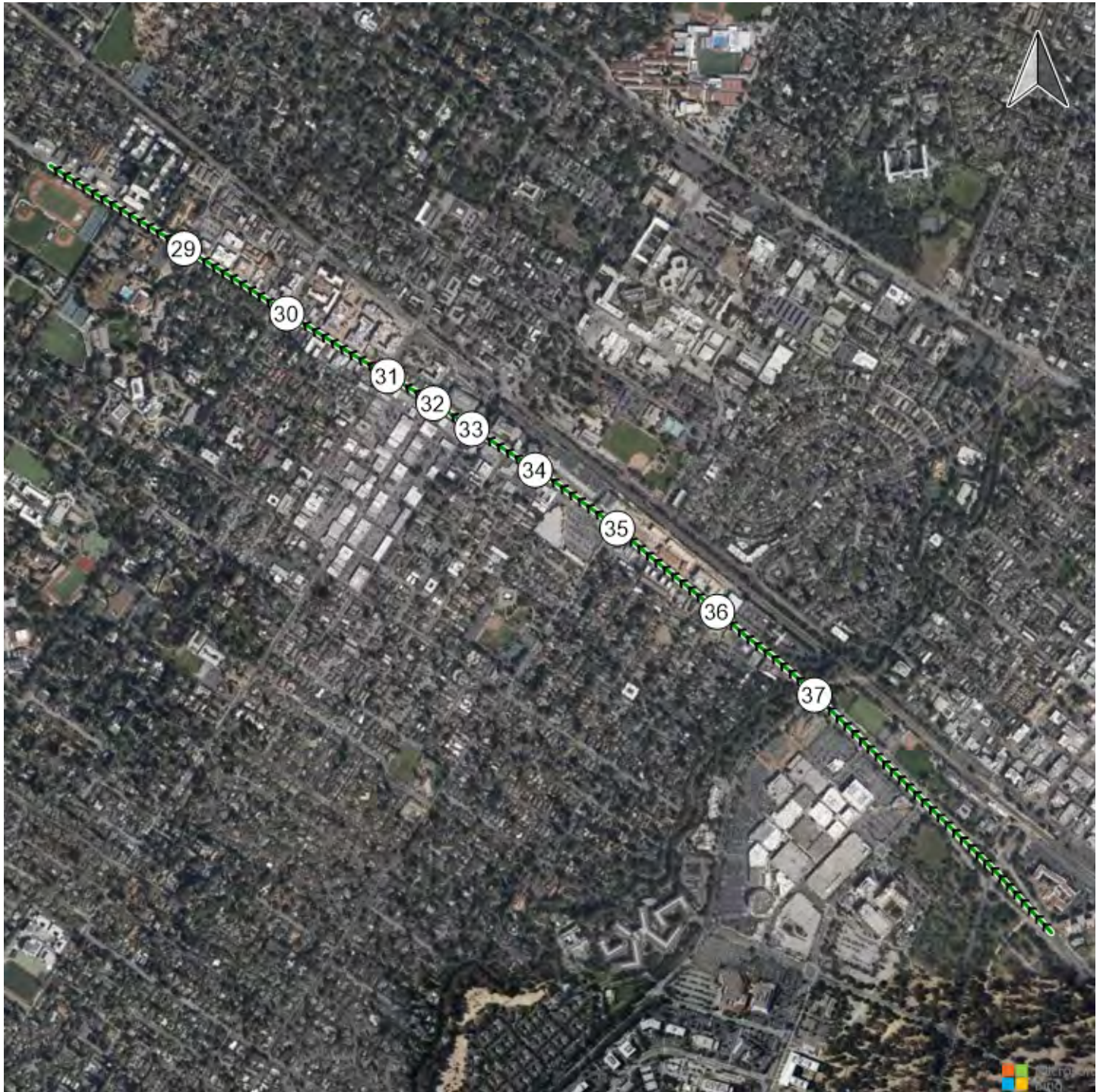
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



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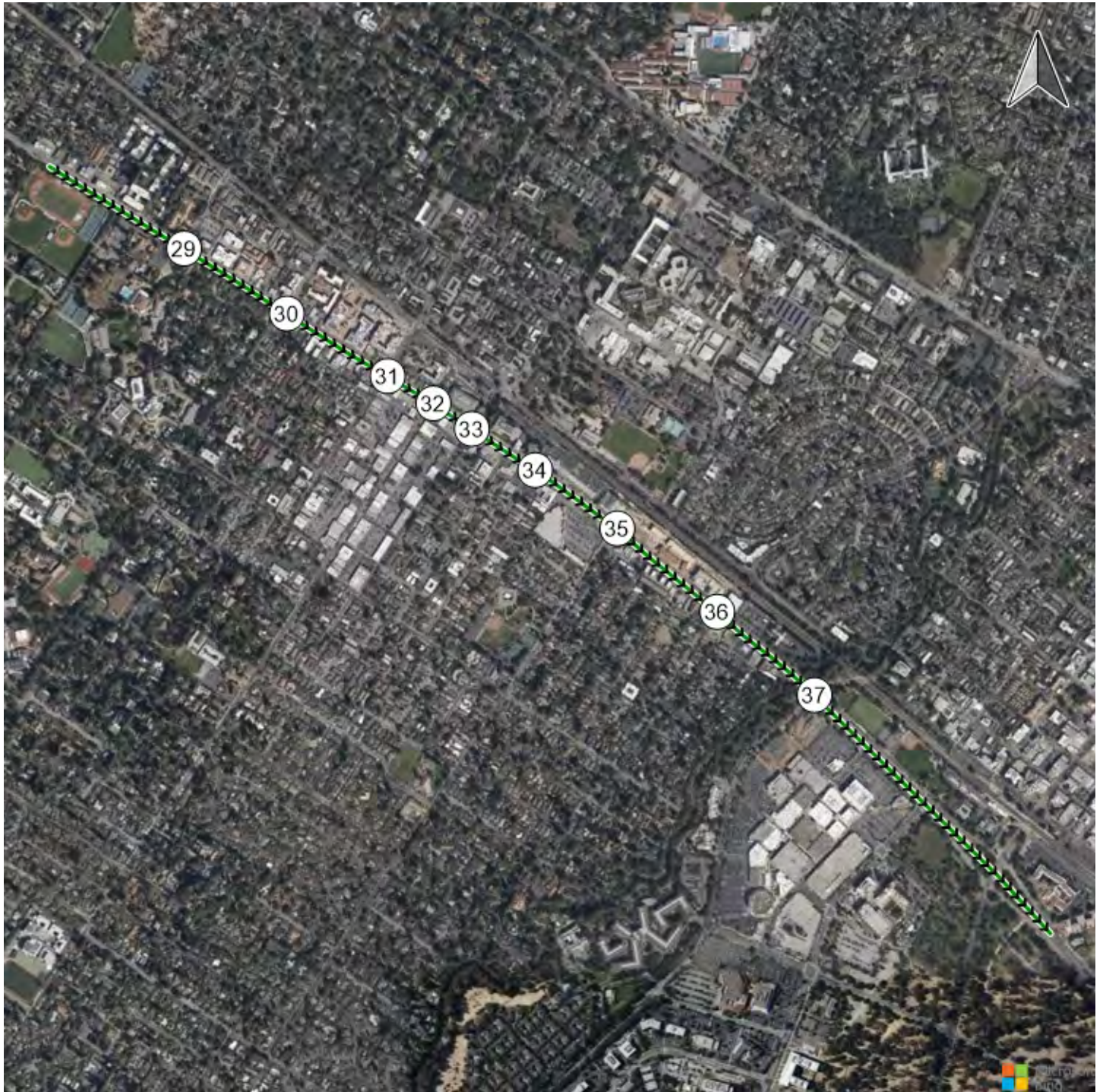
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



Generated with  PTV VISTRO

Version 2021 (SP 0-4)

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Route 2: ECR SB

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Vistro File: \\...\Vistro\_AllScenarios\_PM - 12.1.2021.vistro

Scenario 22 Cumulative w/dumbarton PM (2040 vols)+  
ProjectReport File: \\...\Cumulative w Dumbarton + Project PM  
(RedTripCap).pdf

12/9/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Marsh Rd (SR 84)/US 101 SB Offramp	Signalized	HCM 6th Edition	SEB Left	0.801	18.7	B
2	Marsh Rd/Rolison Rd-Scott Dr	Signalized	HCM 6th Edition	NEB Left	0.594	17.8	B
3	Marsh Rd/Florence St-Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.852	53.1	D
4	Marsh Rd/Bay Rd	Signalized	HCM 6th Edition	SB Left	0.879	51.2	D
9	Middlefield Rd/Ravenswood Ave	Signalized	HCM 6th Edition	NEB Left	2.304	19.5	B
10	Middlefield Rd/Ringwood Ave	Signalized	HCM 6th Edition	NEB Left	0.543	21.1	C
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Signalized	HCM 6th Edition	NEB Thru	1.158	137.9	F
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Signalized	HCM 6th Edition	SB Thru	1.355	232.1	F
17	Willow Rd (SR 114)/Hamilton Ave	Signalized	HCM 6th Edition	EB Left	1.636	438.0	F
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	SB Right	1.462	207.2	F
19	Willow Rd (SR 114)/O'Brien Dr	Signalized	HCM 6th Edition	WB Right	1.612	255.6	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.466	206.7	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.410	224.3	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.277	222.0	F
23	Willow Rd/Coleman Ave	Signalized	HCM 6th Edition	EB Left	0.691	13.2	B
24	Willow Rd/Gilbert Ave	Signalized	HCM 6th Edition	WB Left	0.559	13.9	B
25	Middlefield Rd-Willow Rd	Signalized	HCM 6th Edition	NEB Thru	0.710	42.3	D



110	Marsh Road/101 NB Ramps	Signalized	HCM 6th Edition	NWB Right	0.988	22.7	C
131	Chilco Street/Hamilton Avenue	All-way stop	HCM 6th Edition	SB Thru	1.552	163.8	F
163	Bayfront Expy/Marsh Rd	Signalized	HCM 6th Edition	WB Left	1.079	72.8	E
165	Willow Rd/US-101 SB Ramps	Signalized	HCM 6th Edition	SB Right	2.058	156.3	F
168	Willow Rd/US-101 NB Ramps	Signalized	HCM 6th Edition	SB Thru	1.237	230.9	F
195	Bayfront Expy/Chilco St	Signalized	HCM 6th Edition	NB Right	1.102	65.6	E
196	Bayfront Expy/Chrysler Drive	Signalized	HCM 6th Edition	NB Left	0.953	33.5	C
199	Bafront Expwy/Bldg 21	Signalized	HCM 6th Edition	NB Right	0.941	36.1	D
200	O'Brien Drive/Kavanaugh Drive	All-way stop	HCM 6th Edition	NB Thru	1.614	168.7	F
201	Bayfront Expwy/Bldg 20	Signalized	HCM 6th Edition	NB Right	0.888	18.8	B
207	Chilco St/Constitution Dr	Signalized	HCM 6th Edition	EB Right	1.147	170.9	F
215	Chrysler Dr/Constitution Dr	Signalized	HCM 6th Edition	WB Right	1.362	140.7	F
264	Adams Drive/O'Brien Drive	Two-way stop	HCM 6th Edition	SB Left	2.378	798.2	F
265	Adam Court/ Adams Drive	Two-way stop	HCM 6th Edition	EB Left	0.076	12.6	B
267	Willow Road(SR114)/Park Street	Signalized	HCM 6th Edition	SB Left	0.677	16.2	B
269	O'Brien Drive/Loop Road	Roundabout	HCM 6th Edition	SB Thru		10.2	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: Marsh Rd (SR 84)/US 101 SB Offramp**

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.801

**Intersection Setup**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↑↑		↑↑		↶↷↶	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	420.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	

**Volumes**

Name	Marsh Road		Marsh Road (SR 84)		US 101 SB Offramp	
Base Volume Input [veh/h]	0	969	1175	279	1311	427
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.70	2.15	3.60	0.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	969	1175	279	1311	427
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	247	300	70	334	109
Total Analysis Volume [veh/h]	0	989	1199	279	1338	436
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		5	
v_ci, Inbound Pedestrian Volume crossing mi	0		5		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	6		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	52.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	0	6	2	0	4	5
Auxiliary Signal Groups						1,4
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	0	8	8	0	6	0
Maximum Green [s]	0	32	32	0	32	0
Amber [s]	0.0	4.1	4.1	0.0	3.1	0.0
All red [s]	0.0	0.5	0.5	0.0	1.0	0.0
Split [s]	0	45	45	0	35	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	0	7	0	5	0
Pedestrian Clearance [s]	0	0	16	0	20	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.5	2.6	0.0	0.0	0.0
Minimum Recall		Yes	Yes		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	4.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	2.60	0.00	0.00
g_i, Effective Green Time [s]	42	40	33	33
g / C, Green / Cycle	0.53	0.50	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.25	0.34	0.39	0.27
s, saturation flow rate [veh/h]	4000	3540	3414	1609
c, Capacity [veh/h]	2122	1785	1411	665
d1, Uniform Delay [s]	11.68	14.83	22.59	18.84
k, delay calibration	0.50	0.50	0.04	0.20
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.74	2.04	1.75	2.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.47	0.67	0.95	0.66
d, Delay for Lane Group [s/veh]	12.42	16.87	24.34	20.90
Lane Group LOS	B	B	C	C
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	5.01	7.65	11.50	6.45
50th-Percentile Queue Length [ft/ln]	125.33	191.27	287.61	161.19
95th-Percentile Queue Length [veh/ln]	8.69	12.19	17.07	10.61
95th-Percentile Queue Length [ft/ln]	217.13	304.68	426.68	265.30

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	12.42	16.87	0.00	24.34	20.90
Movement LOS		B	B		C	C
d_A, Approach Delay [s/veh]	12.42		16.87		23.49	
Approach LOS	B		B		C	
d_I, Intersection Delay [s/veh]	18.72					
Intersection LOS	B					
Intersection V/C	0.801					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.45	0.00	29.70
I_p,int, Pedestrian LOS Score for Intersection	2.873	0.000	2.510
Crosswalk LOS	C	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1011	1011	774
d_b, Bicycle Delay [s]	9.79	9.76	15.02
I_b,int, Bicycle LOS Score for Intersection	2.376	2.549	1.560
Bicycle LOS	B	B	A

**Sequence**



Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 2: Marsh Rd/Rolison Rd-Scott Dr**

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.594

**Intersection Setup**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	60.00	100.00	35.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Scott Drive			Rolison Drive		
Base Volume Input [veh/h]	50	1326	7	76	1038	263	15	6	414	299	6	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.40	2.40	0.00	4.50	1.50	2.50	3.70	0.00	1.70	1.30	7.70	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	326	0	0	0
Total Hourly Volume [veh/h]	50	1326	7	76	1038	263	15	6	88	299	6	4
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	345	2	20	270	68	4	2	23	78	2	1
Total Analysis Volume [veh/h]	52	1381	7	79	1081	274	16	6	92	311	6	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			0			0			1	
v_di, Inbound Pedestrian Volume crossing in		1			0			0			1	
v_co, Outbound Pedestrian Volume crossing		0			0			0			1	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			1			0			0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	77.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	14.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	0	1	6	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	4	10	0	4	10	0	0	6	0	0	4	0
Maximum Green [s]	15	40	0	10	40	0	0	20	0	0	20	0
Amber [s]	3.0	4.0	0.0	3.0	4.0	0.0	0.0	3.2	0.0	0.0	3.2	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	15	51	0	12	48	0	0	41	0	0	36	0
Vehicle Extension [s]	2.5	3.5	0.0	2.0	3.5	0.0	0.0	2.5	0.0	0.0	2.5	0.0
Walk [s]	0	7	0	0	7	0	0	8	0	0	8	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	28	0	0	24	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	0.0	20.0	20.0	0.0	0.0	20.0	0.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	7	99	99	98	98	98	9	9	18	18
g / C, Green / Cycle	0.05	0.71	0.71	0.70	0.70	0.70	0.06	0.06	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.26	0.26	0.09	0.37	0.38	0.01	0.03	0.09	0.09
s, saturation flow rate [veh/h]	1761	3549	1859	899	1877	1732	1833	2820	1791	1697
c, Capacity [veh/h]	91	2522	1321	650	1315	1213	115	178	228	216
d1, Uniform Delay [s]	64.78	7.88	7.88	8.28	9.98	10.13	62.16	63.48	58.65	58.65
k, delay calibration	0.08	0.50	0.50	0.15	0.50	0.50	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	0.40	0.77	0.11	1.53	1.75	0.59	1.73	3.20	3.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.57	0.36	0.36	0.12	0.53	0.54	0.19	0.52	0.72	0.72
d, Delay for Lane Group [s/veh]	68.86	8.28	8.65	8.39	11.50	11.88	62.74	65.21	61.85	62.03
Lane Group LOS	E	A	A	A	B	B	E	E	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1.91	5.12	5.50	0.39	10.00	9.66	0.77	1.65	5.88	5.58
50th-Percentile Queue Length [ft/ln]	47.79	128.11	137.57	9.72	250.00	241.48	19.27	41.21	146.90	139.50
95th-Percentile Queue Length [veh/ln]	3.44	8.84	9.35	0.70	15.19	14.76	1.39	2.97	9.85	9.45
95th-Percentile Queue Length [ft/ln]	86.03	220.92	233.75	17.50	379.65	368.90	34.69	74.18	246.29	236.35

**Movement, Approach, & Intersection Results**

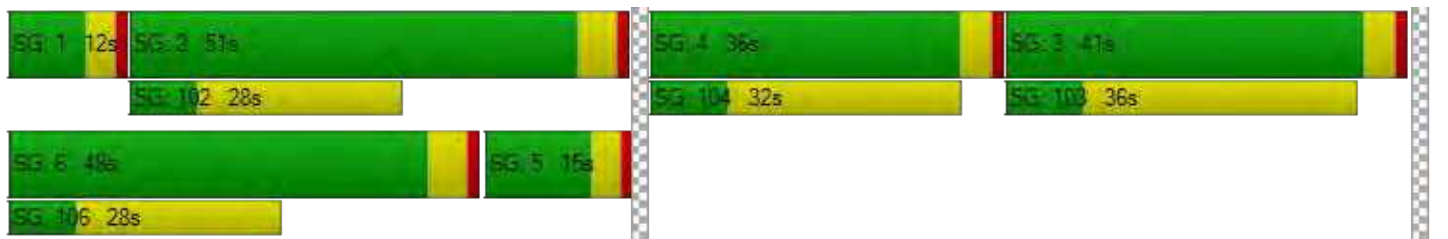
d_M, Delay for Movement [s/veh]	68.86	8.41	8.65	8.39	11.64	11.88	62.74	62.74	65.21	61.93	62.03	62.03
Movement LOS	E	A	A	A	B	B	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	10.59			11.50			64.74			61.94		
Approach LOS	B			B			E			E		
d_I, Intersection Delay [s/veh]	17.83											
Intersection LOS	B											
Intersection V/C	0.594											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0			12.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	58.49			58.49			59.41			59.41		
I_p,int, Pedestrian LOS Score for Intersection	2.955			3.190			2.945			2.138		
Crosswalk LOS	C			C			C			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	657			615			526			454		
d_b, Bicycle Delay [s]	31.53			33.60			38.01			41.79		
I_b,int, Bicycle LOS Score for Intersection	2.352			2.743			2.286			2.089		
Bicycle LOS	B			B			B			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	53.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.852

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	296	675	54	13	1013	354	461	34	230	125	87	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	174	0	0	0
Total Hourly Volume [veh/h]	296	675	54	13	1013	354	461	34	56	125	87	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	181	15	3	272	95	124	9	15	34	23	11
Total Analysis Volume [veh/h]	318	726	58	14	1089	381	496	37	60	134	94	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			1			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			2			1	
v_co, Outbound Pedestrian Volume crossing		0			3			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			2			3			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	55	55	12	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	87	87	4	71	71	26	26	26	16	16
g / C, Green / Cycle	0.14	0.62	0.62	0.03	0.50	0.50	0.18	0.18	0.18	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.22	0.01	0.41	0.42	0.15	0.15	0.04	0.08	0.08
s, saturation flow rate [veh/h]	1771	1852	1797	1714	1867	1678	1774	1821	1572	1751	1788
c, Capacity [veh/h]	252	1151	1117	45	943	848	324	333	287	196	201
d1, Uniform Delay [s]	59.92	12.74	12.76	66.82	28.84	29.67	54.78	54.78	48.47	59.64	59.65
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	145.03	0.82	0.85	1.45	7.28	9.70	3.66	3.56	0.26	3.08	3.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.26	0.34	0.35	0.31	0.81	0.84	0.81	0.81	0.21	0.68	0.68
d, Delay for Lane Group [s/veh]	204.95	13.56	13.61	68.27	36.12	39.37	58.44	58.34	48.74	62.72	62.68
Lane Group LOS	F	B	B	E	D	D	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	19.05	6.14	6.00	0.51	22.59	22.20	9.31	9.54	1.83	4.79	4.89
50th-Percentile Queue Length [ft/ln]	476.29	153.52	150.01	12.71	564.65	554.92	232.66	238.60	45.83	119.65	122.26
95th-Percentile Queue Length [veh/ln]	28.96	10.20	10.02	0.91	30.38	29.92	14.31	14.61	3.30	8.37	8.52
95th-Percentile Queue Length [ft/ln]	723.93	255.12	250.44	22.87	759.50	748.08	357.73	365.26	82.49	209.34	212.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	204.95	13.59	13.61	68.27	37.10	39.37	58.39	58.34	48.74	62.72	62.68	62.68
Movement LOS	F	B	B	E	D	D	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	68.81			37.98			57.41			62.70		
Approach LOS	E			D			E			E		
d_I, Intersection Delay [s/veh]	53.11											
Intersection LOS	D											
Intersection V/C	0.852											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	59.37			59.37			59.37			59.37		
I_p,int, Pedestrian LOS Score for Intersection	2.959			3.062			2.717			2.064		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	721			578			458			469		
d_b, Bicycle Delay [s]	28.63			35.41			41.66			41.01		
I_b,int, Bicycle LOS Score for Intersection	2.469			2.784			2.825			2.007		
Bicycle LOS	B			C			C			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 4: Marsh Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	51.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.879

**Intersection Setup**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name	Marsh Road			Marsh Road			Bay Road			Bay Road		
Base Volume Input [veh/h]	2	745	61	434	723	56	95	25	2	65	90	310
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.30	0.90	1.00	1.00	0.00	2.20	6.90	0.00	1.20	0.00	2.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	745	61	434	723	56	95	25	2	65	90	310
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	209	17	122	203	16	27	7	1	18	25	87
Total Analysis Volume [veh/h]	2	837	69	488	812	63	107	28	2	73	101	348
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			6			0			6	
v_di, Inbound Pedestrian Volume crossing in		0			6			0			6	
v_co, Outbound Pedestrian Volume crossing		0			3			3			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			1			5			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	79
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	6	2	5	2	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	6	7	6	7	6	7	8	8	8	0	8	0
Maximum Green [s]	40	40	40	30	40	40	30	30	30	0	30	0
Amber [s]	4.1	4.1	4.1	4.1	4.1	4.1	3.7	3.7	3.7	0.0	3.7	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	48	29	48	19	48	29	32	32	32	0	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	5.0	0.0	5.0	0.0
Walk [s]	7	0	7	0	7	0	7	7	7	0	7	0
Pedestrian Clearance [s]	17	0	17	0	17	0	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.5	0.5	1.0	0.5	0.5	0.1	0.1	0.1	0.0	0.1	0.0
Minimum Recall		No		No	No			No			No	
Maximum Recall		No		No	No			No			No	
Pedestrian Recall		No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	C	C	C
C, Cycle Length [s]	79	79	79	79	79	79	79
L, Total Lost Time per Cycle [s]	2.50	2.50	3.00	2.50	2.50	2.10	2.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	0.50	0.50	1.00	0.50	0.50	0.10	0.10
g_i, Effective Green Time [s]	27	27	16	46	46	29	29
g / C, Green / Cycle	0.34	0.34	0.20	0.58	0.58	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.26	0.26	0.27	0.23	0.24	0.22	0.30
s, saturation flow rate [veh/h]	1861	1644	1795	1885	1830	613	1723
c, Capacity [veh/h]	678	559	365	1095	1063	302	674
d1, Uniform Delay [s]	23.28	23.33	31.58	9.09	9.11	21.23	23.12
k, delay calibration	0.50	0.50	0.26	0.50	0.50	0.28	0.39
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.19	9.55	161.01	1.11	1.16	2.73	6.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.71	0.76	1.34	0.40	0.41	0.45	0.78
d, Delay for Lane Group [s/veh]	29.47	32.88	192.58	10.19	10.27	23.96	29.87
Lane Group LOS	C	C	F	B	B	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	8.55	8.05	22.94	3.86	3.80	2.32	9.55
50th-Percentile Queue Length [ft/ln]	213.81	201.15	573.42	96.41	94.90	57.92	238.66
95th-Percentile Queue Length [veh/ln]	13.35	12.70	35.28	6.94	6.83	4.17	14.61
95th-Percentile Queue Length [ft/ln]	333.72	317.45	881.88	173.54	170.81	104.25	365.34

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	29.47	30.93	32.88	192.58	10.23	10.27	23.96	23.96	23.96	29.87	29.87	29.87
Movement LOS	C	C	C	F	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	31.07			75.52			23.96			29.87		
Approach LOS	C			E			C			C		
d_I, Intersection Delay [s/veh]	51.20											
Intersection LOS	D											
Intersection V/C	0.879											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			29.33			29.33			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			3.049			1.834			0.000		
Crosswalk LOS	F			C			A			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	604			1084			690			690		
d_b, Bicycle Delay [s]	19.29			8.30			17.02			16.99		
I_b,int, Bicycle LOS Score for Intersection	2.309			2.684			1.786			2.421		
Bicycle LOS	B			B			A			B		

**Sequence**

Ring 1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 9: Middlefield Rd/Ravenswood Ave**

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.304

**Intersection Setup**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Approach	Northeastbound		Northwestbound		Southeastbound	
Lane Configuration	↔↔		↔↑		↑↔	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	0	0
Entry Pocket Length [ft]	100.00	120.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		No	

**Volumes**

Name	Ravenswood Avenue		Middlefield Road		Middlefield Road	
Base Volume Input [veh/h]	137	541	468	638	465	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.10	1.30	0.60	1.40	6.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	1000	0	0	0	0
Total Hourly Volume [veh/h]	137	0	468	638	465	104
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	0	121	164	120	27
Total Analysis Volume [veh/h]	141	0	482	658	479	107
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	11		12		0	
v_di, Inbound Pedestrian Volume crossing in	12		11		0	
v_co, Outbound Pedestrian Volume crossing	6		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		6	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	11		27		9	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	58.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	3	2	1	6	2	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	4	10	4	5	10	0
Maximum Green [s]	50	35	35	70	35	0
Amber [s]	3.2	3.6	3.0	3.6	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	50	35	35	70	35	0
Vehicle Extension [s]	2.5	3.6	3.0	3.0	3.6	0.0
Walk [s]	7	7	0	7	7	0
Pedestrian Clearance [s]	10	12	0	12	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.6	0.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	Yes	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	R	L	C	C
C, Cycle Length [s]	82	82	82	82	82
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	4.60	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	2.60	0.00
g_i, Effective Green Time [s]	12	12	26	63	38
g / C, Green / Cycle	0.15	0.15	0.32	0.77	0.46
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.27	0.35	0.32
s, saturation flow rate [veh/h]	1781	1588	1791	1891	1805
c, Capacity [veh/h]	269	240	569	1454	827
d1, Uniform Delay [s]	32.13	0.00	26.13	3.37	17.84
k, delay calibration	0.08	0.08	0.21	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.18	0.00	6.71	0.22	5.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.52	0.00	0.85	0.45	0.71
d, Delay for Lane Group [s/veh]	33.31	0.00	32.83	3.59	22.94
Lane Group LOS	C	A	C	A	C
Critical Lane Group	Yes	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2.61	0.00	9.26	2.26	9.16
50th-Percentile Queue Length [ft/ln]	65.16	0.00	231.38	56.41	228.88
95th-Percentile Queue Length [veh/ln]	4.69	0.00	14.24	4.06	14.12
95th-Percentile Queue Length [ft/ln]	117.29	0.00	356.11	101.54	352.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.31	0.00	32.83	3.59	22.94	22.94
Movement LOS	C	A	C	A	C	C
d_A, Approach Delay [s/veh]	33.31		15.95		22.94	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	19.46					
Intersection LOS	B					
Intersection V/C	2.304					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	30.70	30.70	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.920	2.870	0.000
Crosswalk LOS	D	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1118	1597	742
d_b, Bicycle Delay [s]	8.01	1.69	16.28
I_b,int, Bicycle LOS Score for Intersection	1.560	3.441	2.527
Bicycle LOS	A	C	B

**Sequence**

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 10: Middlefield Rd/Ringwood Ave**

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.543

**Intersection Setup**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	30.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	20.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	D Street			Ringwood Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	34	32	32	224	0	271	2	772	137	323	706	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.70	0.00	0.00	0.00	0.00	2.20	0.00	1.70	0.00	2.10	1.80	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	8	0	0	57	0	0	0
Total Hourly Volume [veh/h]	34	32	32	224	0	263	2	772	80	323	706	2
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	8	8	59	0	69	1	203	21	85	186	1
Total Analysis Volume [veh/h]	36	34	34	236	0	277	2	813	84	340	743	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	6			0			6			1		
v_di, Inbound Pedestrian Volume crossing in	6			1			6			0		
v_co, Outbound Pedestrian Volume crossing	8			2			1			7		
v_ci, Inbound Pedestrian Volume crossing mi	7			1			2			8		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	5			21			18			14		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	58.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	2	8	2	6	8	6	1	6	8	5	2	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	10	6	10	10	6	10	4	10	6	4	10	0
Maximum Green [s]	35	35	35	50	35	50	10	50	35	10	35	0
Amber [s]	3.6	3.2	3.6	3.6	3.2	3.6	3.0	3.6	3.2	3.5	3.6	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	35	35	35	50	35	50	50	50	35	35	35	0
Vehicle Extension [s]	3.0	2.9	3.0	3.6	2.9	3.6	3.0	3.6	2.9	3.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	12	12	12	12	12	12	0	12	12	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.6	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.6	0.0
Minimum Recall		No			No		Yes	No		Yes	No	
Maximum Recall		No			No		No	Yes		No	Yes	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	4.60	4.60	4.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60
g_i, Effective Green Time [s]	34	34	34	34	82	65	65	79	75	75
g / C, Green / Cycle	0.29	0.29	0.29	0.29	0.68	0.54	0.54	0.66	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.21	0.18	0.00	0.23	0.05	0.39	0.20	0.20
s, saturation flow rate [veh/h]	1421	1719	1136	1540	757	3569	1558	882	1873	1871
c, Capacity [veh/h]	156	493	386	442	535	1920	838	576	1166	1165
d1, Uniform Delay [s]	53.53	31.78	41.75	36.98	7.58	16.59	13.52	11.05	10.66	10.66
k, delay calibration	0.10	0.10	0.27	0.20	0.11	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	0.12	3.90	2.64	0.00	0.69	0.24	4.39	0.72	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.23	0.14	0.61	0.63	0.00	0.42	0.10	0.59	0.32	0.32
d, Delay for Lane Group [s/veh]	54.25	31.90	45.66	39.62	7.58	17.28	13.75	15.43	11.38	11.38
Lane Group LOS	D	C	D	D	A	B	B	B	B	B
Critical Lane Group	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.09	1.53	6.82	7.34	0.02	6.64	1.14	4.18	4.63	4.63
50th-Percentile Queue Length [ft/ln]	27.24	38.21	170.60	183.45	0.42	166.02	28.57	104.46	115.80	115.70
95th-Percentile Queue Length [veh/ln]	1.96	2.75	11.11	11.78	0.03	10.87	2.06	7.52	8.16	8.16
95th-Percentile Queue Length [ft/ln]	49.03	68.78	277.70	294.52	0.76	271.68	51.42	188.02	204.04	203.91

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	54.25	31.90	31.90	45.66	45.66	39.62	7.58	17.28	13.75	15.43	11.38	11.38
Movement LOS	D	C	C	D	D	D	A	B	B	B	B	B
d_A, Approach Delay [s/veh]	39.64			42.40			16.93			12.65		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	21.08											
Intersection LOS	C											
Intersection V/C	0.543											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	49.50
I_p,int, Pedestrian LOS Score for Intersection	1.979	2.560	3.257	2.870
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	513	513	757	507
d_b, Bicycle Delay [s]	33.24	33.50	23.40	33.69
I_b,int, Bicycle LOS Score for Intersection	1.731	2.419	2.348	2.455
Bicycle LOS	A	B	B	B

**Sequence**

Ring 1	1	2	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 15: Bayfront Expy (SR 84)/University Ave (SR 109)**

Control Type:	Signalized	Delay (sec / veh):	137.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.158

**Intersection Setup**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Approach	Northeastbound		Southwestbound		Northwestbound	
Lane Configuration	↑↑↑↱		↰↱↑↑		↰↰↱↱↱↱	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	2	0	0	1
Entry Pocket Length [ft]	100.00	100.00	830.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	55.00		55.00		35.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		Yes	



**Volumes**

Name	Bayfront Expressway (SR84)		Bayfront Expressway (SR84)		University Avenue (SR109)	
Base Volume Input [veh/h]	3762	20	359	970	68	1868
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.40	16.10	4.90	3.80	9.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3762	20	359	970	68	1868
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	960	5	92	247	17	477
Total Analysis Volume [veh/h]	3839	20	366	990	69	1906
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	7		0		8	
v_ci, Inbound Pedestrian Volume crossing mi	8		0		7	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	10.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Overlap
Signal Group	6	2	5	2	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	4	10	4	4
Maximum Green [s]	90	140	50	140	15	15
Amber [s]	5.0	5.4	3.0	5.4	3.0	3.0
All red [s]	1.0	0.5	0.5	0.5	1.0	1.0
Split [s]	30	0	0	0	30	30
Vehicle Extension [s]	3.5	3.5	2.0	3.5	2.0	2.0
Walk [s]	5	0	0	0	5	5
Pedestrian Clearance [s]	35	0	0	0	29	29
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	4.0	5.8	1.5	5.8	2.0	2.0
Minimum Recall	Yes		No	Yes	No	No
Maximum Recall	No		No	No	No	No
Pedestrian Recall	No		No	No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	155	155	155	155	155	155
L, Total Lost Time per Cycle [s]	6.00	6.00	3.50	7.80	4.00	3.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.00	4.00	1.50	5.80	2.00	0.00
g_i, Effective Green Time [s]	90	90	36	128	15	55
g / C, Green / Cycle	0.58	0.58	0.24	0.83	0.10	0.36
(v / s)_i Volume / Saturation Flow Rate	0.76	0.01	0.11	0.20	0.02	0.45
s, saturation flow rate [veh/h]	5077	1399	3378	5020	3264	4237
c, Capacity [veh/h]	2948	812	796	4152	316	1518
d1, Uniform Delay [s]	32.52	13.84	50.79	2.89	64.61	49.75
k, delay calibration	0.13	0.13	0.04	0.13	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	136.78	0.01	0.15	0.04	0.13	115.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.30	0.02	0.46	0.24	0.22	1.26
d, Delay for Lane Group [s/veh]	169.29	13.85	50.95	2.92	64.74	165.34
Lane Group LOS	F	B	D	A	E	F
Critical Lane Group	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	70.17	0.29	5.95	1.42	1.27	35.58
50th-Percentile Queue Length [ft/ln]	1754.15	7.19	148.69	35.52	31.65	889.47
95th-Percentile Queue Length [veh/ln]	101.89	0.52	9.95	2.56	2.28	52.22
95th-Percentile Queue Length [ft/ln]	2547.19	12.95	248.68	63.94	56.97	1305.49

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	169.29	13.85	50.95	2.92	64.74	165.34
Movement LOS	F	B	D	A	E	F
d_A, Approach Delay [s/veh]	168.49		15.88		161.83	
Approach LOS	F		B		F	
d_I, Intersection Delay [s/veh]	137.88					
Intersection LOS	F					
Intersection V/C	1.158					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	68.73	0.00	68.73
I_p,int, Pedestrian LOS Score for Intersection	3.877	0.000	3.088
Crosswalk LOS	D	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	542	568	194
d_b, Bicycle Delay [s]	41.16	39.74	63.20
I_b,int, Bicycle LOS Score for Intersection	3.682	2.305	1.670
Bicycle LOS	D	B	A

**Sequence**

Ring 1	5	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 16: Bayfront Expy (SR 84)/Willow Rd (SR 114)**

Control Type:	Signalized	Delay (sec / veh):	232.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.355

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	3	0	1	0	0	0	2	0	1	1	0	1
Entry Pocket Length [ft]	265.00	100.00	200.00	100.00	100.00	100.00	530.00	100.00	630.00	1500.00	100.00	600.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			20.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road (SR 114)			Willow Road			Ba Ex			Ba Ex		
Base Volume Input [veh/h]	196	95	1142	159	332	146	76	2263	379	559	842	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.20	10.90	3.30	4.30	1.00	1.70	37.10	2.50	12.00	6.40	5.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	70	0	0	45	0	0	1
Total Hourly Volume [veh/h]	196	95	1142	159	332	76	76	2263	334	559	842	33
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	24	294	41	86	20	20	583	86	144	217	9
Total Analysis Volume [veh/h]	202	98	1177	164	342	78	78	2333	344	576	868	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			11			11			0	
v_di, Inbound Pedestrian Volume crossing in		0			11			11			0	
v_co, Outbound Pedestrian Volume crossing		8			0			8			0	
v_ci, Inbound Pedestrian Volume crossing mi		8			0			8			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			3			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	155
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	7	4	4	3	8	4	1	6	2	5	2	6
Auxiliary Signal Groups			4,5									
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	4	5	5	5	4
Maximum Green [s]	22	15	15	9	9	15	26	40	50	25	50	40
Amber [s]	3.6	3.9	3.9	3.6	3.0	3.9	3.6	5.0	5.0	3.6	5.0	5.0
All red [s]	0.0	0.5	0.5	1.5	1.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	25	47	47	20	42	47	21	38	64	47	64	38
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	5	5	0	5	5	0	5	0	0	0	5
Pedestrian Clearance [s]	0	0	0	0	29	0	0	35	0	0	0	35
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.6	2.4	2.4	3.1	2.5	2.4	2.6	4.0	4.0	2.6	4.0	4.0
Minimum Recall	No	No	No	No	No		Yes	No		Yes	No	
Maximum Recall	No	No	No	No	No		No	No		No	No	
Pedestrian Recall	No	No	No	No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	3.60	4.40	4.60	5.10	4.50	4.50	6.00	6.00	6.00	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.60	2.40	0.00	3.10	2.50	2.50	0.00	4.00	4.00	0.00	4.00	4.00
g_i, Effective Green Time [s]	14	13	40	9	10	10	67	40	40	67	58	58
g / C, Green / Cycle	0.13	0.13	0.38	0.09	0.09	0.09	0.64	0.38	0.38	0.64	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.12	0.07	0.28	0.09	0.21	0.05	0.08	0.76	0.39	0.41	0.18	0.02
s, saturation flow rate [veh/h]	1749	1479	4141	1748	1606	1453	956	3084	889	1421	4959	1615
c, Capacity [veh/h]	237	190	1582	150	149	134	620	1178	339	927	2728	888
d1, Uniform Delay [s]	44.31	42.63	27.84	47.92	47.57	45.39	7.80	32.40	32.40	24.04	12.86	10.84
k, delay calibration	0.12	0.11	0.16	0.35	0.48	0.11	0.11	0.19	0.44	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.20	2.15	1.07	88.74	605.96	3.92	0.09	442.36	49.20	0.68	0.07	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.85	0.52	0.74	1.09	2.30	0.58	0.13	1.98	1.01	0.62	0.32	0.04
d, Delay for Lane Group [s/veh]	53.52	44.79	28.91	136.65	653.52	49.31	7.89	474.75	81.60	24.72	12.92	10.85
Lane Group LOS	D	D	C	F	F	D	A	F	F	C	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	5.59	1.21	8.16	7.67	14.46	2.11	0.32	57.84	12.93	2.76	3.59	0.36
50th-Percentile Queue Length [ft/ln]	139.78	30.30	203.88	191.64	361.51	52.77	8.07	1445.98	323.21	68.88	89.85	8.96
95th-Percentile Queue Length [veh/ln]	9.47	2.18	12.84	12.60	24.83	3.80	0.58	94.76	18.99	4.96	6.47	0.65
95th-Percentile Queue Length [ft/ln]	236.72	54.55	320.96	314.91	620.73	94.99	14.53	2368.92	474.84	123.99	161.73	16.13



**Movement, Approach, & Intersection Results**

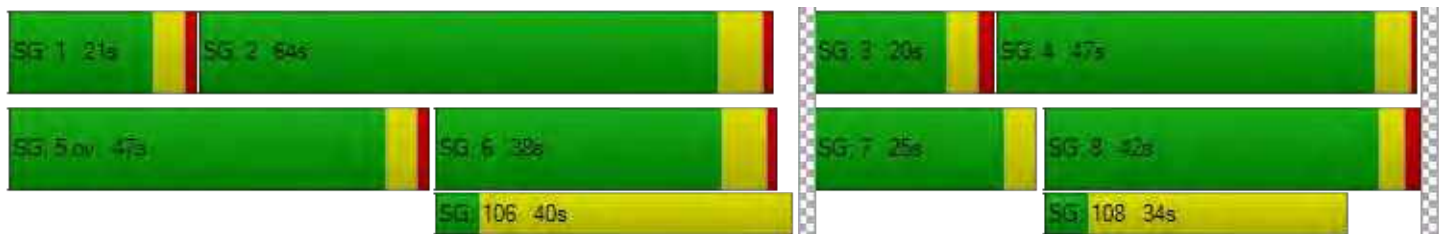
d_M, Delay for Movement [s/veh]	53.52	44.79	28.91	136.65	653.52	49.31	7.89	474.75	81.60	24.72	12.92	10.85
Movement LOS	D	D	C	F	F	D	A	F	F	C	B	B
d_A, Approach Delay [s/veh]	33.33			427.68			412.44			17.47		
Approach LOS	C			F			F			B		
d_I, Intersection Delay [s/veh]	232.14											
Intersection LOS	F											
Intersection V/C	1.355											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	43.76	0.00	43.76	0.00
I_p,int, Pedestrian LOS Score for Intersection	3.475	0.000	3.251	0.000
Crosswalk LOS	C	F	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	813	716	611	1108
d_b, Bicycle Delay [s]	18.44	21.61	25.26	10.43
I_b,int, Bicycle LOS Score for Intersection	2.778	2.099	3.100	2.373
Bicycle LOS	C	B	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 17: Willow Rd (SR 114)/Hamilton Ave**

Control Type:	Signalized	Delay (sec / veh):	438.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.636

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	44	1281	22	271	1102	54	123	8	35	72	15	320
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	3.50	33.30	7.70	3.50	0.00	0.60	26.70	5.10	0.70	5.90	1.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	1281	22	271	1102	54	123	8	35	72	15	320
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	364	6	77	313	15	35	2	10	20	4	91
Total Analysis Volume [veh/h]	50	1456	25	308	1252	61	140	9	40	82	17	364
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			86			11			85	
v_di, Inbound Pedestrian Volume crossing in		11			85			12			86	
v_co, Outbound Pedestrian Volume crossing		13			14			14			13	
v_ci, Inbound Pedestrian Volume crossing mi		13			14			14			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			18			7			15	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	20.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	2	5	2	6	4	8	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	5	10	10	4	10	10	4	5	4	5	4	5
Maximum Green [s]	10	30	30	10	30	30	26	26	26	26	26	26
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.2	3.0	3.2	3.0	3.2
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	8	67	66	7	66	67	66	66	66	66	66	66
Vehicle Extension [s]	3.0	4.0	4.0	2.0	4.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Walk [s]	0	7	7	7	7	7	5	5	5	5	5	5
Pedestrian Clearance [s]	0	19	15	15	15	19	25	25	25	25	25	25
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	1.0	2.0	2.0	1.0	1.2	1.0	1.2	1.0	1.2
Minimum Recall	Yes	Yes		Yes	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	3.20	3.20	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	1.20	1.20	0.00	1.00
g_i, Effective Green Time [s]	70	63	63	70	63	63	63	63	63	63
g / C, Green / Cycle	0.50	0.45	0.45	0.50	0.45	0.45	0.45	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.10	0.90	0.90	0.43	0.80	0.81	0.14	0.09	0.06	0.58
s, saturation flow rate [veh/h]	521	826	821	718	826	807	1013	571	1353	656
c, Capacity [veh/h]	149	373	370	133	371	363	51	256	551	294
d1, Uniform Delay [s]	32.88	38.41	38.41	43.09	38.56	38.56	70.00	23.39	28.69	38.59
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.11	0.04	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.99	454.78	457.64	616.39	360.11	372.00	786.76	0.13	0.12	155.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.34	1.99	2.00	2.32	1.78	1.80	2.72	0.19	0.15	1.29
d, Delay for Lane Group [s/veh]	38.87	493.19	496.06	659.48	398.67	410.56	856.76	23.52	28.82	193.72
Lane Group LOS	D	F	F	F	F	F	F	C	C	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.08	59.36	59.24	12.58	49.65	49.68	13.10	1.02	1.72	22.71
50th-Percentile Queue Length [ft/ln]	26.88	1484.12	1480.92	314.46	1241.21	1241.95	327.57	25.44	42.91	567.74
95th-Percentile Queue Length [veh/ln]	1.94	98.57	98.43	22.64	81.50	81.83	23.59	1.83	3.09	35.76
95th-Percentile Queue Length [ft/ln]	48.38	2464.29	2460.63	566.02	2037.53	2045.63	589.63	45.80	77.24	894.02

**Movement, Approach, & Intersection Results**

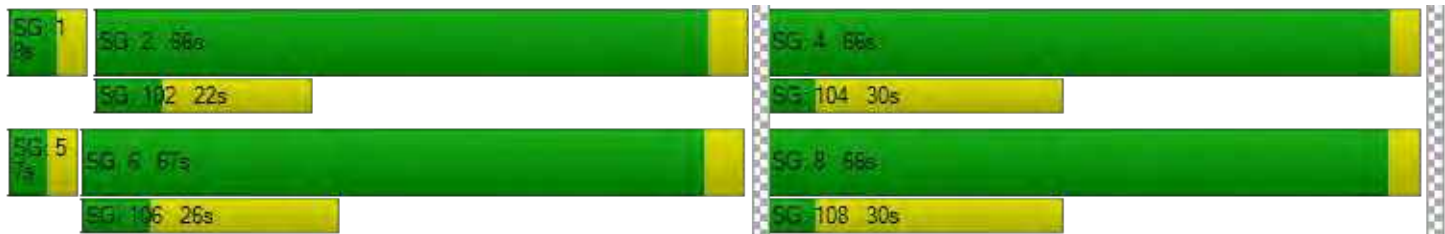
d_M, Delay for Movement [s/veh]	38.87	494.60	496.06	659.48	404.30	410.56	856.76	23.52	23.52	28.82	193.72	193.72
Movement LOS	D	F	F	F	F	F	F	C	C	C	F	F
d_A, Approach Delay [s/veh]	479.74			453.02			640.74			164.51		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	437.98											
Intersection LOS	F											
Intersection V/C	1.636											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.29	61.29	59.43	59.43
I_p,int, Pedestrian LOS Score for Intersection	3.271	3.314	2.080	2.649
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	900	886	897	900
d_b, Bicycle Delay [s]	21.19	21.93	21.36	21.33
I_b,int, Bicycle LOS Score for Intersection	2.823	2.897	1.871	2.324
Bicycle LOS	C	C	A	B

**Sequence**

Ring 1	2	1	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	207.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.462

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↪	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	244	933	1447	52	163	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	3.30	2.80	0.00	0.00	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	244	933	1447	52	163	114
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	251	389	14	44	31
Total Analysis Volume [veh/h]	262	1003	1556	56	175	123
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing in	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	24	106	90	90	24	24
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	1.00
g_i, Effective Green Time [s]	21	99	75	75	24	24
g / C, Green / Cycle	0.16	0.76	0.58	0.58	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.21	0.64	0.97	0.98	0.17	0.14
s, saturation flow rate [veh/h]	1270	1576	831	819	1026	899
c, Capacity [veh/h]	206	1199	479	472	190	167
d1, Uniform Delay [s]	54.41	10.23	27.54	27.54	51.92	49.71
k, delay calibration	0.50	0.50	0.50	0.50	0.26	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	155.88	7.02	316.93	327.98	30.53	7.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.27	0.84	1.68	1.71	0.92	0.74
d, Delay for Lane Group [s/veh]	210.28	17.25	344.47	355.52	82.45	56.85
Lane Group LOS	F	B	F	F	F	E
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	15.50	8.50	55.64	56.29	7.20	4.09
50th-Percentile Queue Length [ft/ln]	387.46	212.42	1391.03	1407.15	180.09	102.31
95th-Percentile Queue Length [veh/ln]	24.38	13.28	91.23	92.60	11.61	7.37
95th-Percentile Queue Length [ft/ln]	609.52	331.93	2280.76	2315.12	290.13	184.16

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	210.28	17.25	349.80	355.52	82.45	56.85
Movement LOS	F	B	F	F	F	E
d_A, Approach Delay [s/veh]	57.23		350.00		71.88	
Approach LOS	E		F		E	
d_I, Intersection Delay [s/veh]	207.25					
Intersection LOS	F					
Intersection V/C	1.462					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.084	3.057	2.158
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.00	7.44	45.70
I_b,int, Bicycle LOS Score for Intersection	2.603	2.890	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 19: Willow Rd (SR 114)/O'Brien Dr**

Control Type:	Signalized	Delay (sec / veh):	255.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.612

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑↑		←↑↑		←↑↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	1	0
Entry Pocket Length [ft]	100.00	60.00	100.00	100.00	50.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		O'Brien Drive	
Base Volume Input [veh/h]	1000	492	57	1184	274	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.90	6.50	2.80	2.70	1.80	6.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1000	492	57	1184	274	204
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	269	132	15	318	74	55
Total Analysis Volume [veh/h]	1075	529	61	1273	295	219
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	5		0		5	
v_ci, Inbound Pedestrian Volume crossing mi	5		0		5	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	3		6		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	16.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	2	1	6	4	8
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	10	10	5	15	8	0
Maximum Green [s]	35	35	21	35	21	0
Amber [s]	4.0	4.0	3.0	4.0	3.2	0.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	88	88	16	104	26	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	10	10	0
Pedestrian Clearance [s]	17	17	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	1.0	2.0	1.2	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	20.0	6.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	L	C	L	C
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	3.00	4.00	3.20	3.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	1.00	2.00	1.20	1.20
g_i, Effective Green Time [s]	84	84	13	100	23	23
g / C, Green / Cycle	0.65	0.65	0.10	0.77	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.83	0.98	0.09	0.99	0.43	0.43
s, saturation flow rate [veh/h]	1293	540	643	1286	648	560
c, Capacity [veh/h]	838	350	63	989	114	98
d1, Uniform Delay [s]	22.83	21.66	58.46	15.00	53.56	53.56
k, delay calibration	0.50	0.50	0.10	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	136.04	243.96	43.45	136.99	667.24	671.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.28	1.51	0.97	1.29	2.43	2.43
d, Delay for Lane Group [s/veh]	158.87	265.62	101.91	151.99	720.80	725.02
Lane Group LOS	F	F	F	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	27.00	32.58	2.73	29.51	24.77	21.53
50th-Percentile Queue Length [ft/ln]	674.98	814.49	68.17	737.80	619.35	538.17
95th-Percentile Queue Length [veh/ln]	42.34	54.14	4.91	46.41	41.82	36.85
95th-Percentile Queue Length [ft/ln]	1058.46	1353.61	122.71	1160.34	1045.42	921.31

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	158.87	265.62	101.91	151.99	721.28	725.02
Movement LOS	F	F	F	F	F	F
d_A, Approach Delay [s/veh]	194.08		149.70		722.76	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	255.65					
Intersection LOS	F					
Intersection V/C	1.612					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	54.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.317
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1293	1539	351
d_b, Bicycle Delay [s]	8.14	3.46	44.22
I_b,int, Bicycle LOS Score for Intersection	2.883	2.660	2.408
Bicycle LOS	C	B	B

**Sequence**

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	206.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.466

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑ →			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	268	1389	355	78	1354	26	27	195	624	346	285	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	268	1389	355	78	1354	26	27	195	449	346	285	11
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	382	98	21	372	7	7	54	123	95	78	3
Total Analysis Volume [veh/h]	295	1526	390	86	1488	29	30	214	493	380	313	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	3	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	4	4	4	0	4	0
Maximum Green [s]	21	40	40	21	40	40	25	25	25	0	21	0
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0
Split [s]	16	66	66	11	61	61	34	34	34	0	19	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	5	0	7	7	5	5	5	0	5	0
Pedestrian Clearance [s]	0	19	19	0	16	16	23	23	23	0	23	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	0.0	1.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	1.00	1.00
g_i, Effective Green Time [s]	13	57	57	8	52	52	34	34	34	16	16	16
g / C, Green / Cycle	0.10	0.44	0.44	0.06	0.40	0.40	0.26	0.26	0.26	0.12	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.23	0.52	0.54	0.09	0.54	0.54	0.02	0.22	0.32	0.11	0.24	0.01
s, saturation flow rate [veh/h]	1273	2481	1171	952	1853	961	1810	965	1546	3409	1303	1416
c, Capacity [veh/h]	127	1082	511	59	737	382	478	255	408	420	160	174
d1, Uniform Delay [s]	58.50	36.66	36.66	61.00	39.16	39.16	35.81	45.25	47.19	56.26	57.00	50.36
k, delay calibration	0.50	0.50	0.50	0.07	0.50	0.50	0.04	0.23	0.50	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	617.13	95.62	118.65	223.20	168.40	177.57	0.02	14.07	114.48	3.08	450.13	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.32	1.19	1.23	1.47	1.35	1.36	0.06	0.84	1.21	0.91	1.95	0.07
d, Delay for Lane Group [s/veh]	675.63	132.27	155.31	284.20	207.55	216.72	35.83	59.32	161.67	59.33	507.13	50.42
Lane Group LOS	F	F	F	F	F	F	D	E	F	E	F	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	25.94	30.73	32.28	5.58	28.93	30.98	0.72	7.50	25.92	6.33	25.32	0.35
50th-Percentile Queue Length [ft/ln]	648.43	768.35	806.92	139.60	723.22	774.45	18.11	187.55	648.02	158.35	632.93	8.77
95th-Percentile Queue Length [veh/ln]	41.90	44.85	47.65	10.05	45.07	48.00	1.30	11.99	38.11	10.46	40.86	0.63
95th-Percentile Queue Length [ft/ln]	1047.48	1121.30	1191.13	251.29	1126.66	1200.03	32.60	299.85	952.83	261.54	1021.50	15.79

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	675.63	135.84	155.31	284.20	210.57	216.72	35.83	59.32	161.67	59.33	507.13	50.42
Movement LOS	F	F	F	F	F	F	D	E	F	E	F	D
d_A, Approach Delay [s/veh]	211.30			214.63			126.83			257.99		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	206.73											
Intersection LOS	F											
Intersection V/C	1.466											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.494	2.986	2.775	2.770
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	938	862	462	246
d_b, Bicycle Delay [s]	18.31	21.11	38.54	50.14
I_b,int, Bicycle LOS Score for Intersection	2.776	2.441	3.064	2.797
Bicycle LOS	C	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	224.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.410

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↪	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	40	1319	809	283	349	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	40	1319	809	60	349	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	340	209	15	90	0
Total Analysis Volume [veh/h]	41	1360	834	62	360	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	88	88	88	88	88	88
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	3	42	36	36	36	36
g / C, Green / Cycle	0.03	0.48	0.41	0.41	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.02	0.81	0.50	0.04	0.42	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	1574	850	1596
c, Capacity [veh/h]	54	805	690	645	348	654
d1, Uniform Delay [s]	42.28	22.85	25.92	15.91	25.92	0.00
k, delay calibration	0.04	0.43	0.19	0.15	0.48	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.54	314.68	99.28	0.09	55.80	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.75	1.69	1.21	0.10	1.03	0.00
d, Delay for Lane Group [s/veh]	49.82	337.53	125.20	16.00	81.72	0.00
Lane Group LOS	D	F	F	B	F	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.99	42.79	16.11	0.74	12.19	0.00
50th-Percentile Queue Length [ft/ln]	24.65	1069.64	402.65	18.58	304.81	0.00
95th-Percentile Queue Length [veh/ln]	1.77	70.48	25.45	1.34	18.31	0.00
95th-Percentile Queue Length [ft/ln]	44.37	1761.89	636.35	33.45	457.78	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	49.82	337.53	125.20	16.00	81.72	0.00
Movement LOS	D	F	F	B	F	A
d_A, Approach Delay [s/veh]	329.11		117.65		81.72	
Approach LOS	F		F		F	
d_I, Intersection Delay [s/veh]	224.28					
Intersection LOS	F					
Intersection V/C	1.410					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	33.58
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.244
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	820	820	820
d_b, Bicycle Delay [s]	15.35	15.32	15.30
I_b,int, Bicycle LOS Score for Intersection	2.715	2.483	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	222.0
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.277

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	50.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	9	1052	4	29	541	18	142	31	38	21	8	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	2.10	0.00	0.00	2.60	27.60	4.30	0.00	17.90	0.00	0.00	6.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	0
Total Hourly Volume [veh/h]	9	1052	4	29	541	18	142	31	20	21	8	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	292	1	8	150	5	39	9	6	6	2	13
Total Analysis Volume [veh/h]	10	1169	4	32	601	20	158	34	22	23	9	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing in	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	L	C
C, Cycle Length [s]	153	153	153	153	153	153	153	153	153	153
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
g_i, Effective Green Time [s]	1	100	100	4	102	13	13	13	19	19
g / C, Green / Cycle	0.01	0.65	0.65	0.02	0.67	0.08	0.08	0.08	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.92	0.92	0.02	1.05	0.05	0.05	0.05	0.01	0.11
s, saturation flow rate [veh/h]	1095	688	589	1810	593	1748	1840	444	1810	555
c, Capacity [veh/h]	10	449	384	43	395	144	151	37	225	69
d1, Uniform Delay [s]	75.91	26.66	26.66	74.41	25.58	68.22	68.20	67.65	59.52	66.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	119.64	196.32	198.58	22.85	268.65	4.91	4.61	14.84	0.20	30.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.96	1.41	1.41	0.75	1.57	0.65	0.65	0.60	0.10	0.88
d, Delay for Lane Group [s/veh]	195.55	222.98	225.23	97.25	294.23	73.13	72.80	82.49	59.71	96.54
Lane Group LOS	F	F	F	F	F	E	E	F	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.74	40.12	34.58	1.54	43.15	3.87	4.04	1.01	0.82	2.96
50th-Percentile Queue Length [ft/ln]	18.58	1003.06	864.39	38.44	1078.86	96.75	100.99	25.13	20.46	73.93
95th-Percentile Queue Length [veh/ln]	1.34	63.64	55.54	2.77	71.28	6.97	7.27	1.81	1.47	5.32
95th-Percentile Queue Length [ft/ln]	33.45	1590.92	1388.51	69.19	1782.12	174.15	181.79	45.24	36.83	133.07

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	195.55	224.01	225.23	97.25	294.23	294.23	73.00	72.80	82.49	59.71	96.54	96.54
Movement LOS	F	F	F	F	F	F	E	E	F	E	F	F
d_A, Approach Delay [s/veh]	223.78			284.58			73.94			86.45		
Approach LOS	F			F			E			F		
d_I, Intersection Delay [s/veh]	221.95											
Intersection LOS	F											
Intersection V/C	1.277											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	65.98	65.98	65.98	65.98
I_p,int, Pedestrian LOS Score for Intersection	2.532	2.753	2.204	2.007
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	261	261	392	392
d_b, Bicycle Delay [s]	57.98	58.15	49.55	49.55
I_b,int, Bicycle LOS Score for Intersection	2.536	2.637	1.942	1.698
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 23: Willow Rd/Coleman Ave**

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.691

**Intersection Setup**

Name	Willow Road			Willow Road			Coleman Avenue					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Willow Road			Willow Road			Coleman Avenue					
Base Volume Input [veh/h]	21	693	5	2	687	109	147	2	49	15	4	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.10	0.00	0.00	3.70	2.40	3.90	0.00	3.20	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	693	5	2	687	109	147	2	49	15	4	6
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	190	1	1	189	30	40	1	13	4	1	2
Total Analysis Volume [veh/h]	23	762	5	2	755	120	162	2	54	16	4	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		19			15			19			15	
v_di, Inbound Pedestrian Volume crossing in		19			15			19			15	
v_co, Outbound Pedestrian Volume crossing		10			8			8			11	
v_ci, Inbound Pedestrian Volume crossing mi		11			8			8			10	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		8			4			4			4	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	80.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	10	10	10	10	10	10	4	4	4	0	4	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	6.0	6.0	6.0	6.0	6.0	6.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	11	11	11	13	13	13	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	20.0	20.0	20.0	6.0	6.0	6.0	0.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	C
C, Cycle Length [s]	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	73	73	73	73	19	19
g / C, Green / Cycle	0.73	0.73	0.73	0.73	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.04	0.41	0.00	0.49	0.15	0.02
s, saturation flow rate [veh/h]	644	1851	712	1791	1413	1536
c, Capacity [veh/h]	360	1352	438	1309	327	345
d1, Uniform Delay [s]	15.83	6.19	11.83	7.09	38.60	33.49
k, delay calibration	0.50	0.50	0.50	0.50	0.18	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.34	1.73	0.02	2.73	3.82	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.06	0.57	0.00	0.67	0.67	0.08
d, Delay for Lane Group [s/veh]	16.17	7.92	11.85	9.81	42.42	33.59
Lane Group LOS	B	A	B	A	D	C
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.34	6.95	0.02	8.83	5.40	0.56
50th-Percentile Queue Length [ft/ln]	8.41	173.80	0.59	220.87	135.06	13.88
95th-Percentile Queue Length [veh/ln]	0.61	11.28	0.04	13.71	9.21	1.00
95th-Percentile Queue Length [ft/ln]	15.14	281.90	1.06	342.73	230.36	24.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.17	7.92	7.92	11.85	9.81	9.81	42.42	42.42	42.42	33.59	33.59	33.59
Movement LOS	B	A	A	B	A	A	D	D	D	C	C	C
d_A, Approach Delay [s/veh]	8.16			9.82			42.42			33.59		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	13.19											
Intersection LOS	B											
Intersection V/C	0.691											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.57			39.57			39.57			39.57		
I_p,int, Pedestrian LOS Score for Intersection	2.405			2.763			1.930			1.737		
Crosswalk LOS	B			C			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1379			1379			458			458		
d_b, Bicycle Delay [s]	4.84			4.83			29.75			29.75		
I_b,int, Bicycle LOS Score for Intersection	2.863			3.007			1.919			1.604		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 24: Willow Rd/Gilbert Ave**

Control Type:	Signalized	Delay (sec / veh):	13.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.559

**Intersection Setup**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐			⇐⇑⇓⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	55.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Gilbert Avenue			Gilbert Avenue		
Base Volume Input [veh/h]	3	656	119	54	703	10	44	120	5	81	52	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	3.00	0.00	0.00	2.70	0.00	3.30	2.00	10.10	0.00	2.30	3.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	656	119	54	703	10	44	120	5	81	52	58
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	171	31	14	183	3	11	31	1	21	14	15
Total Analysis Volume [veh/h]	3	683	124	56	732	10	46	125	5	84	54	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3			1			2			4		
v_di, Inbound Pedestrian Volume crossing in	4			2			1			3		
v_co, Outbound Pedestrian Volume crossing	1			2			1			2		
v_ci, Inbound Pedestrian Volume crossing mi	1			2			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	15			12			5			7		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	4	4	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	12	12	12	12	12	12	5	5	5	0	5	0
Maximum Green [s]	60	60	60	60	60	60	24	24	24	0	24	0
Amber [s]	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	0.0	3.1	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	73	73	73	73	73	73	27	27	27	0	27	0
Vehicle Extension [s]	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	7	7	7	7	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	14	14	14	14	14	14	15	15	15	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		Yes			Yes			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.10	4.10	4.10	4.10	4.10	4.10	4.10	4.10
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
g_i, Effective Green Time [s]	74	74	74	74	18	18	18	18
g / C, Green / Cycle	0.74	0.74	0.74	0.74	0.18	0.18	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.00	0.45	0.08	0.40	0.04	0.07	0.07	0.07
s, saturation flow rate [veh/h]	729	1796	686	1854	1259	1854	1276	1680
c, Capacity [veh/h]	475	1331	426	1375	191	327	189	297
d1, Uniform Delay [s]	10.00	6.07	12.77	5.57	42.58	36.46	44.12	36.37
k, delay calibration	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	2.06	0.64	1.52	0.65	0.78	1.63	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.01	0.61	0.13	0.54	0.24	0.40	0.44	0.38
d, Delay for Lane Group [s/veh]	10.03	8.13	13.40	7.10	43.22	37.24	45.75	37.18
Lane Group LOS	B	A	B	A	D	D	D	D
Critical Lane Group	No	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.03	7.41	0.73	6.19	1.11	2.90	2.11	2.54
50th-Percentile Queue Length [ft/ln]	0.81	185.23	18.36	154.82	27.70	72.38	52.83	63.45
95th-Percentile Queue Length [veh/ln]	0.06	11.87	1.32	10.27	1.99	5.21	3.80	4.57
95th-Percentile Queue Length [ft/ln]	1.46	296.83	33.05	256.84	49.86	130.28	95.10	114.20



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	10.03	8.13	8.13	13.40	7.10	7.10	43.22	37.24	37.24	45.75	37.18	37.18
Movement LOS	B	A	A	B	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	8.13			7.54			38.80			40.82		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	13.88											
Intersection LOS	B											
Intersection V/C	0.559											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.60			39.60			39.60			39.60		
I_p,int, Pedestrian LOS Score for Intersection	2.506			2.524			2.015			2.161		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1378			1378			458			458		
d_b, Bicycle Delay [s]	4.87			4.86			29.79			29.82		
I_b,int, Bicycle LOS Score for Intersection	2.896			2.876			1.850			1.886		
Bicycle LOS	C			C			A			A		

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 25: Middlefield Rd-Willow Rd**

Control Type:	Signalized	Delay (sec / veh):	42.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

**Intersection Setup**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Entry Pocket Length [ft]	75.00	100.00	215.00	155.00	100.00	160.00	125.00	100.00	70.00	270.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	30	281	269	372	126	299	134	478	184	277	684	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.20	1.10	0.00	1.70	0.00	2.40	1.10	0.50	2.30	6.40	0.00	3.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	120	0	0	1000	0	0	1000	0	0	0
Total Hourly Volume [veh/h]	30	281	149	372	126	0	134	478	184	277	684	22
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	74	39	98	33	0	35	126	48	73	180	6
Total Analysis Volume [veh/h]	32	296	157	392	133	0	141	503	194	292	720	23
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		12			6			12			6	
v_di, Inbound Pedestrian Volume crossing in		12			6			12			6	
v_co, Outbound Pedestrian Volume crossing		5			5			4			5	
v_ci, Inbound Pedestrian Volume crossing mi		5			4			5			5	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		50			19			4			14	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	71.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	8	1	8	4	4	4	6	3	6	2	2	2
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lag	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	5	5	5	0	5	0	5	5	5
Maximum Green [s]	0	20	0	45	45	45	0	45	0	30	30	30
Amber [s]	0.0	3.3	0.0	3.7	3.7	3.7	0.0	3.7	0.0	3.7	3.7	3.7
All red [s]	0.0	1.0	0.0	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0
Split [s]	0	33	0	46	46	46	0	32	0	39	39	39
Vehicle Extension [s]	0.0	3.0	0.0	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	8	0	8	8	8	0	8	0	8	8	8
Pedestrian Clearance [s]	0	20	0	22	22	22	0	17	0	18	18	18
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.3	0.0	2.7	2.7	2.7	0.0	2.7	0.0	2.7	2.7	2.7
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	C	R	L	C	C
C, Cycle Length [s]	102	102	102	102	102	102	102	102	102	102	102	102	102
L, Total Lost Time per Cycle [s]	4.30	4.30	4.30	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70	4.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.30	2.30	2.30	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
g_i, Effective Green Time [s]	20	20	20	20	20	20	18	18	18	18	25	25	25
g / C, Green / Cycle	0.20	0.20	0.20	0.19	0.19	0.19	0.18	0.18	0.18	0.18	0.25	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.11	0.14	0.14	0.00	0.08	0.13	0.14	0.13	0.17	0.22	0.20
s, saturation flow rate [veh/h]	1778	1883	1452	1785	1853	1584	1794	1892	1892	1541	1718	1900	1699
c, Capacity [veh/h]	350	370	285	344	357	305	322	340	340	277	430	475	425
d1, Uniform Delay [s]	33.43	38.95	36.37	38.73	38.73	0.00	37.15	39.33	39.63	39.00	34.46	36.50	35.55
k, delay calibration	0.11	0.28	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.13	0.24	0.19
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	9.73	1.65	3.27	3.15	0.00	0.94	2.90	3.47	3.21	2.28	10.14	5.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.09	0.80	0.55	0.75	0.75	0.00	0.44	0.72	0.76	0.70	0.68	0.87	0.78
d, Delay for Lane Group [s/veh]	33.55	48.68	38.02	42.00	41.88	0.00	38.09	42.23	43.09	42.22	36.74	46.64	41.05
Lane Group LOS	C	D	D	D	D	A	D	D	D	D	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.65	7.94	3.57	6.37	6.60	0.00	3.18	5.99	6.37	4.72	6.70	10.92	8.19
50th-Percentile Queue Length [ft/ln]	16.37	198.50	89.18	159.18	164.94	0.00	79.59	149.6	159.1	118.1	167.49	273.06	204.63
95th-Percentile Queue Length [veh/ln]	1.18	12.56	6.42	10.51	10.81	0.00	5.73	10.00	10.51	8.29	10.94	16.34	12.88
95th-Percentile Queue Length [ft/ln]	29.47	314.03	160.53	262.64	270.26	0.00	143.2	249.9	262.6	207.2	273.61	408.56	321.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	33.55	48.68	38.02	41.96	41.88	0.00	38.09	42.67	42.22	36.74	44.24	41.05
Movement LOS	C	D	D	D	D	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	44.23			41.94			41.80			42.06		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.33											
Intersection LOS	D											
Intersection V/C	0.710											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	12.0	12.0	12.0	12.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.47	39.47	39.47	39.47
I_p,int, Pedestrian LOS Score for Intersection	2.526	4.264	4.404	2.806
Crosswalk LOS	B	E	E	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	565	814	538	676
d_b, Bicycle Delay [s]	26.79	18.03	27.18	22.41
I_b,int, Bicycle LOS Score for Intersection	2.558	4.076	3.076	2.413
Bicycle LOS	B	D	C	B

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 110: Marsh Road/101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	22.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.988

**Intersection Setup**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Approach	Northbound		Southbound		Northwestbound	
Lane Configuration	↑↑		↑↑		1111	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	1	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	500.00	360.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

**Volumes**

Name	Marsh Road		Marsh Road		101 NB Ramps	
Base Volume Input [veh/h]	1912	0	0	1568	570	891
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.40	0.00	0.00	3.00	5.10	12.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1912	0	0	1568	570	891
Peak Hour Factor	0.9900	1.0000	1.0000	0.9900	0.9900	0.9900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	483	0	0	396	144	225
Total Analysis Volume [veh/h]	1931	0	0	1584	576	900
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		1	
v_ci, Inbound Pedestrian Volume crossing mi	1		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		7		0	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	40.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	6	8	1
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	8	0	0	8	6	0
Maximum Green [s]	32	0	0	32	26	0
Amber [s]	4.1	0.0	0.0	4.1	3.2	0.0
All red [s]	0.5	0.0	0.0	0.5	1.0	0.0
Split [s]	50	0	0	50	30	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	0	0	5	0
Pedestrian Clearance [s]	12	0	0	0	15	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.5	0.0	0.0	0.5	0.0	0.0
Minimum Recall	Yes			Yes	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	0.0	0.0	20.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	R
C, Cycle Length [s]	80	80	80	80
L, Total Lost Time per Cycle [s]	2.50	2.50	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.50	0.50	0.00	0.00
g_i, Effective Green Time [s]	47	47	28	28
g / C, Green / Cycle	0.59	0.59	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.55	0.45	0.17	0.35
s, saturation flow rate [veh/h]	3492	3532	3373	2585
c, Capacity [veh/h]	2071	2095	1182	906
d1, Uniform Delay [s]	14.79	11.99	20.33	25.85
k, delay calibration	0.50	0.50	0.04	0.07
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.19	2.60	0.12	9.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.76	0.49	0.99
d, Delay for Lane Group [s/veh]	23.98	14.59	20.44	35.76
Lane Group LOS	C	B	C	D
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.91	9.58	4.03	9.22
50th-Percentile Queue Length [ft/ln]	397.83	239.49	100.73	230.42
95th-Percentile Queue Length [veh/ln]	22.46	14.66	7.25	14.20
95th-Percentile Queue Length [ft/ln]	561.38	366.39	181.31	354.89

**Movement, Approach, & Intersection Results**

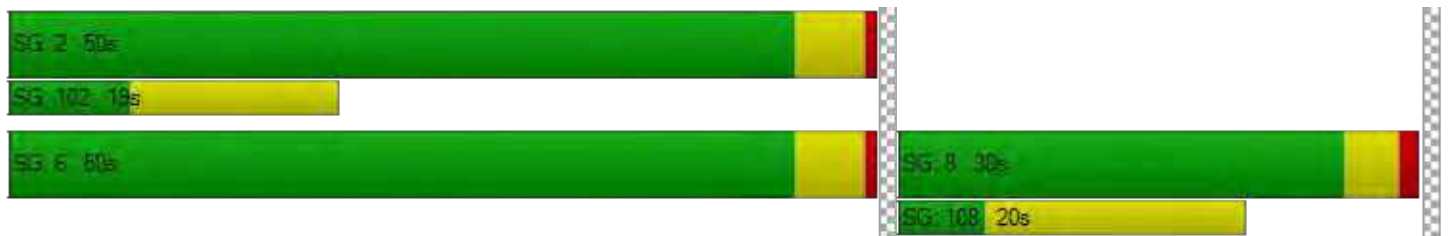
d_M, Delay for Movement [s/veh]	23.98	0.00	0.00	14.59	20.44	35.76
Movement LOS	C			B	C	D
d_A, Approach Delay [s/veh]	23.98		14.59		29.78	
Approach LOS	C		B		C	
d_I, Intersection Delay [s/veh]	22.71					
Intersection LOS	C					
Intersection V/C	0.988					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	29.73
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.203	2.484
Crosswalk LOS	F	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1136	1136	645
d_b, Bicycle Delay [s]	7.46	7.49	18.34
I_b,int, Bicycle LOS Score for Intersection	3.153	2.866	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	All-way stop	Delay (sec / veh):	163.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.552

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	22	382	18	76	781	36	21	124	23	7	16	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	382	18	76	781	36	21	124	23	7	16	56
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	103	5	21	211	10	6	35	7	2	4	15
Total Analysis Volume [veh/h]	24	413	19	82	845	39	24	140	26	8	17	61
Pedestrian Volume [ped/h]	3			4			2			5		

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	603	966	512	504
Degree of Utilization, x	0.76	1.55	0.37	0.17

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	6.80	50.15	1.70	0.61
95th-Percentile Queue Length [ft]	169.96	1253.69	42.55	15.26
Approach Delay [s/veh]	25.13	272.29	14.14	11.61
Approach LOS	D	F	B	B
Intersection Delay [s/veh]	163.83			
Intersection LOS	F			

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**Intersection Level Of Service Report**  
**Intersection 163: Bayfront Expy/Marsh Rd**

Control Type:	Signalized	Delay (sec / veh):	72.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.079

**Intersection Setup**

Name	Marsh Road			Haven Avenue			Bayfront Expressway					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ← ← ←			← ←			← ←			← ← ← ←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	No			Yes			Yes			No		

**Volumes**

Name				Marsh Road			Haven Avenue			Bayfront Expressway		
Base Volume Input [veh/h]	194	40	1694	12	31	5	9	752	232	2657	802	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	19.20	0.00	2.90	0.00	0.00	0.00	0.00	0.40	2.20	2.90	14.30	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	40	1694	12	31	5	9	752	232	2657	802	14
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	10	441	3	8	1	2	196	60	692	209	4
Total Analysis Volume [veh/h]	202	42	1765	13	32	5	9	783	242	2768	835	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			4			4			0	
v_di, Inbound Pedestrian Volume crossing in		0			4			4			0	
v_co, Outbound Pedestrian Volume crossing		0			13			0			13	
v_ci, Inbound Pedestrian Volume crossing mi		0			13			0			13	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			13			8			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	125.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Split	Split	Overlap	Split	Split	Split	Split	Split	Split	Split	Split	Split
Signal Group	2	3	3	6	4	6	4	1	4	1	2	8
Auxiliary Signal Groups			2,3									
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lead	-	-
Minimum Green [s]	10	6	6	10	4	10	4	12	4	12	10	0
Maximum Green [s]	0	0	0	10	0	10	0	0	0	0	0	0
Amber [s]	4.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	4.7	0.0
All red [s]	1.0	1.0	1.0	0.5	0.5	0.5	0.5	0.0	0.5	0.0	1.0	0.0
Split [s]	58	11	11	25	32	25	32	59	32	59	58	0
Vehicle Extension [s]	4.5	2.0	2.0	3.0	2.0	3.0	2.0	2.0	2.0	2.0	4.5	0.0
Walk [s]	5	0	0	10	5	10	5	0	5	0	5	0
Pedestrian Clearance [s]	16	0	0	10	22	10	22	0	22	0	16	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.1	0.0	2.1	0.0	1.6	0.0	1.6	0.0	0.0
Minimum Recall		No	No		No			No			Yes	
Maximum Recall		No	No		No			No			No	
Pedestrian Recall		No	No		No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	R	C	C	C	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	3.60	3.60	3.60	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	1.60	1.60	1.60	0.00	0.00
g_i, Effective Green Time [s]	27	117	10	10	38	38	38	76	76
g / C, Green / Cycle	0.17	0.73	0.06	0.06	0.24	0.24	0.24	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.13	0.42	0.02	0.01	0.22	0.22	0.16	0.54	0.51
s, saturation flow rate [veh/h]	1824	4190	1707	1588	1892	1724	1556	5150	1678
c, Capacity [veh/h]	305	2956	137	97	447	407	368	2449	798
d1, Uniform Delay [s]	64.05	11.98	71.59	71.56	59.75	59.75	55.05	41.96	41.96
k, delay calibration	0.40	0.50	0.04	0.04	0.15	0.15	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.02	0.90	0.27	0.45	11.14	11.99	0.75	64.36	50.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.80	0.60	0.20	0.23	0.93	0.93	0.66	1.13	1.06
d, Delay for Lane Group [s/veh]	80.06	12.88	71.86	72.01	70.88	71.74	55.81	106.31	92.54
Lane Group LOS	F	B	E	E	E	E	E	F	F
Critical Lane Group	No	Yes	Yes	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.98	10.62	1.10	0.89	17.86	16.37	8.94	46.36	42.27
50th-Percentile Queue Length [ft/ln]	274.42	265.44	27.52	22.30	446.62	409.28	223.62	1158.93	1056.65
95th-Percentile Queue Length [veh/ln]	16.41	15.96	1.98	1.61	24.80	23.01	13.85	63.14	55.65
95th-Percentile Queue Length [ft/ln]	410.26	399.04	49.54	40.15	619.91	575.17	346.25	1578.51	1391.25

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	80.06	80.06	12.88	71.86	71.94	72.01	70.88	71.29	55.81	106.31	92.54	92.54
Movement LOS	F	F	B	E	E	E	E	E	E	F	F	F
d_A, Approach Delay [s/veh]	21.04			71.93			67.66			103.08		
Approach LOS	C			E			E			F		
d_I, Intersection Delay [s/veh]	72.83											
Intersection LOS	E											
Intersection V/C	1.079											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0			9.0			9.0			0.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			71.25			71.25			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.006			2.665			0.000		
Crosswalk LOS	F			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	80			349			693			654		
d_b, Bicycle Delay [s]	73.73			54.89			34.33			36.27		
I_b,int, Bicycle LOS Score for Intersection	4.874			1.601			2.413			7.529		
Bicycle LOS	E			A			B			F		

**Sequence**

Ring 1	-	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 165: Willow Rd/US-101 SB Ramps**

Control Type:	Signalized	Delay (sec / veh):	156.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.058

**Intersection Setup**

Name	Willow Road			Willow Road								
Approach	Northbound			Southbound			Westbound			Southeastbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	Yes			No			Yes			No		

**Volumes**

Name	Willow Road			Willow Road								
Base Volume Input [veh/h]	0	1036	199	0	1142	863	0	0	0	0	799	352
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	0.00	4.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1036	199	0	1142	863	0	0	0	0	799	352
Peak Hour Factor	1.0000	0.9300	1.0000	1.0000	0.9300	0.9300	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	278	50	0	307	232	0	0	0	0	200	98
Total Analysis Volume [veh/h]	0	1114	199	0	1228	928	0	0	0	0	799	391
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		0			0			0			0	
v_di, Inbound Pedestrian Volume crossing in		0			0			0			0	
v_co, Outbound Pedestrian Volume crossing		0			0			0			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			0			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			10			0			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	Lead	-
Minimum Green [s]	0	5	0	0	5	0	0	0	0	0	5	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	0	30	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Split [s]	0	21	0	0	21	0	0	0	0	0	59	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	0	5	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No						No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Minimum Recall		Yes			Yes						No	
Maximum Recall		No			No						No	
Pedestrian Recall		No			No						No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	R		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	43	43	43		29	29
g / C, Green / Cycle	0.54	0.54	0.54		0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.22	0.25	1.34		0.23	0.31
s, saturation flow rate [veh/h]	5094	5012	693		3514	1271
c, Capacity [veh/h]	2749	2705	374		1265	458
d1, Uniform Delay [s]	10.82	11.20	17.81		21.14	23.59
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	0.45	0.55	673.93		0.52	4.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	0.41	0.45	2.48		0.63	0.85
d, Delay for Lane Group [s/veh]	11.27	11.75	691.74		21.67	28.24
Lane Group LOS	B	B	F		C	C
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	3.61	4.12	75.84		5.94	3.49
50th-Percentile Queue Length [ft/ln]	90.14	103.05	1896.06		148.38	87.14
95th-Percentile Queue Length [veh/ln]	6.49	7.42	129.75		9.93	6.27
95th-Percentile Queue Length [ft/ln]	162.24	185.48	3243.66		248.27	156.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	11.27	0.00	0.00	11.75	691.74	0.00	0.00	0.00	0.00	21.67	28.24
Movement LOS		B			B	F					C	C
d_A, Approach Delay [s/veh]	11.27		304.43				0.00			23.83		
Approach LOS	B		F				A			C		
d_I, Intersection Delay [s/veh]	156.34											
Intersection LOS	F											
Intersection V/C	2.058											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.46	0.00	31.46	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.970	0.000	1.419	0.000
Crosswalk LOS	C	F	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	426	426	0	1377
d_b, Bicycle Delay [s]	24.77	24.88	39.95	3.88
I_b,int, Bicycle LOS Score for Intersection	2.172	2.745	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 168: Willow Rd/US-101 NB Ramps**

Control Type:	Signalized	Delay (sec / veh):	230.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.237

**Intersection Setup**

Name	Willow Road			Willow Road (SR 114)								
Approach	Northbound			Southbound			Eastbound			Northwestbound		
Lane Configuration	↑↑↑			↑↑↑						↑↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Right	Right	Left2	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1	0	0	0	1	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No						No		
Crosswalk	No			Yes			Yes			No		



**Volumes**

Name	Willow Road			Willow Road (SR 114)								
Base Volume Input [veh/h]	0	1376	470	0	1637	784	0	0	0	345	0	859
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	1376	470	0	1637	784	0	0	0	345	0	859
Peak Hour Factor	1.0000	0.9800	0.9800	1.0000	0.9800	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	351	120	0	418	196	0	0	0	86	0	239
Total Analysis Volume [veh/h]	0	1404	480	0	1670	784	0	0	0	345	0	954
Presence of On-Street Parking	No		No	No		No				No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			4			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	8.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	0	0	8	0	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	4	0	0	4	0	0	0	0	5	0	0
Maximum Green [s]	0	16	0	0	16	0	0	0	0	30	0	0
Amber [s]	0.0	3.5	0.0	0.0	3.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0
All red [s]	0.0	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Split [s]	0	20	0	0	20	0	0	0	0	60	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	0	0	5	0	0
Pedestrian Clearance [s]	0	11	0	0	11	0	0	0	0	10	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No					No		
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Minimum Recall		No			No					No		
Maximum Recall		No			No					No		
Pedestrian Recall		No			No					No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	R	C		L	R
C, Cycle Length [s]	80	80	80		80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00
g_i, Effective Green Time [s]	24	24	24		48	48
g / C, Green / Cycle	0.30	0.30	0.30		0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.46	0.30	0.55		0.10	0.57
s, saturation flow rate [veh/h]	3051	1579	3051		3514	1685
c, Capacity [veh/h]	913	472	913		2111	1012
d1, Uniform Delay [s]	28.00	27.73	28.00		7.06	14.68
k, delay calibration	0.50	0.50	0.50		0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00
d2, Incremental Delay [s]	247.61	45.53	377.52		0.04	5.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00

**Lane Group Results**

X, volume / capacity	1.54	1.02	1.83		0.16	0.94
d, Delay for Lane Group [s/veh]	275.61	73.26	405.52		7.10	19.93
Lane Group LOS	F	F	F		A	B
Critical Lane Group	No	No	Yes		No	Yes
50th-Percentile Queue Length [veh/ln]	26.44	14.44	37.42		1.15	7.31
50th-Percentile Queue Length [ft/ln]	660.92	361.06	935.44		28.85	182.77
95th-Percentile Queue Length [veh/ln]	42.77	20.88	61.19		2.08	11.74
95th-Percentile Queue Length [ft/ln]	1069.31	522.08	1529.79		51.94	293.62

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	275.61	73.26	0.00	405.52	0.00	0.00	0.00	0.00	7.10	0.00	19.93
Movement LOS		F	F		F					A		B
d_A, Approach Delay [s/veh]	224.05		405.52		0.00		16.52					
Approach LOS	F		F		A		B					
d_I, Intersection Delay [s/veh]	230.95											
Intersection LOS	F											
Intersection V/C	1.237											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	31.48	31.48	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	3.151	1.419	0.000
Crosswalk LOS	F	C	A	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	400	400	0	1401
d_b, Bicycle Delay [s]	25.60	25.63	39.97	3.59
I_b,int, Bicycle LOS Score for Intersection	2.596	2.478	4.132	1.560
Bicycle LOS	B	B	D	A

**Sequence**

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 195: Bayfront Expy/Chilco St**

Control Type:	Signalized	Delay (sec / veh):	65.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.102

**Intersection Setup**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←↔→		↑↑↑↔		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	50.00	100.00	660.00	520.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chilco Street		Bayfront Expy		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	768	555	2535	280	219	1966
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.50	3.10	3.10	1.30	21.10	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	768	555	2535	280	219	1966
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	206	149	681	75	59	528
Total Analysis Volume [veh/h]	826	597	2726	301	235	2114
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Permissive	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	3	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	10	50	0	10	50
Amber [s]	3.2	3.0	5.2	0.0	3.6	5.2
All red [s]	0.5	8.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	0
Pedestrian Clearance [s]	26	0	21	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	9.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	94	94	94	94	94	94
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	64	64
g / C, Green / Cycle	0.21	0.21	0.53	0.53	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.25	0.39	0.54	0.19	0.68	0.42
s, saturation flow rate [veh/h]	3361	1543	5049	1579	347	4979
c, Capacity [veh/h]	719	330	2700	844	298	3387
d1, Uniform Delay [s]	36.75	36.55	21.75	12.47	28.34	8.31
k, delay calibration	0.07	0.50	0.04	0.04	0.50	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	69.45	375.54	7.55	0.09	18.75	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.15	1.81	1.01	0.36	0.79	0.62
d, Delay for Lane Group [s/veh]	106.20	412.08	29.30	12.56	47.10	8.38
Lane Group LOS	F	F	F	B	D	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.95	41.76	19.68	3.43	3.06	6.66
50th-Percentile Queue Length [ft/ln]	373.85	1044.07	492.09	85.84	76.56	166.52
95th-Percentile Queue Length [veh/ln]	22.86	65.95	27.17	6.18	5.51	10.89
95th-Percentile Queue Length [ft/ln]	571.48	1648.86	679.17	154.51	137.82	272.34



**Movement, Approach, & Intersection Results**

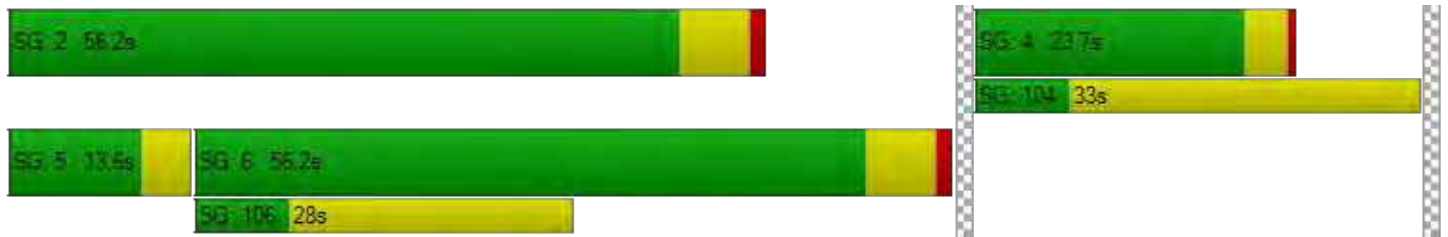
d_M, Delay for Movement [s/veh]	106.20	412.08	29.30	12.56	47.10	8.38
Movement LOS	F	F	F	B	D	A
d_A, Approach Delay [s/veh]	234.53		27.64		12.25	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	65.62					
Intersection LOS	E					
Intersection V/C	1.102					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.40	36.40	36.40
I_p,int, Pedestrian LOS Score for Intersection	2.959	3.426	3.385
Crosswalk LOS	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	428	1070	1070
d_b, Bicycle Delay [s]	29.01	10.12	10.12
I_b,int, Bicycle LOS Score for Intersection	1.560	3.224	2.852
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 196: Bayfront Expy/Chrysler Drive**

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.953

**Intersection Setup**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	←←→		↑↑↑		←↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	1	1	0
Entry Pocket Length [ft]	100.00	280.00	100.00	290.00	345.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Chrysler Drive		Bayfront Expy		Bayfront Expy	
Base Volume Input [veh/h]	1029	89	2580	93	69	2347
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.80	0.00	2.80	0.90	0.00	4.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1029	89	2580	93	69	2347
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	263	23	658	24	18	599
Total Analysis Volume [veh/h]	1050	91	2633	95	70	2395
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Protected	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	25	0	50	0	20	50
Amber [s]	4.1	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.5	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	10
Pedestrian Clearance [s]	26	0	21	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.6	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	20.0	0.0	0.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.60	4.60	6.20	6.20	4.10	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.60	2.60	4.20	4.20	2.10	4.20
g_i, Effective Green Time [s]	25	25	50	50	5	59
g / C, Green / Cycle	0.26	0.26	0.53	0.53	0.05	0.62
(v / s)_i Volume / Saturation Flow Rate	0.30	0.06	0.52	0.06	0.04	0.48
s, saturation flow rate [veh/h]	3464	1615	5061	1604	1810	4975
c, Capacity [veh/h]	914	426	2670	846	93	3096
d1, Uniform Delay [s]	34.88	27.21	22.04	11.24	44.36	13.04
k, delay calibration	0.06	0.04	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	68.75	0.09	2.66	0.02	4.57	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.15	0.21	0.99	0.11	0.75	0.77
d, Delay for Lane Group [s/veh]	103.63	27.30	24.70	11.26	48.93	13.20
Lane Group LOS	F	C	C	B	D	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	19.09	1.62	16.85	0.90	1.68	9.87
50th-Percentile Queue Length [ft/ln]	477.33	40.54	421.23	22.47	41.92	246.64
95th-Percentile Queue Length [veh/ln]	28.40	2.92	23.58	1.62	3.02	15.02
95th-Percentile Queue Length [ft/ln]	710.00	72.96	589.52	40.44	75.45	375.42

**Movement, Approach, & Intersection Results**

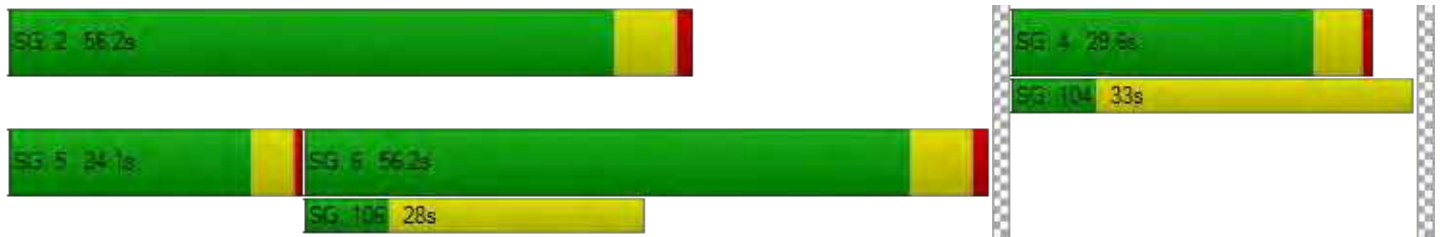
d_M, Delay for Movement [s/veh]	103.63	27.30	24.70	11.26	48.93	13.20
Movement LOS	F	C	C	B	D	B
d_A, Approach Delay [s/veh]	97.54		24.23		14.21	
Approach LOS	F		C		B	
d_I, Intersection Delay [s/veh]	33.54					
Intersection LOS	C					
Intersection V/C	0.953					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.99	36.99	36.99
I_p,int, Pedestrian LOS Score for Intersection	2.398	3.856	3.680
Crosswalk LOS	B	D	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	528	1056	1056
d_b, Bicycle Delay [s]	25.65	10.55	10.55
I_b,int, Bicycle LOS Score for Intersection	1.560	3.060	2.915
Bicycle LOS	A	C	C

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 199: Bafront Expwy/Bldg 21**

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.941

**Intersection Setup**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	⇐⇐		↑↑↑↑		⇐⇐↑↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 21		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	581	164	2490	60	48	1306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	14.80	14.80	4.10	4.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	581	164	2490	60	48	1306
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	148	42	635	15	12	333
Total Analysis Volume [veh/h]	593	167	2541	61	49	1333
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	



**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	0	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Maximum Green [s]	20	0	50	0	10	50
Amber [s]	3.2	0.0	5.2	0.0	3.6	5.2
All red [s]	0.5	0.0	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	0	7	0	0	7
Pedestrian Clearance [s]	26	0	21	0	0	21
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	0.0	4.2	0.0	2.1	4.2
Minimum Recall	No		Yes		No	Yes
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	87	87	87	87	87	87
L, Total Lost Time per Cycle [s]	3.70	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	20	20	50	50	57	57
g / C, Green / Cycle	0.23	0.23	0.57	0.57	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.56	0.04	0.10	0.30
s, saturation flow rate [veh/h]	1438	1365	4507	1406	471	4470
c, Capacity [veh/h]	330	313	2588	807	342	2936
d1, Uniform Delay [s]	33.54	33.54	18.10	8.26	20.44	7.31
k, delay calibration	0.50	0.50	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	104.70	112.89	2.35	0.01	0.07	0.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.17	1.19	0.98	0.08	0.14	0.45
d, Delay for Lane Group [s/veh]	138.25	146.43	20.45	8.27	20.51	7.35
Lane Group LOS	F	F	C	A	C	A
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	16.35	16.23	14.93	0.48	0.14	3.44
50th-Percentile Queue Length [ft/ln]	408.81	405.70	373.36	11.88	3.46	86.09
95th-Percentile Queue Length [veh/ln]	24.96	24.97	21.27	0.86	0.25	6.20
95th-Percentile Queue Length [ft/ln]	624.01	624.28	531.80	21.39	6.23	154.96

**Movement, Approach, & Intersection Results**

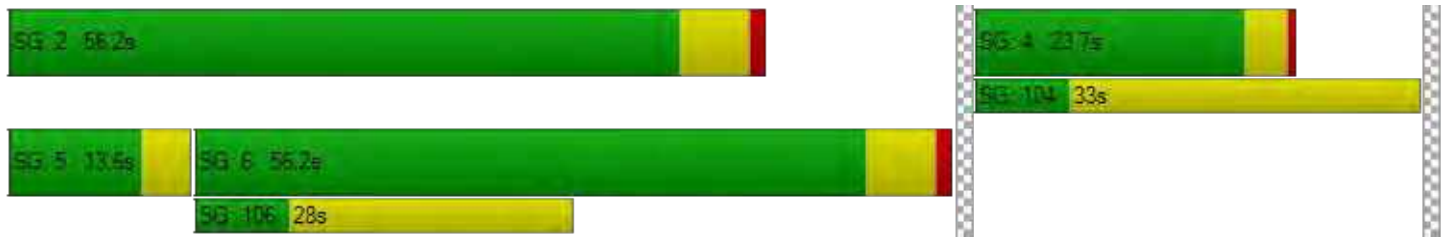
d_M, Delay for Movement [s/veh]	141.12	146.43	20.45	8.27	20.51	7.35
Movement LOS	F	F	C	A	C	A
d_A, Approach Delay [s/veh]	142.26		20.17		7.82	
Approach LOS	F		C		A	
d_I, Intersection Delay [s/veh]	36.13					
Intersection LOS	D					
Intersection V/C	0.941					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	33.21	33.21	33.21
I_p,int, Pedestrian LOS Score for Intersection	2.383	3.222	3.222
Crosswalk LOS	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	460	1149	1149
d_b, Bicycle Delay [s]	25.81	7.88	7.88
I_b,int, Bicycle LOS Score for Intersection	2.814	2.991	2.320
Bicycle LOS	C	C	B

**Sequence**




Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	All-way stop	Delay (sec / veh):	168.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.614

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	388	372	167	261	101	336
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	388	372	167	261	101	336
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	107	48	75	29	97
Total Analysis Volume [veh/h]	446	428	192	300	116	386
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	874	517	546
Degree of Utilization, x	1.61	0.95	0.92

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	48.35	12.16	11.25
95th-Percentile Queue Length [ft]	1208.81	304.08	281.27
Approach Delay [s/veh]	302.58	55.19	46.80
Approach LOS	F	F	E
Intersection Delay [s/veh]	168.68		
Intersection LOS	F		

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**Intersection Level Of Service Report**  
**Intersection 201: Bayfront Expwy/Bldg 20**

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

**Intersection Setup**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration	↱		↑↑↑↱		↰↑↑↑	
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Bldg 20		Bayfront Expressway (SR 84)		Bayfront Expressway (SR 84)	
Base Volume Input [veh/h]	0	179	2541	24	49	1374
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	19.20	3.80	3.80	8.60	8.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	179	2541	24	49	1374
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	49	698	7	13	377
Total Analysis Volume [veh/h]	0	197	2792	26	54	1510
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Split	Split	Permissive	Permissive	ProtPerm	Permissive
Signal Group	4	4	6	0	5	2
Auxiliary Signal Groups						
Lead / Lag	Lag	-	-	-	Lead	-
Minimum Green [s]	5	5	10	0	5	10
Maximum Green [s]	20	20	50	0	10	50
Amber [s]	3.2	3.2	5.2	0.0	3.6	5.2
All red [s]	0.5	0.5	1.0	0.0	0.0	1.0
Split [s]	0	0	0	0	0	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	7	7	0	0	0	0
Pedestrian Clearance [s]	26	26	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No			No
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	1.7	1.7	4.2	0.0	2.1	4.2
Minimum Recall		No	Yes		No	Yes
Maximum Recall		No	No		No	No
Pedestrian Recall		No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	R	C	R	L	C
C, Cycle Length [s]	82	82	82	82	82
L, Total Lost Time per Cycle [s]	3.70	6.20	6.20	6.20	6.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.70	4.20	4.20	0.00	4.20
g_i, Effective Green Time [s]	15	50	50	57	57
g / C, Green / Cycle	0.18	0.61	0.61	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.16	0.62	0.02	0.25	0.35
s, saturation flow rate [veh/h]	1233	4518	1410	214	4342
c, Capacity [veh/h]	222	2761	862	224	3035
d1, Uniform Delay [s]	32.75	15.91	6.31	20.33	5.68
k, delay calibration	0.13	0.04	0.04	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.61	8.03	0.01	0.20	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.89	1.01	0.03	0.24	0.50
d, Delay for Lane Group [s/veh]	46.36	23.94	6.31	20.53	5.73
Lane Group LOS	D	F	A	C	A
Critical Lane Group	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.53	16.08	0.16	0.23	3.05
50th-Percentile Queue Length [ft/ln]	113.26	402.00	3.96	5.83	76.29
95th-Percentile Queue Length [veh/ln]	8.02	22.86	0.28	0.42	5.49
95th-Percentile Queue Length [ft/ln]	200.53	571.56	7.12	10.49	137.32

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	46.36	23.94	6.31	20.53	5.73
Movement LOS		D	F	A	C	A
d_A, Approach Delay [s/veh]	46.36		23.78		6.24	
Approach LOS	D		C		A	
d_I, Intersection Delay [s/veh]	18.76					
Intersection LOS	B					
Intersection V/C	0.888					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	-6.2	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.30	30.60	30.60
I_p,int, Pedestrian LOS Score for Intersection	1.911	3.191	3.223
Crosswalk LOS	A	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	1224	1224
d_b, Bicycle Delay [s]	23.31	6.16	6.16
I_b,int, Bicycle LOS Score for Intersection	1.560	3.110	2.420
Bicycle LOS	A	C	B

**Sequence**

Ring 1	-	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 207: Chilco St/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	170.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.147

**Intersection Setup**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	80.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	75.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Terminal Avenue			Chilco Street			Constitution Drive					
Base Volume Input [veh/h]	95	458	27	131	346	51	325	21	597	270	18	678
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	458	27	131	346	51	325	21	597	270	18	678
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	130	8	37	98	14	92	6	170	77	5	193
Total Analysis Volume [veh/h]	108	520	31	149	393	58	369	24	678	307	20	770
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			40			40			0		
v_di, Inbound Pedestrian Volume crossing in	0			40			40			0		
v_co, Outbound Pedestrian Volume crossing	19			0			19			0		
v_ci, Inbound Pedestrian Volume crossing mi	19			0			19			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	3	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	5	5	0	5	5	0	0	5	0	0	5	0
Maximum Green [s]	11	46	0	11	46	0	0	36	0	0	21	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	34	0	9	32	0	0	48	0	0	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	L	C	C	R	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	30	5	28	44	44	35	35
g / C, Green / Cycle	0.05	0.23	0.04	0.22	0.34	0.34	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.06	0.30	0.04	0.26	0.22	0.46	0.33	0.35
s, saturation flow rate [veh/h]	1767	1837	3431	1755	1772	1488	1687	1577
c, Capacity [veh/h]	95	424	132	378	600	504	454	425
d1, Uniform Delay [s]	61.50	50.00	62.50	51.00	36.55	41.80	47.50	47.50
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	133.38	151.39	117.25	110.23	5.51	168.56	112.43	148.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.14	1.30	1.13	1.19	0.66	1.35	1.21	1.29
d, Delay for Lane Group [s/veh]	194.88	201.39	179.75	161.23	42.07	210.36	159.93	195.59
Lane Group LOS	F	F	F	F	D	F	F	F
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	6.67	31.54	4.33	23.83	11.53	39.13	28.80	31.12
50th-Percentile Queue Length [ft/ln]	166.74	788.53	108.34	595.73	288.15	978.27	720.03	777.92
95th-Percentile Queue Length [veh/ln]	11.31	46.68	7.80	34.95	17.09	58.63	41.89	46.30
95th-Percentile Queue Length [ft/ln]	282.81	1166.94	195.00	873.66	427.34	1465.63	1047.14	1157.44

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	194.88	201.39	201.39	179.75	161.23	161.23	42.07	42.07	210.36	159.93	159.93	185.33
Movement LOS	F	F	F	F	F	F	D	D	F	F	F	F
d_A, Approach Delay [s/veh]	200.32			165.83			148.60			177.76		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	170.90											
Intersection LOS	F											
Intersection V/C	1.147											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	56.31	56.31	56.31
I_p,int, Pedestrian LOS Score for Intersection	2.621	2.759	2.368	2.467
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	462	431	677	538
d_b, Bicycle Delay [s]	38.46	40.02	28.45	34.71
I_b,int, Bicycle LOS Score for Intersection	2.647	2.550	3.327	3.370
Bicycle LOS	B	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 215: Chrysler Dr/Constitution Dr**

Control Type:	Signalized	Delay (sec / veh):	140.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.362

**Intersection Setup**

Name	Chrysler Drive						Constitution Drive					
Approach	Southbound			Eastbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Chrysler Drive						Constitution Drive					
Base Volume Input [veh/h]	349	49	39	340	150	3	60	9	238	0	490	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.60	0.00	100.00	1.50	1.80	11.10	50.00	50.00	5.10	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	349	49	39	340	150	3	60	9	238	0	490	79
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	12	10	85	38	1	15	2	60	0	123	20
Total Analysis Volume [veh/h]	349	49	39	340	150	3	60	9	238	0	490	79
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			8			7		
v_di, Inbound Pedestrian Volume crossing in	0			0			7			8		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	6	0	0	2	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	41	0	0	27	0	0	22	0	0	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	38	22	22	18	38	38
g / C, Green / Cycle	0.43	0.24	0.24	0.20	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.81	0.21	0.09	0.34	0.18	0.18
s, saturation flow rate [veh/h]	540	1609	1680	902	1629	1472
c, Capacity [veh/h]	301	387	404	182	732	625
d1, Uniform Delay [s]	35.92	33.00	28.64	36.00	18.04	18.29
k, delay calibration	0.50	0.11	0.11	0.47	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	220.80	6.54	0.59	330.50	1.67	2.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.45	0.88	0.38	1.69	0.41	0.44
d, Delay for Lane Group [s/veh]	256.72	39.54	29.22	366.50	19.71	20.49
Lane Group LOS	F	D	C	F	B	C
Critical Lane Group	Yes	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	25.13	7.66	2.78	20.61	4.46	4.21
50th-Percentile Queue Length [ft/ln]	628.35	191.57	69.59	515.15	111.50	105.27
95th-Percentile Queue Length [veh/ln]	40.98	12.20	5.01	34.17	7.92	7.58
95th-Percentile Queue Length [ft/ln]	1024.42	305.06	125.27	854.33	198.09	189.41

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	256.72	256.72	256.72	39.54	29.22	29.22	366.50	366.50	366.50	19.71	20.01	20.49
Movement LOS	F	F	F	D	C	C	F	F	F	B	C	C
d_A, Approach Delay [s/veh]	256.72			36.34			366.50			20.08		
Approach LOS	F			D			F			C		
d_I, Intersection Delay [s/veh]	140.67											
Intersection LOS	F											
Intersection V/C	1.362											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.72	34.72	34.72	34.72
I_p,int, Pedestrian LOS Score for Intersection	2.429	2.116	2.642	2.161
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	821	511	400	821
d_b, Bicycle Delay [s]	15.64	24.98	28.85	15.64
I_b,int, Bicycle LOS Score for Intersection	2.281	2.373	2.066	2.029
Bicycle LOS	B	B	B	B

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	6	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Two-way stop	Delay (sec / veh):	798.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.378

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	118	63	230	644	280	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	63	230	644	280	22
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	19	69	194	84	7
Total Analysis Volume [veh/h]	142	76	277	776	337	27
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	2.38	0.11	0.24	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	798.19	743.16	9.01	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	20.32	20.32	0.92	0.92	0.00	0.00
95th-Percentile Queue Length [ft/ln]	508.11	508.11	22.95	22.95	0.00	0.00
d_A, Approach Delay [s/veh]	779.01		2.37		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	105.39					
Intersection LOS	F					

**Intersection Level Of Service Report**  
**Intersection 265: Adam Court/ Adams Drive**

Control Type:	Two-way stop	Delay (sec / veh):	12.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.076

**Intersection Setup**

Name	Adams Drive		Adams Drive		Adams Court	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		Adams Drive		Adams Court	
Base Volume Input [veh/h]	42	209	35	15	34	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.90	7.90	14.00	14.00	12.70	17.70
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	209	35	15	34	90
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	65	11	5	10	28
Total Analysis Volume [veh/h]	52	258	43	19	42	111
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.00	0.08	0.11
d_M, Delay for Movement [s/veh]	7.48	0.00	0.00	0.00	12.58	9.75
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.11	0.11	0.00	0.00	0.70	0.70
95th-Percentile Queue Length [ft/ln]	2.68	2.68	0.00	0.00	17.48	17.48
d_A, Approach Delay [s/veh]	1.25		0.00		10.53	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.81					
Intersection LOS	B					



**Intersection Level Of Service Report**  
**Intersection 267: Willow Road(SR114)/Park Street**

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.677

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↑↑		←↑↑		←↑	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Park Street	
Base Volume Input [veh/h]	1182	324	147	1062	498	192
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1182	324	147	1062	498	192
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	296	81	37	266	125	48
Total Analysis Volume [veh/h]	1182	324	147	1062	498	192
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	8	0
Auxiliary Signal Groups						
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	57	0	16	73	67	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	74	0	13	87	53	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	11	0	0	11	11	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	L	C	L	C
C, Cycle Length [s]	65	65	65	65	65	65
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32	32	5	41	16	16
g / C, Green / Cycle	0.49	0.49	0.07	0.63	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.40	0.43	0.04	0.30	0.20	0.20
s, saturation flow rate [veh/h]	1870	1738	3459	3560	1781	1666
c, Capacity [veh/h]	923	858	248	2232	444	416
d1, Uniform Delay [s]	13.92	14.67	29.16	6.42	22.79	22.85
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.83	3.09	2.24	0.16	3.33	3.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.82	0.88	0.59	0.48	0.80	0.81
d, Delay for Lane Group [s/veh]	15.75	17.76	31.40	6.58	26.12	26.59
Lane Group LOS	B	B	C	A	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.74	8.40	1.10	2.59	5.11	4.88
50th-Percentile Queue Length [ft/ln]	193.48	209.96	27.53	64.87	127.65	122.10
95th-Percentile Queue Length [veh/ln]	12.30	13.15	1.98	4.67	8.81	8.51
95th-Percentile Queue Length [ft/ln]	307.54	328.78	49.55	116.76	220.29	212.71

**Movement, Approach, & Intersection Results**

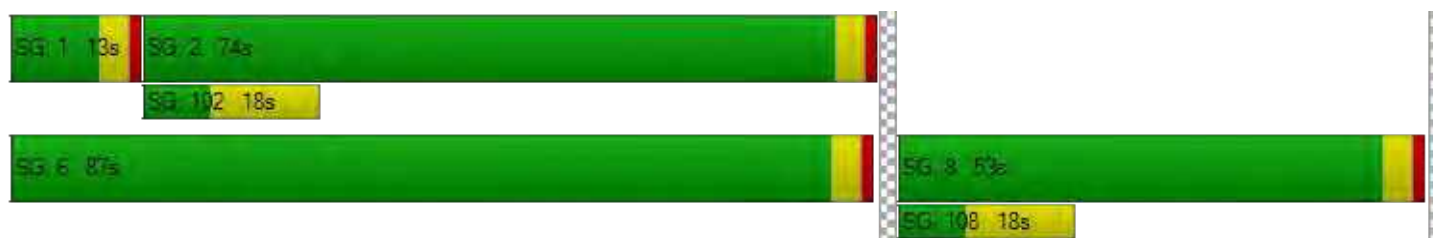
d_M, Delay for Movement [s/veh]	16.48	17.76	31.40	6.58	26.26	26.59
Movement LOS	B	B	C	A	C	C
d_A, Approach Delay [s/veh]	16.76		9.60		26.35	
Approach LOS	B		A		C	
d_I, Intersection Delay [s/veh]	16.16					
Intersection LOS	B					
Intersection V/C	0.677					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.27	22.27	22.27
I_p,int, Pedestrian LOS Score for Intersection	3.109	2.994	2.396
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2165	2567	1515
d_b, Bicycle Delay [s]	0.22	2.60	1.90
I_b,int, Bicycle LOS Score for Intersection	2.802	2.557	2.698
Bicycle LOS	C	B	B

**Sequence**

Ring 1	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 269: O'Brien Drive/Loop Road**

Control Type:	Roundabout	Delay (sec / veh):	10.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes		

**Intersection Setup**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	O'Brien Drive			East Loop Road			Main Street			O'Brien Drive		
Base Volume Input [veh/h]	49	88	57	256	292	114	37	56	102	162	86	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	88	57	256	292	114	37	56	102	162	86	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	22	14	64	73	29	9	14	26	41	22	19
Total Analysis Volume [veh/h]	49	88	57	256	292	114	37	56	102	162	86	77
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	356			303			724			177		
Exiting Flow Rate [veh/h]	567			206			254			376		
Demand Flow Rate [veh/h]	49	88	57	256	292	114	37	56	102	162	86	77
Adjusted Demand Flow Rate [veh/h]	49	88	57	256	292	114	37	56	102	162	86	77

**Lanes**

Overwrite Calculated Critical Headway	No			No			No			No		
User-Defined Critical Headway [s]	4.00			4.00			4.00			4.00		
Overwrite Calculated Follow-Up Time	No			No			No			No		
User-Defined Follow-Up Time [s]	3.00			3.00			3.00			3.00		
A (intercept)	1380.00			1380.00			1380.00			1380.00		
B (coefficient)	0.00102			0.00102			0.00102			0.00102		
HV Adjustment Factor	0.98			0.98			0.98			0.98		
Entry Flow Rate [veh/h]	198			676			199			332		
Capacity of Entry and Bypass Lanes [veh/h]	960			1014			660			1152		
Pedestrian Impedance	1.00			1.00			1.00			1.00		
Capacity per Entry Lane [veh/h]	941			994			647			1129		
X, volume / capacity	0.21			0.67			0.30			0.29		

**Movement, Approach, & Intersection Results**

Lane LOS	A			B			A			A		
95th-Percentile Queue Length [veh]	0.77			5.31			1.27			1.20		
95th-Percentile Queue Length [ft]	19.32			132.82			31.69			29.96		
Approach Delay [s/veh]	5.85			13.88			9.47			5.91		
Approach LOS	A			B			A			A		
Intersection Delay [s/veh]	10.24											
Intersection LOS	B											

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12/9/2021

**Turning Movement Volume: Summary**

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	969		1175		1311	427	3882

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2	Marsh Rd/Rolison Rd-Scott Dr	50	1326	7	76	1038	263	15	6	414	299	6	4	3504

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	296	675	54	13	1013	354	461	34	230	125	87	40	3382

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Marsh Rd/Bay Rd	2	745	61	434	723	56	95	25	2	65	90	310	2608

ID	Intersection Name	Northeastbound		Northwestbound		Southeastbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	137	541	468	638	465	104	2353

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	34	32	32	224	0	271	2	772	137	323	706	2	2535

ID	Intersection Name	Northeastbound		Southwestbound		Northwestbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	3762	20	359	970	68	1868	7047



ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	196	95	1142	159	332	146	76	2263	379	559	842	34	6223

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	44	1281	22	271	1102	54	123	8	35	72	15	320	3347

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	244	933	1447	52	163	114	2953

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	1000	492	57	1184	274	204	3211

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	268	1389	355	78	1354	26	27	195	624	346	285	56	5003

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	40	1319	809	283	349	40	2840

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	9	1052	4	29	541	18	142	31	38	21	8	47	1940

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	21	693	5	2	687	109	147	2	49	15	4	6	1740

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	3	656	119	54	703	10	44	120	5	81	52	58	1905

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd-Willow Rd	30	281	269	372	126	299	134	478	184	277	684	22	3156

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	Left	Right	
110	Marsh Road/101 NB Ramps	1912		1568		570	891	4941

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	22	382	18	76	781	36	21	124	23	7	16	56	1562

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	194	40	1694	12	31	5	9	752	232	2657	802	14	6442

ID	Intersection Name	Northbound		Southbound		Southeastbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	1036	199	1142	863	799	352	4391

ID	Intersection Name	Northbound		Southbound		Northwestbound		Total Volume
		Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	1376	470	1637	784	345	859	5471

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	768	555	2535	280	219	1966	6323

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	1029	89	2580	93	69	2347	6207

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	581	164	2490	60	48	1306	4649

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	388	372	167	261	101	336	1625

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Right		Thru	Right	Left	Thru	
201	Bayfront Expwy/Bldg 20	179		2541	24	49	1374	4167

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	95	458	27	131	346	51	325	21	597	270	18	678	3017

ID	Intersection Name	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	349	49	39	340	150	3	60	9	238	0	490	79	1806

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	118	63	230	644	280	22	1357

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	42	209	35	15	34	90	425

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
267	Willow Road(SR114)/Park Street	1182	324	147	1062	498	192	3405

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
269	O'Brien Drive/Loop Road	49	88	57	256	292	114	37	56	102	162	86	77	1376

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12/9/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Thru		Thru		Left	Right	
1	Marsh Rd (SR 84)/US 101 SB Offramp	Final Base	969		1175		1311	427	3882
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>969</b>		<b>1175</b>		<b>1311</b>	<b>427</b>	<b>3882</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
2	Marsh Rd/Rolison Rd-Scott Dr	Final Base	50	1326	7	76	1038	263	15	6	414	299	6	4	3504	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>50</b>	<b>1326</b>	<b>7</b>	<b>76</b>	<b>1038</b>	<b>263</b>	<b>15</b>	<b>6</b>	<b>414</b>	<b>299</b>	<b>6</b>	<b>4</b>	<b>3504</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	296	675	54	13	1013	354	461	34	230	125	87	40	3382	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>296</b>	<b>675</b>	<b>54</b>	<b>13</b>	<b>1013</b>	<b>354</b>	<b>461</b>	<b>34</b>	<b>230</b>	<b>125</b>	<b>87</b>	<b>40</b>	<b>3382</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
4	Marsh Rd/Bay Rd	Final Base	2	745	61	434	723	56	95	25	2	65	90	310	2608	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>2</b>	<b>745</b>	<b>61</b>	<b>434</b>	<b>723</b>	<b>56</b>	<b>95</b>	<b>25</b>	<b>2</b>	<b>65</b>	<b>90</b>	<b>310</b>	<b>2608</b>	

ID	Intersection Name	Volume Type	Northeastbound		Northwestbound		Southeastbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
9	Middlefield Rd/Ravenswood Ave	Final Base	137	541	468	638	465	104	2353
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>137</b>	<b>541</b>	<b>468</b>	<b>638</b>	<b>465</b>	<b>104</b>	<b>2353</b>

ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Middlefield Rd/Ringwood Ave	Final Base	34	32	32	224	0	271	2	772	137	323	706	2	2535
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>34</b>	<b>32</b>	<b>32</b>	<b>224</b>	<b>0</b>	<b>271</b>	<b>2</b>	<b>772</b>	<b>137</b>	<b>323</b>	<b>706</b>	<b>2</b>	<b>2535</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Northwestbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
15	Bayfront Expy (SR 84) /University Ave (SR 109)	Final Base	3762	20	359	970	68	1868	7047
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3762</b>	<b>20</b>	<b>359</b>	<b>970</b>	<b>68</b>	<b>1868</b>	<b>7047</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16	Bayfront Expy (SR 84)/Willow Rd (SR 114)	Final Base	196	95	1142	159	332	146	76	2263	379	559	842	34	6223
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>196</b>	<b>95</b>	<b>1142</b>	<b>159</b>	<b>332</b>	<b>146</b>	<b>76</b>	<b>2263</b>	<b>379</b>	<b>559</b>	<b>842</b>	<b>34</b>	<b>6223</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Willow Rd (SR 114)/Hamilton Ave	Final Base	44	1281	22	271	1102	54	123	8	35	72	15	320	3347
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>44</b>	<b>1281</b>	<b>22</b>	<b>271</b>	<b>1102</b>	<b>54</b>	<b>123</b>	<b>8</b>	<b>35</b>	<b>72</b>	<b>15</b>	<b>320</b>	<b>3347</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	244	933	1447	52	163	114	2953
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>244</b>	<b>933</b>	<b>1447</b>	<b>52</b>	<b>163</b>	<b>114</b>	<b>2953</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
19	Willow Rd (SR 114)/O'Brien Dr	Final Base	1000	492	57	1184	274	204	3211
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1000</b>	<b>492</b>	<b>57</b>	<b>1184</b>	<b>274</b>	<b>204</b>	<b>3211</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	268	1389	355	78	1354	26	27	195	624	346	285	56	5003
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>268</b>	<b>1389</b>	<b>355</b>	<b>78</b>	<b>1354</b>	<b>26</b>	<b>27</b>	<b>195</b>	<b>624</b>	<b>346</b>	<b>285</b>	<b>56</b>	<b>5003</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	40	1319	809	283	349	40	2840
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>40</b>	<b>1319</b>	<b>809</b>	<b>283</b>	<b>349</b>	<b>40</b>	<b>2840</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	9	1052	4	29	541	18	142	31	38	21	8	47	1940
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>1052</b>	<b>4</b>	<b>29</b>	<b>541</b>	<b>18</b>	<b>142</b>	<b>31</b>	<b>38</b>	<b>21</b>	<b>8</b>	<b>47</b>	<b>1940</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
23	Willow Rd/Coleman Ave	Final Base	21	693	5	2	687	109	147	2	49	15	4	6	1740
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>21</b>	<b>693</b>	<b>5</b>	<b>2</b>	<b>687</b>	<b>109</b>	<b>147</b>	<b>2</b>	<b>49</b>	<b>15</b>	<b>4</b>	<b>6</b>	<b>1740</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
24	Willow Rd/Gilbert Ave	Final Base	3	656	119	54	703	10	44	120	5	81	52	58	1905
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>3</b>	<b>656</b>	<b>119</b>	<b>54</b>	<b>703</b>	<b>10</b>	<b>44</b>	<b>120</b>	<b>5</b>	<b>81</b>	<b>52</b>	<b>58</b>	<b>1905</b>



ID	Intersection Name	Volume Type	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
25	Middlefield Rd- Willow Rd	Final Base	30	281	269	372	126	299	134	478	184	277	684	22	3156
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>30</b>	<b>281</b>	<b>269</b>	<b>372</b>	<b>126</b>	<b>299</b>	<b>134</b>	<b>478</b>	<b>184</b>	<b>277</b>	<b>684</b>	<b>22</b>	<b>3156</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru		Thru		Left	Right	
110	Marsh Road/101 NB Ramps	Final Base	1912		1568		570	891	4941
		Growth Factor	1.00		1.00		1.00	1.00	-
		In Process	0		0		0	0	0
		Net New Trips	0		0		0	0	0
		Other	0		0		0	0	0
		<b>Future Total</b>	<b>1912</b>		<b>1568</b>		<b>570</b>	<b>891</b>	<b>4941</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	22	382	18	76	781	36	21	124	23	7	16	56	1562
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>382</b>	<b>18</b>	<b>76</b>	<b>781</b>	<b>36</b>	<b>21</b>	<b>124</b>	<b>23</b>	<b>7</b>	<b>16</b>	<b>56</b>	<b>1562</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
163	Bayfront Expy/Marsh Rd	Final Base	194	40	1694	12	31	5	9	752	232	2657	802	14	6442
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>194</b>	<b>40</b>	<b>1694</b>	<b>12</b>	<b>31</b>	<b>5</b>	<b>9</b>	<b>752</b>	<b>232</b>	<b>2657</b>	<b>802</b>	<b>14</b>	<b>6442</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Southeastbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
165	Willow Rd/US-101 SB Ramps	Final Base	1036	199	1142	863	799	352	4391
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1036</b>	<b>199</b>	<b>1142</b>	<b>863</b>	<b>799</b>	<b>352</b>	<b>4391</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Northwestbound		Total Volume
			Thru	Right	Thru	Right	2	Right	
168	Willow Rd/US-101 NB Ramps	Final Base	1376	470	1637	784	345	859	5471
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1376</b>	<b>470</b>	<b>1637</b>	<b>784</b>	<b>345</b>	<b>859</b>	<b>5471</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
195	Bayfront Expy/Chilco St	Final Base	768	555	2535	280	219	1966	6323
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>768</b>	<b>555</b>	<b>2535</b>	<b>280</b>	<b>219</b>	<b>1966</b>	<b>6323</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
196	Bayfront Expy/Chrysler Drive	Final Base	1029	89	2580	93	69	2347	6207
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1029</b>	<b>89</b>	<b>2580</b>	<b>93</b>	<b>69</b>	<b>2347</b>	<b>6207</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
199	Bafront Expwy/Bldg 21	Final Base	581	164	2490	60	48	1306	4649
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>581</b>	<b>164</b>	<b>2490</b>	<b>60</b>	<b>48</b>	<b>1306</b>	<b>4649</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	388	372	167	261	101	336	1625
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>388</b>	<b>372</b>	<b>167</b>	<b>261</b>	<b>101</b>	<b>336</b>	<b>1625</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Right	Thru	Right	Left	Thru		
201	Bayfront Expwy/Bldg 20	Final Base	179	2541	24	49	1374	4167	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	-	
		In Process	0	0	0	0	0	0	
		Net New Trips	0	0	0	0	0	0	
		Other	0	0	0	0	0	0	
		<b>Future Total</b>	<b>179</b>	<b>2541</b>	<b>24</b>	<b>49</b>	<b>1374</b>	<b>4167</b>	

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
207	Chilco St/Constitution Dr	Final Base	95	458	27	131	346	51	325	21	597	270	18	678	3017
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>95</b>	<b>458</b>	<b>27</b>	<b>131</b>	<b>346</b>	<b>51</b>	<b>325</b>	<b>21</b>	<b>597</b>	<b>270</b>	<b>18</b>	<b>678</b>	<b>3017</b>

ID	Intersection Name	Volume Type	Southbound			Eastbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
215	Chrysler Dr/Constitution Dr	Final Base	349	49	39	340	150	3	60	9	238	0	490	79	1806
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>349</b>	<b>49</b>	<b>39</b>	<b>340</b>	<b>150</b>	<b>3</b>	<b>60</b>	<b>9</b>	<b>238</b>	<b>0</b>	<b>490</b>	<b>79</b>	<b>1806</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	118	63	230	644	280	22	1357
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>118</b>	<b>63</b>	<b>230</b>	<b>644</b>	<b>280</b>	<b>22</b>	<b>1357</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
265	Adam Court/ Adams Drive	Final Base	42	209	35	15	34	90	425
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>42</b>	<b>209</b>	<b>35</b>	<b>15</b>	<b>34</b>	<b>90</b>	<b>425</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
267	Willow Road (SR114)/Park Street	Final Base	1182	324	147	1062	498	192	3405
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1182</b>	<b>324</b>	<b>147</b>	<b>1062</b>	<b>498</b>	<b>192</b>	<b>3405</b>

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ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
269	O'Brien Drive/Loop Road	Final Base	49	88	57	256	292	114	37	56	102	162	86	77	1376	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>49</b>	<b>88</b>	<b>57</b>	<b>256</b>	<b>292</b>	<b>114</b>	<b>37</b>	<b>56</b>	<b>102</b>	<b>162</b>	<b>86</b>	<b>77</b>	<b>1376</b>	

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## Signal Warrants Report For Intersection 131: Chilco Street/Hamilton Avenue

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	S	N	E	W
1	422	893	79	168
2	409	866	77	163
3	401	848	75	160
4	376	795	70	150
5	333	705	62	133
6	329	697	62	131
7	325	688	61	129
8	295	625	55	118
9	291	616	55	116
10	287	607	54	114
11	249	527	47	99
12	232	491	43	92
13	228	482	43	91
14	169	357	32	67
15	169	357	32	67
16	118	250	22	47
17	68	143	13	27
18	68	143	13	27
19	38	80	7	15
20	21	45	4	8
21	13	27	2	5
22	4	9	1	2
23	4	9	1	2
24	4	9	1	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1315	1	168	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1275	1	163	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1249	1	160	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	1171	1	150	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	1038	1	133	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	1026	1	131	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	1013	1	129	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	920	1	118	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	907	1	116	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
10	1	894	1	114	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
11	1	776	1	99	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No
12	1	723	1	92	No	No	No	Yes	No	Yes	Yes	Yes	No	No
13	1	710	1	91	No	No	No	Yes	No	Yes	Yes	Yes	No	No
14	1	526	1	67	No	No	No	No	No	No	Yes	Yes	No	No
15	1	526	1	67	No	No	No	No	No	No	Yes	Yes	No	No
16	1	368	1	47	No	No	No	No	No	No	No	No	No	No
17	1	211	1	27	No	No	No	No	No	No	No	No	No	No
18	1	211	1	27	No	No	No	No	No	No	No	No	No	No
19	1	118	1	15	No	No	No	No	No	No	No	No	No	No
20	1	66	1	8	No	No	No	No	No	No	No	No	No	No
21	1	40	1	5	No	No	No	No	No	No	No	No	No	No
22	1	13	1	2	No	No	No	No	No	No	No	No	No	No
23	1	13	1	2	No	No	No	No	No	No	No	No	No	No
24	1	13	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	7	10	13	11	13	15	15	8	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.6	14.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:15	0:39
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	79	168
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1562	1562
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 200: O'Brien Drive/Kavanaugh Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	428	760	437
2	415	737	424
3	407	722	415
4	381	676	389
5	338	600	345
6	334	593	341
7	330	585	336
8	300	532	306
9	295	524	302
10	291	517	297
11	253	448	258
12	235	418	240
13	231	410	236
14	171	304	175
15	171	304	175
16	120	213	122
17	68	122	70
18	68	122	70
19	39	68	39
20	21	38	22
21	13	23	13
22	4	8	4
23	4	8	4
24	4	8	4



## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1188	1	437	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	1	1152	1	424	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	1	1129	1	415	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	1	1057	1	389	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	1	938	1	345	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	1	927	1	341	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	1	915	1	336	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	1	832	1	306	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
9	1	819	1	302	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	1	808	1	297	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	1	701	1	258	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	1	653	1	240	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	1	641	1	236	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
14	1	475	1	175	No	Yes	Yes	Yes	No	No	No	Yes	No	No
15	1	475	1	175	No	Yes	Yes	Yes	No	No	No	Yes	No	No
16	1	333	1	122	No	No	No	Yes	No	No	No	No	No	No
17	1	190	1	70	No	No	No	No	No	No	No	No	No	No
18	1	190	1	70	No	No	No	No	No	No	No	No	No	No
19	1	107	1	39	No	No	No	No	No	No	No	No	No	No
20	1	59	1	22	No	No	No	No	No	No	No	No	No	No
21	1	36	1	13	No	No	No	No	No	No	No	No	No	No
22	1	12	1	4	No	No	No	No	No	No	No	No	No	No
23	1	12	1	4	No	No	No	No	No	No	No	No	No	No
24	1	12	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					13	15	15	16	10	13	13	15	13	7

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	46.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	5:40
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	437
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1625
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>

## Signal Warrants Report For Intersection 264: Adams Drive/O'Brien Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	302	874	181
2	293	848	176
3	287	830	172
4	269	778	161
5	239	690	143
6	236	682	141
7	233	673	139
8	211	612	127
9	208	603	125
10	205	594	123
11	178	516	107
12	166	481	100
13	163	472	98
14	121	350	72
15	121	350	72
16	85	245	51
17	48	140	29
18	48	140	29
19	27	79	16
20	15	44	9
21	9	26	5
22	3	9	2
23	3	9	2
24	3	9	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	1176	1	181	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
2	1	1141	1	176	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3	1	1117	1	172	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
4	1	1047	1	161	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
5	1	929	1	143	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
6	1	918	1	141	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
7	1	906	1	139	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
8	1	823	1	127	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
9	1	811	1	125	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
10	1	799	1	123	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
11	1	694	1	107	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No
12	1	647	1	100	No	No	No	Yes	No	Yes	Yes	Yes	No	No
13	1	635	1	98	No	No	No	Yes	No	Yes	Yes	Yes	No	No
14	1	471	1	72	No	No	No	No	No	No	No	Yes	No	No
15	1	471	1	72	No	No	No	No	No	No	No	Yes	No	No
16	1	330	1	51	No	No	No	No	No	No	No	No	No	No
17	1	188	1	29	No	No	No	No	No	No	No	No	No	No
18	1	188	1	29	No	No	No	No	No	No	No	No	No	No
19	1	106	1	16	No	No	No	No	No	No	No	No	No	No
20	1	59	1	9	No	No	No	No	No	No	No	No	No	No
21	1	35	1	5	No	No	No	No	No	No	No	No	No	No
22	1	12	1	2	No	No	No	No	No	No	No	No	No	No
23	1	12	1	2	No	No	No	No	No	No	No	No	No	No
24	1	12	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	10	11	13	10	13	13	15	7	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	779
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	39:10
Delay Condition Met	Yes
Volume on Minor Street Approach During Same Hour	181
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	1357
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	Yes
<b>Warrant Met for Intersection</b>	<b>Yes</b>

## Signal Warrants Report For Intersection 265: Adam Court/ Adams Drive

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	S, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	S	N	W
1	251	50	124
2	243	49	120
3	238	48	118
4	223	45	110
5	198	40	98
6	196	39	97
7	193	39	95
8	176	35	87
9	173	35	86
10	171	34	84
11	148	30	73
12	138	28	68
13	136	27	67
14	100	20	50
15	100	20	50
16	70	14	35
17	40	8	20
18	40	8	20
19	23	5	11
20	13	3	6
21	8	2	4
22	3	1	1
23	3	1	1
24	3	1	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	301	1	124	No	No	No	Yes	No	No	No	No	No	No
2	1	292	1	120	No	No	No	Yes	No	No	No	No	No	No
3	1	286	1	118	No	No	No	Yes	No	No	No	No	No	No
4	1	268	1	110	No	No	No	No	No	No	No	No	No	No
5	1	238	1	98	No	No	No	No	No	No	No	No	No	No
6	1	235	1	97	No	No	No	No	No	No	No	No	No	No
7	1	232	1	95	No	No	No	No	No	No	No	No	No	No
8	1	211	1	87	No	No	No	No	No	No	No	No	No	No
9	1	208	1	86	No	No	No	No	No	No	No	No	No	No
10	1	205	1	84	No	No	No	No	No	No	No	No	No	No
11	1	178	1	73	No	No	No	No	No	No	No	No	No	No
12	1	166	1	68	No	No	No	No	No	No	No	No	No	No
13	1	163	1	67	No	No	No	No	No	No	No	No	No	No
14	1	120	1	50	No	No	No	No	No	No	No	No	No	No
15	1	120	1	50	No	No	No	No	No	No	No	No	No	No
16	1	84	1	35	No	No	No	No	No	No	No	No	No	No
17	1	48	1	20	No	No	No	No	No	No	No	No	No	No
18	1	48	1	20	No	No	No	No	No	No	No	No	No	No
19	1	28	1	11	No	No	No	No	No	No	No	No	No	No
20	1	16	1	6	No	No	No	No	No	No	No	No	No	No
21	1	10	1	4	No	No	No	No	No	No	No	No	No	No
22	1	4	1	1	No	No	No	No	No	No	No	No	No	No
23	1	4	1	1	No	No	No	No	No	No	No	No	No	No
24	1	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:21
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	124
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	425
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

Study Intersections

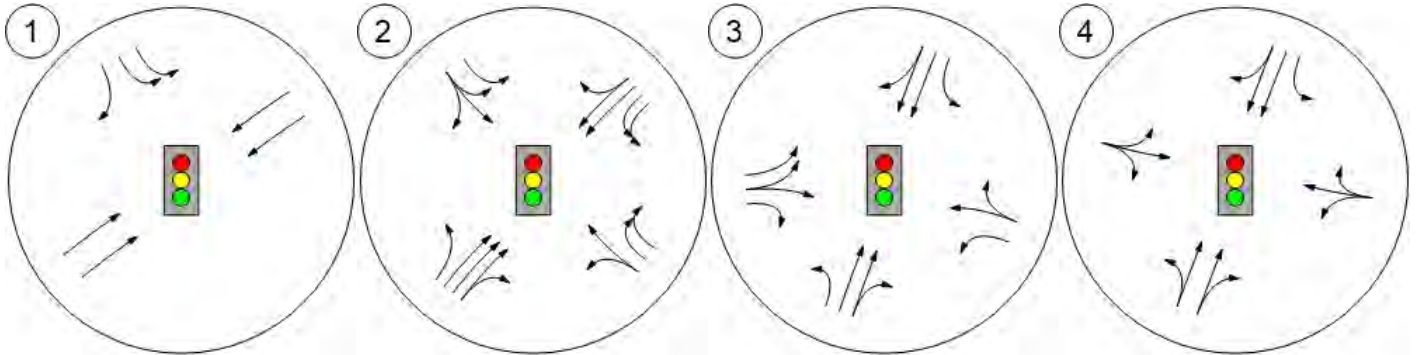


Lane Configuration and Traffic Control

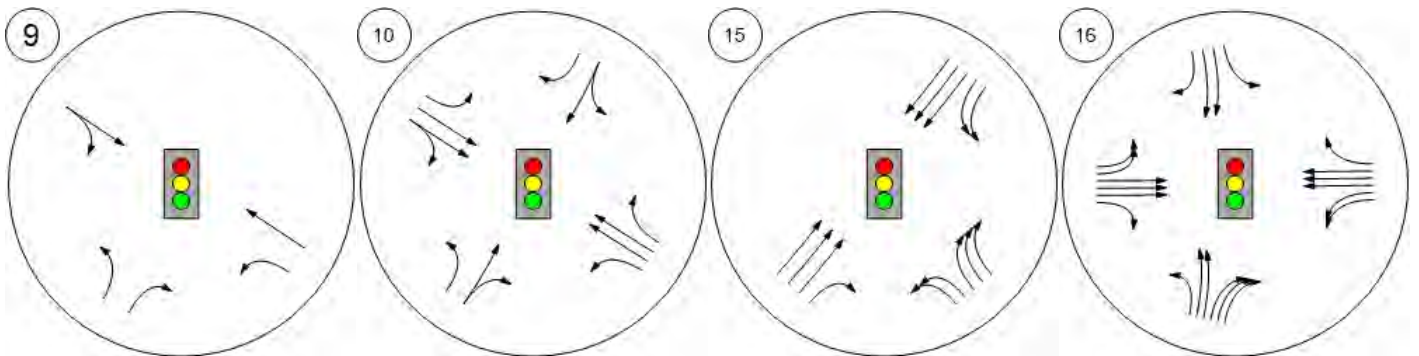


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



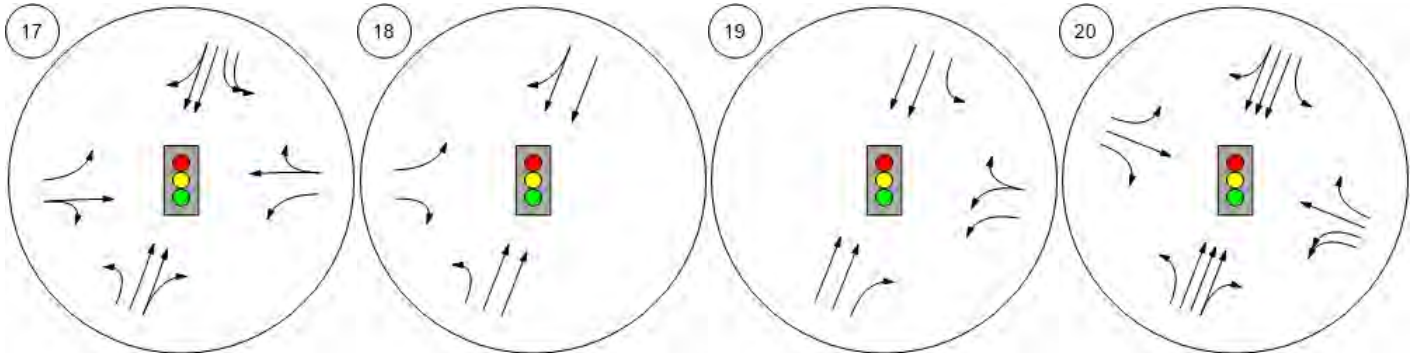
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



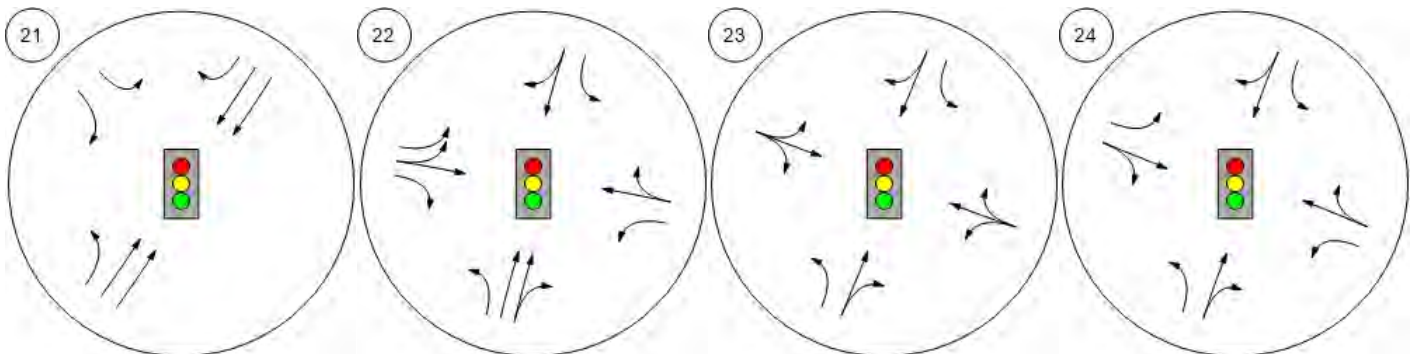
Lane Configuration and Traffic Control



Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave

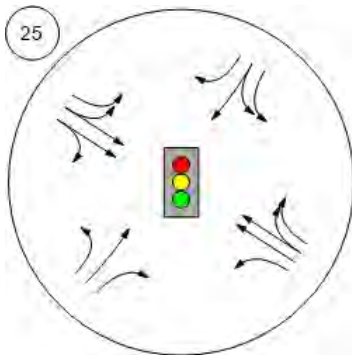




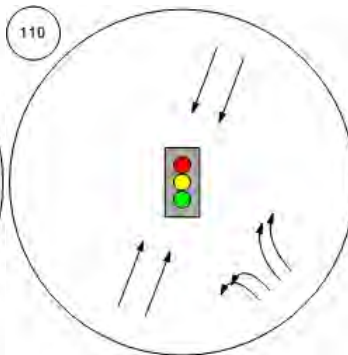
Lane Configuration and Traffic Control



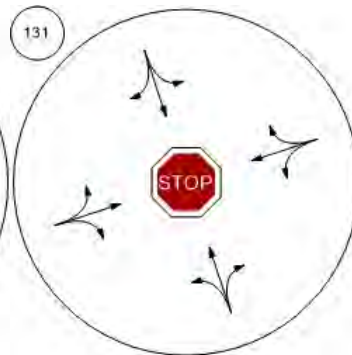
Middlefield Rd-Willow Rd



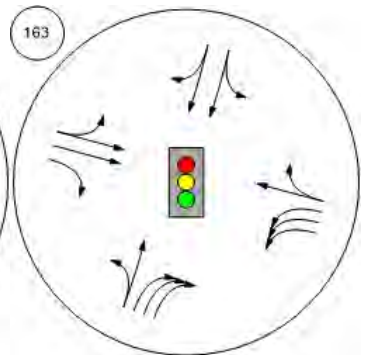
Marsh Road/101 NB Ramps



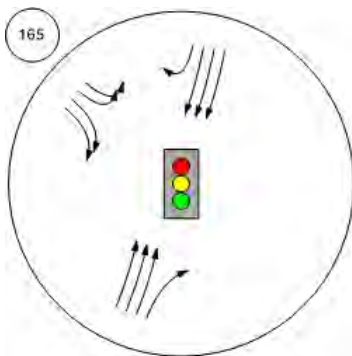
Chilco Street/Hamilton Avenue



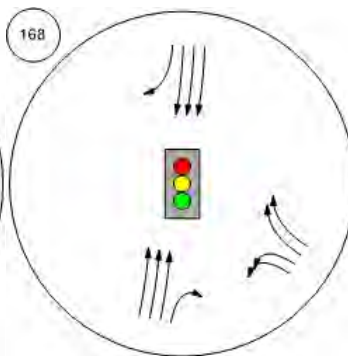
Bayfront Expy/Marsh Rd



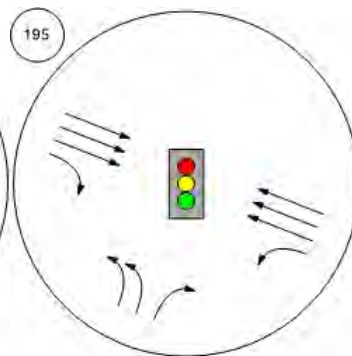
Willow Rd/US-101 SB Ramps



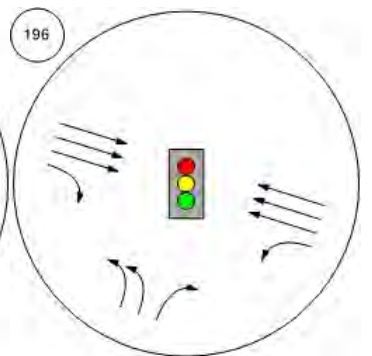
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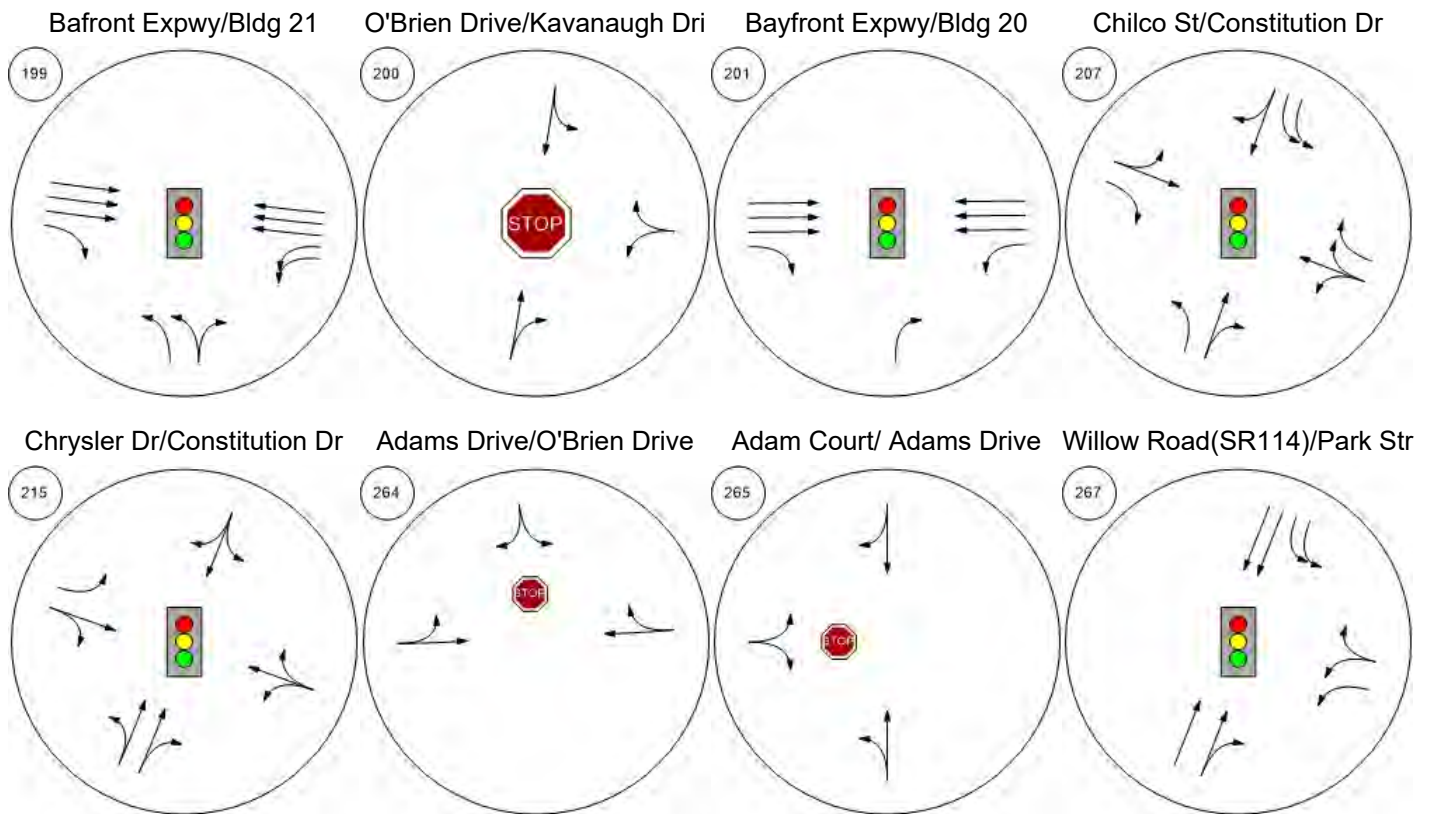
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



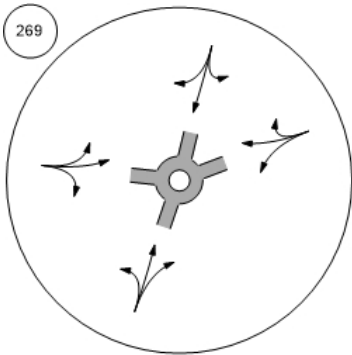
Lane Configuration and Traffic Control



Lane Configuration and Traffic Control



O'Brien Drive/Loop Road

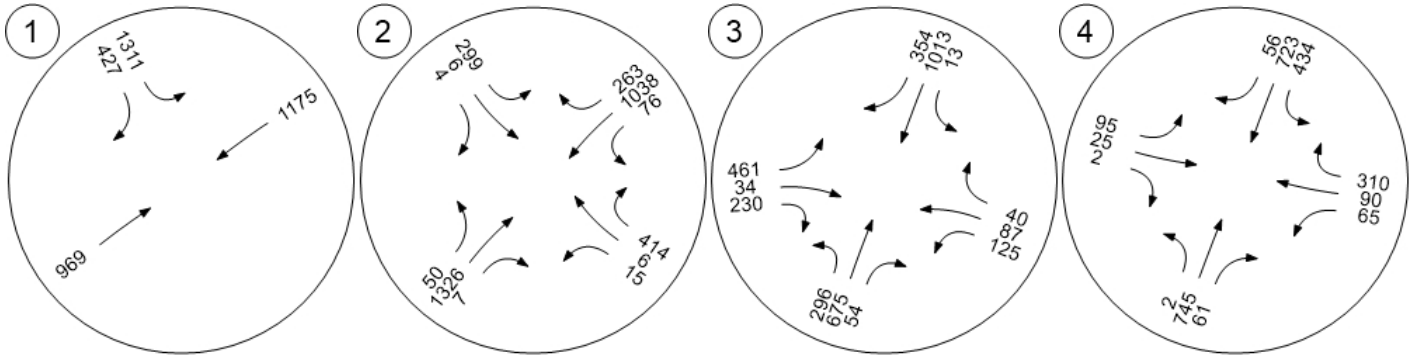


Traffic Volume - Base Volume

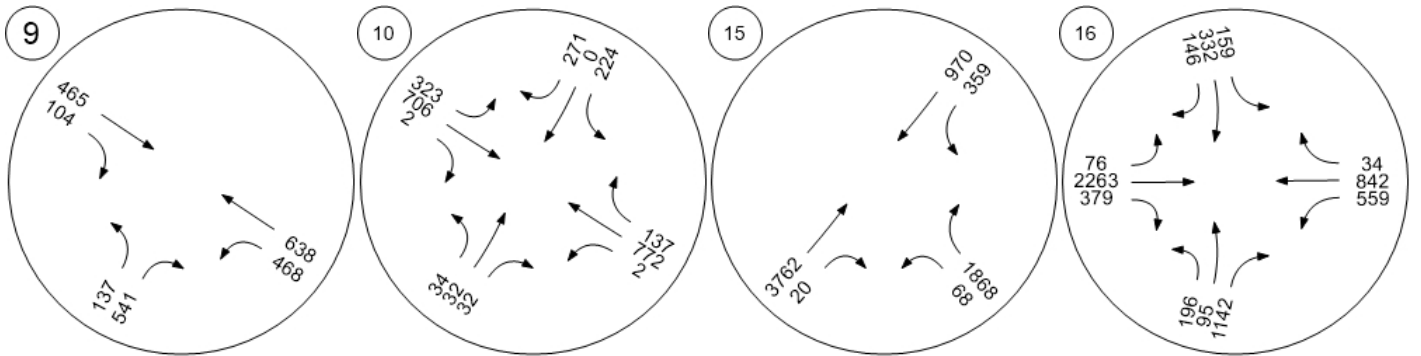


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



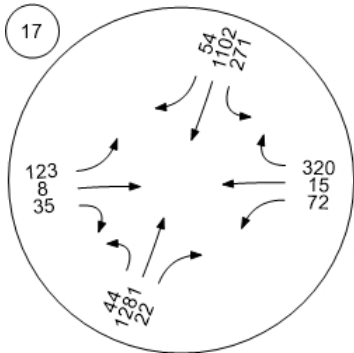
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



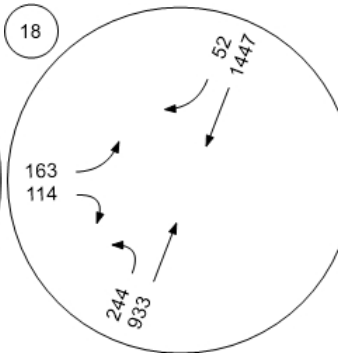
Traffic Volume - Base Volume



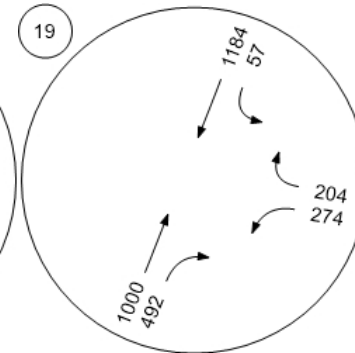
Willow Rd (SR 114)/Hamilton



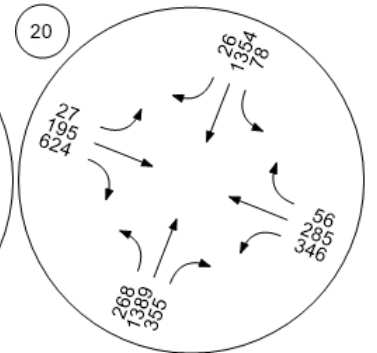
Willow Rd (SR 114)/Ivy Dr



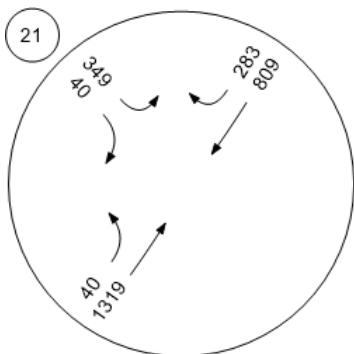
Willow Rd (SR 114)/O'Brien



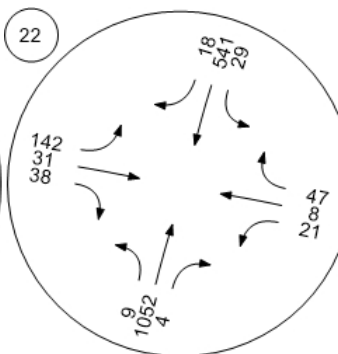
Willow Rd (SR 114)/Newbrid



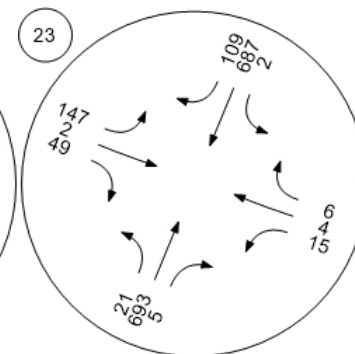
Willow Rd/Bay Rd



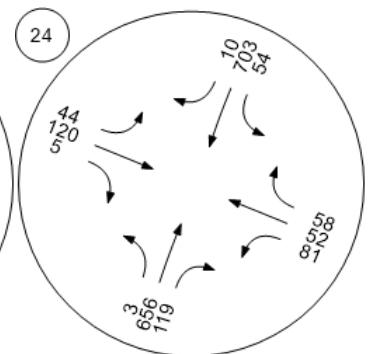
Willow Rd/Durham St-VA Me



Willow Rd/Coleman Ave



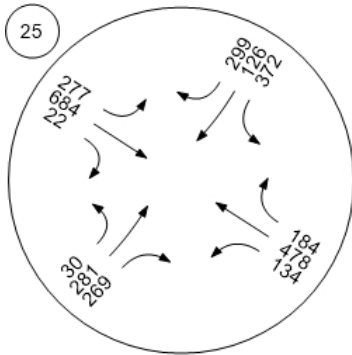
Willow Rd/Gilbert Ave



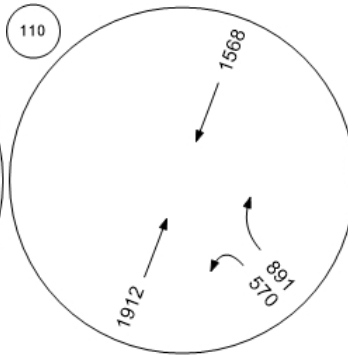
Traffic Volume - Base Volume



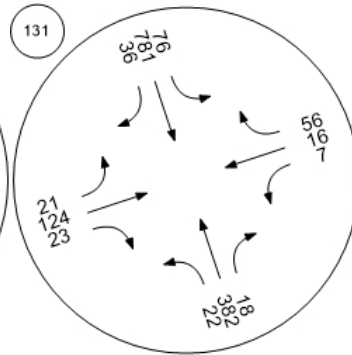
Middlefield Rd-Willow Rd



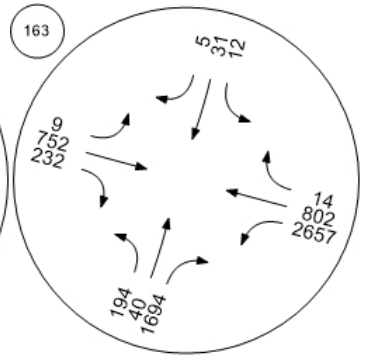
Marsh Road/101 NB Ramps



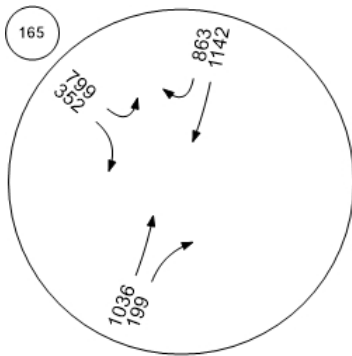
Chilco Street/Hamilton Avenue



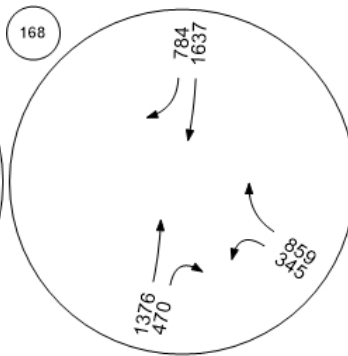
Bayfront Expy/Marsh Rd



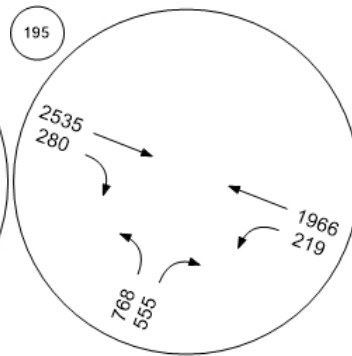
Willow Rd/US-101 SB Ramps



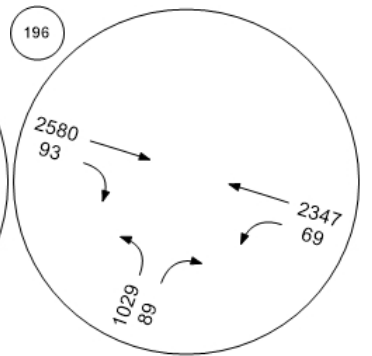
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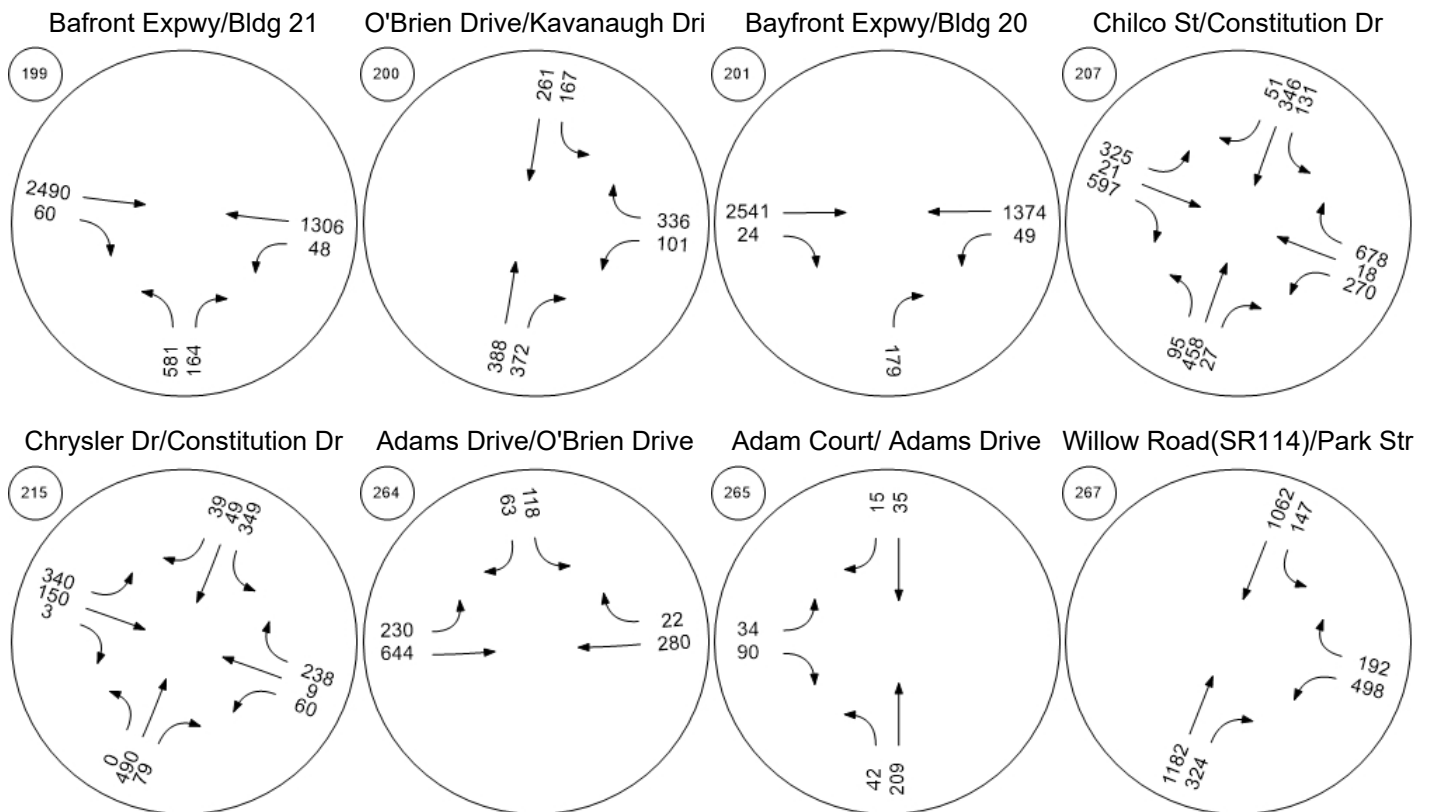
Bayfront Expy/Chilco St



Bayfront Expy/Chrysler Drive



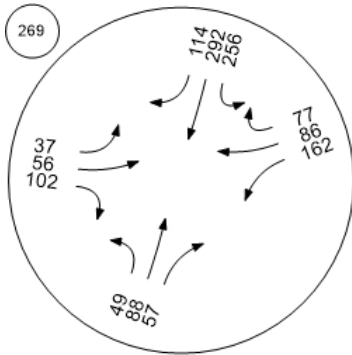
Traffic Volume - Base Volume



Traffic Volume - Base Volume



O'Brien Drive/Loop Road



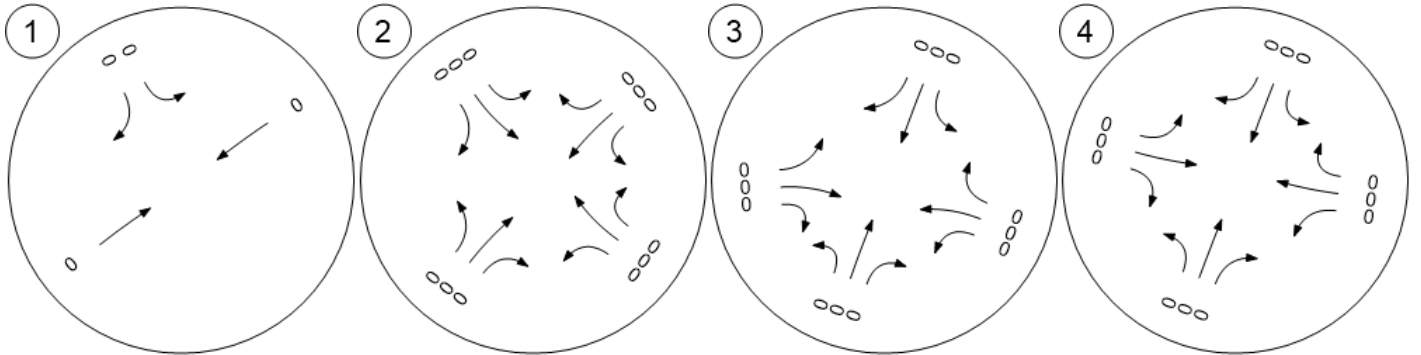


Traffic Volume - In-Process Volume

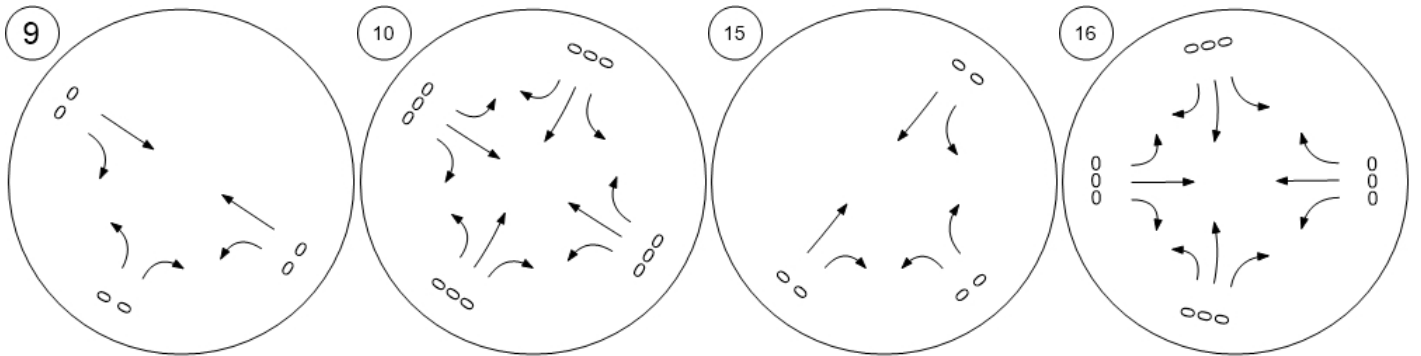


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



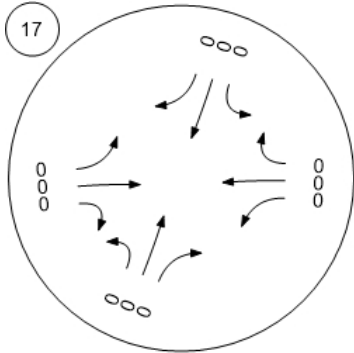
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



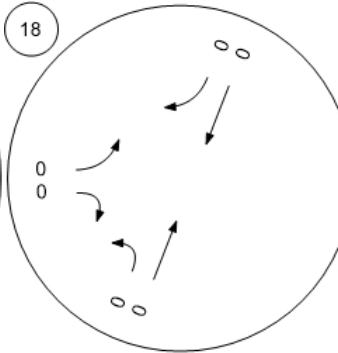
Traffic Volume - In-Process Volume



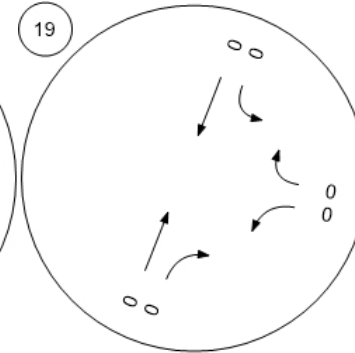
Willow Rd (SR 114)/Hamilton



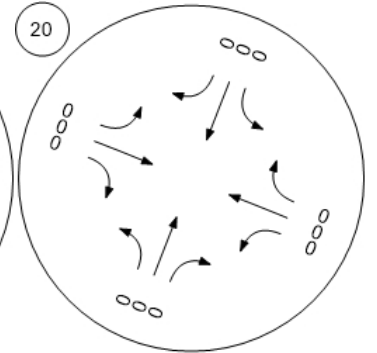
Willow Rd (SR 114)/Ivy Dr



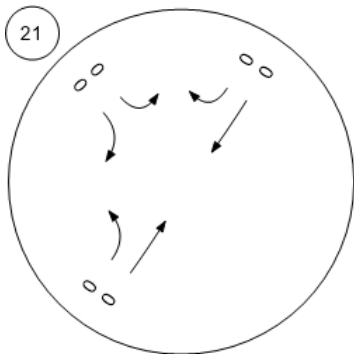
Willow Rd (SR 114)/O'Brien



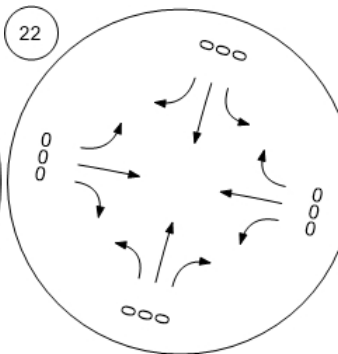
Willow Rd (SR 114)/Newbrid



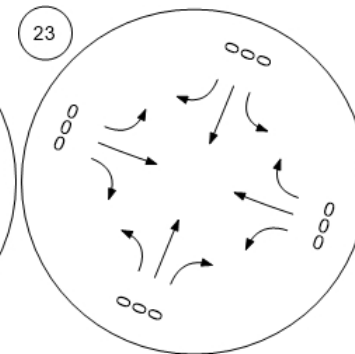
Willow Rd/Bay Rd



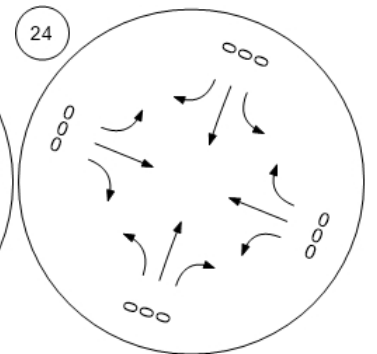
Willow Rd/Durham St-VA Me



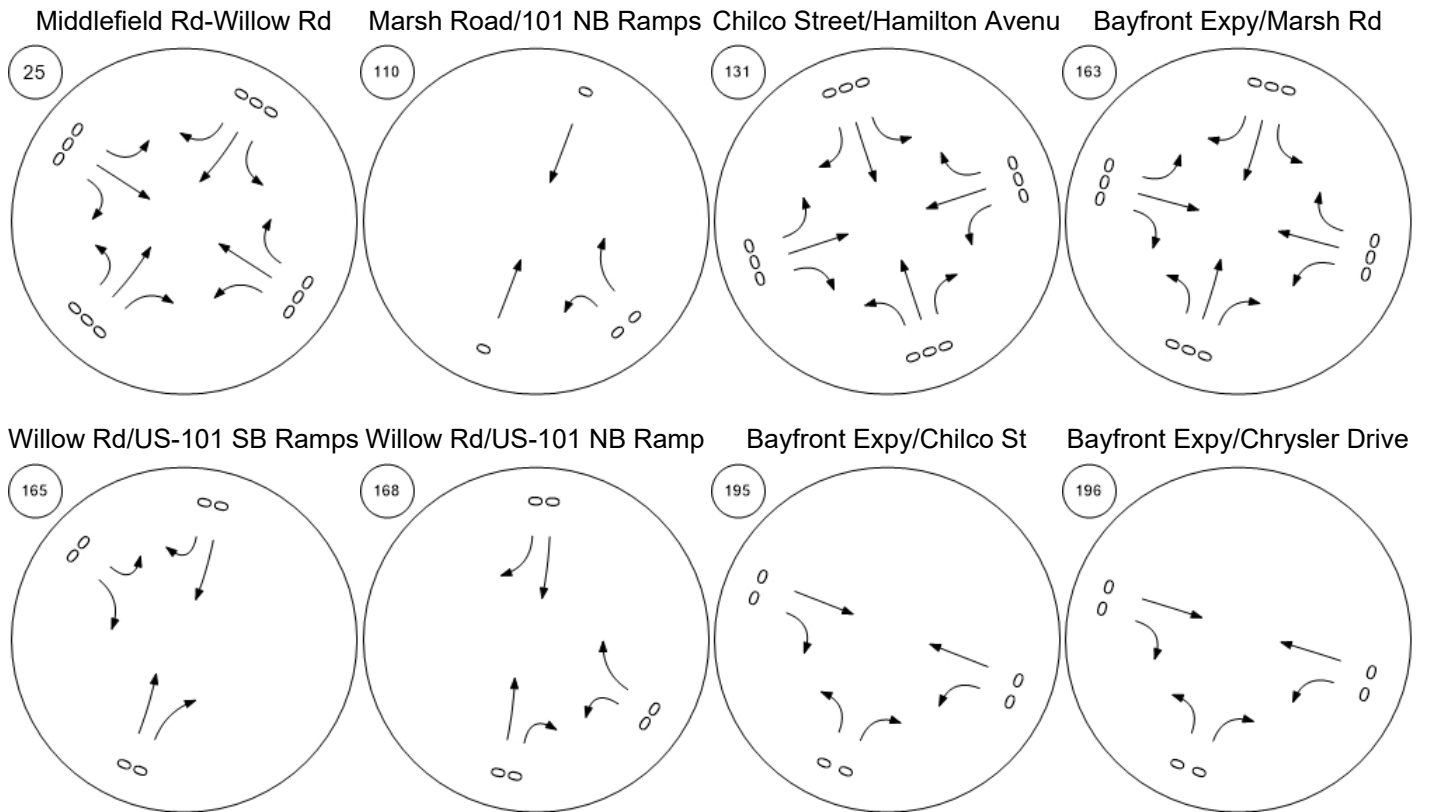
Willow Rd/Coleman Ave



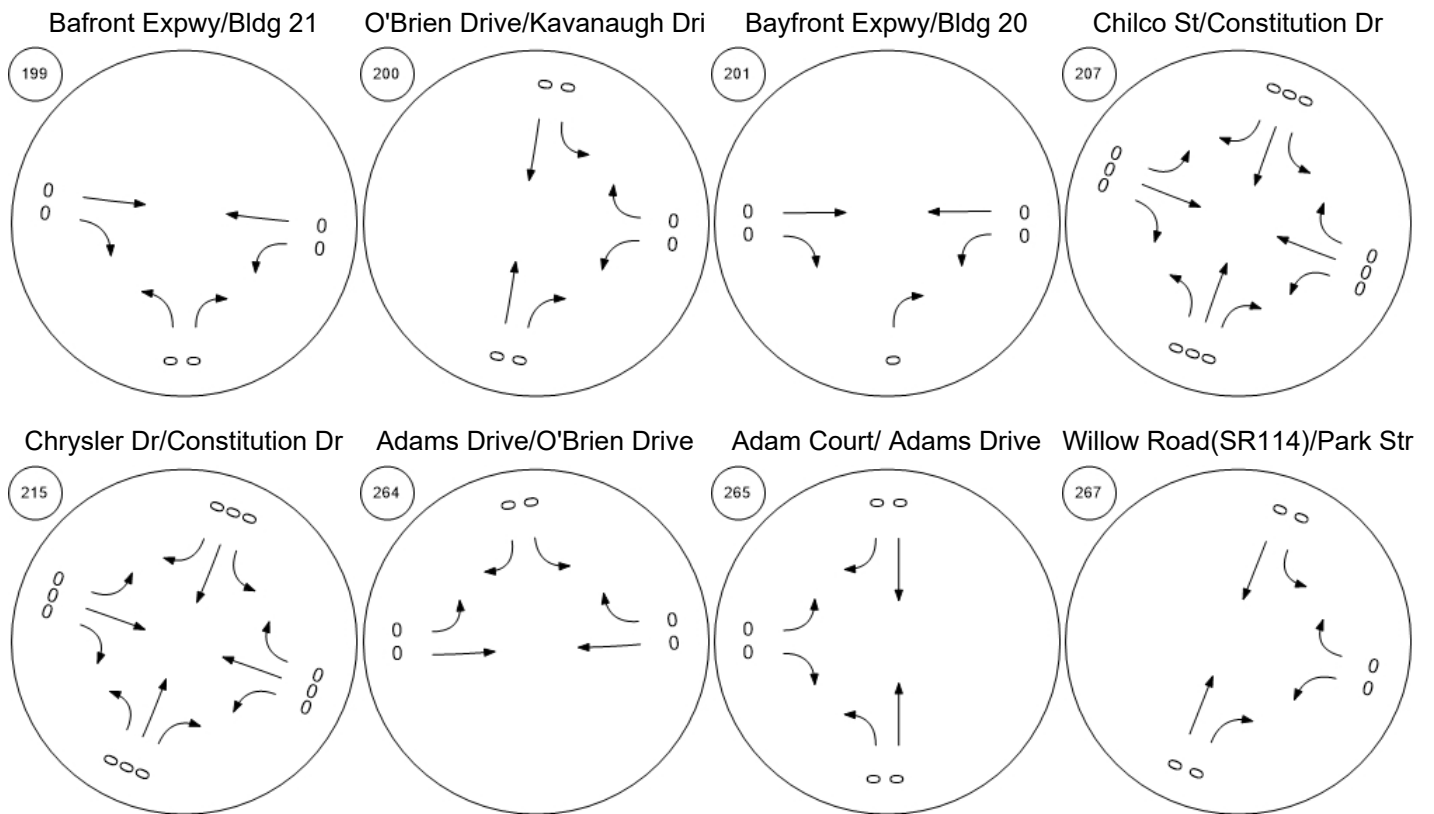
Willow Rd/Gilbert Ave



Traffic Volume - In-Process Volume



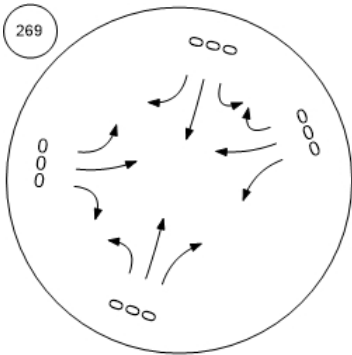
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume



O'Brien Drive/Loop Road

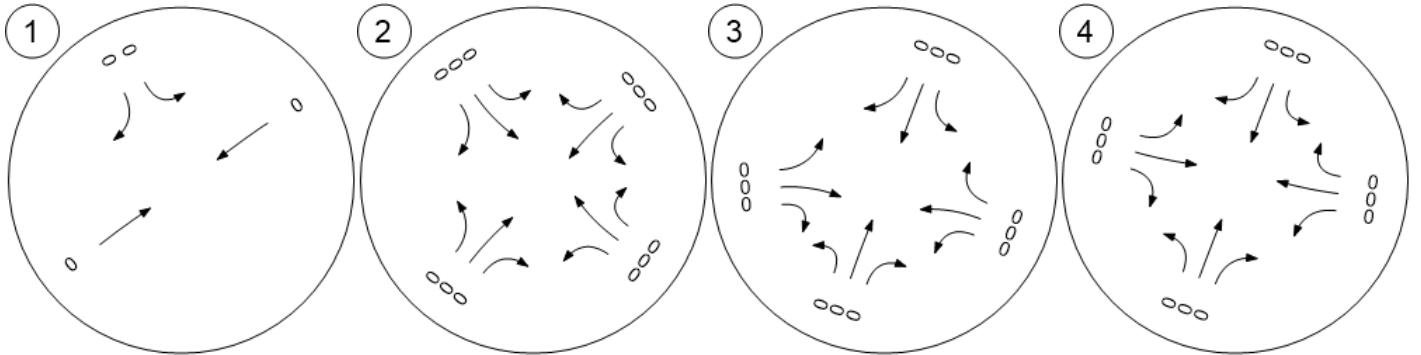


Traffic Volume - Net New Site Trips

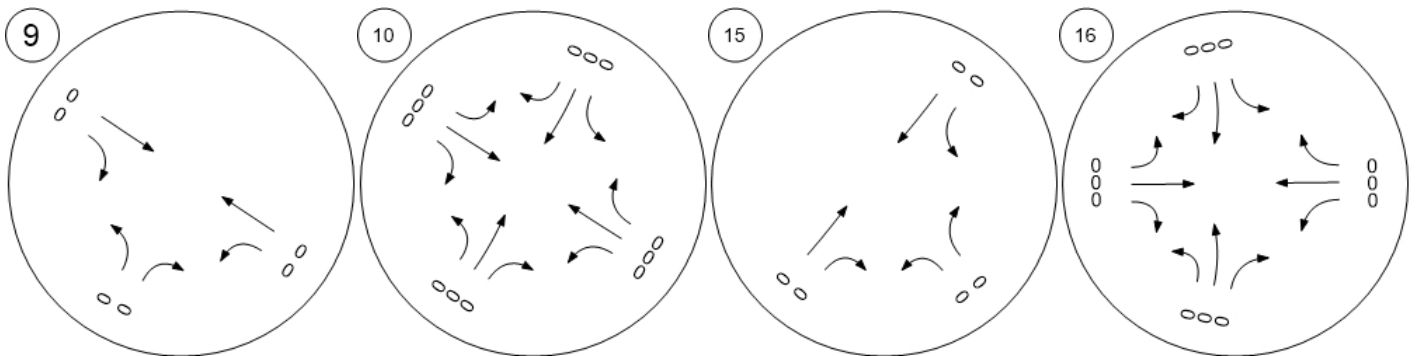


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



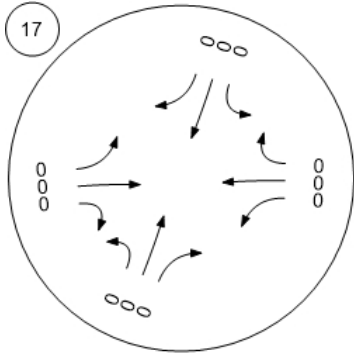
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



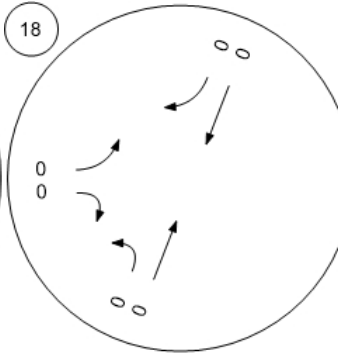
Traffic Volume - Net New Site Trips



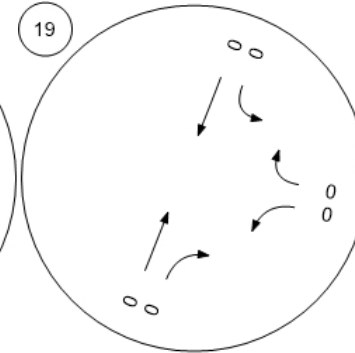
Willow Rd (SR 114)/Hamilton



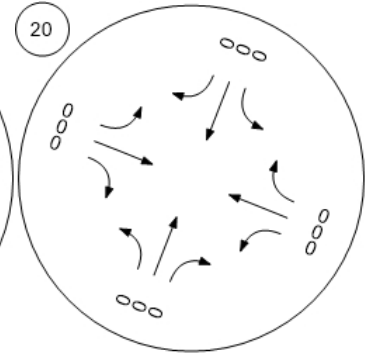
Willow Rd (SR 114)/Ivy Dr



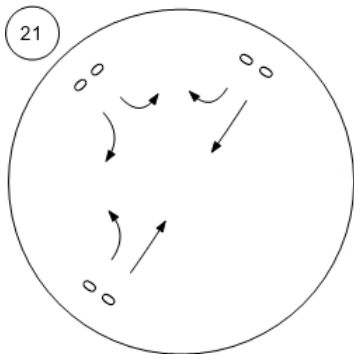
Willow Rd (SR 114)/O'Brien



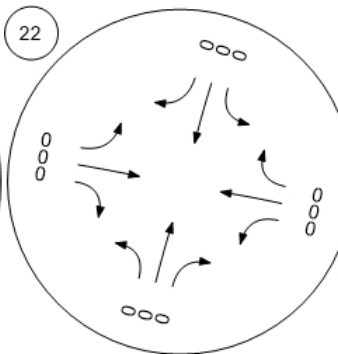
Willow Rd (SR 114)/Newbrid



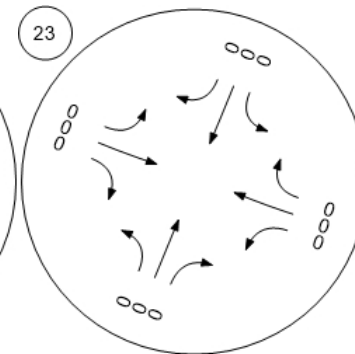
Willow Rd/Bay Rd



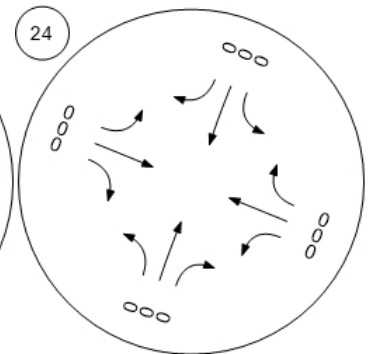
Willow Rd/Durham St-VA Me



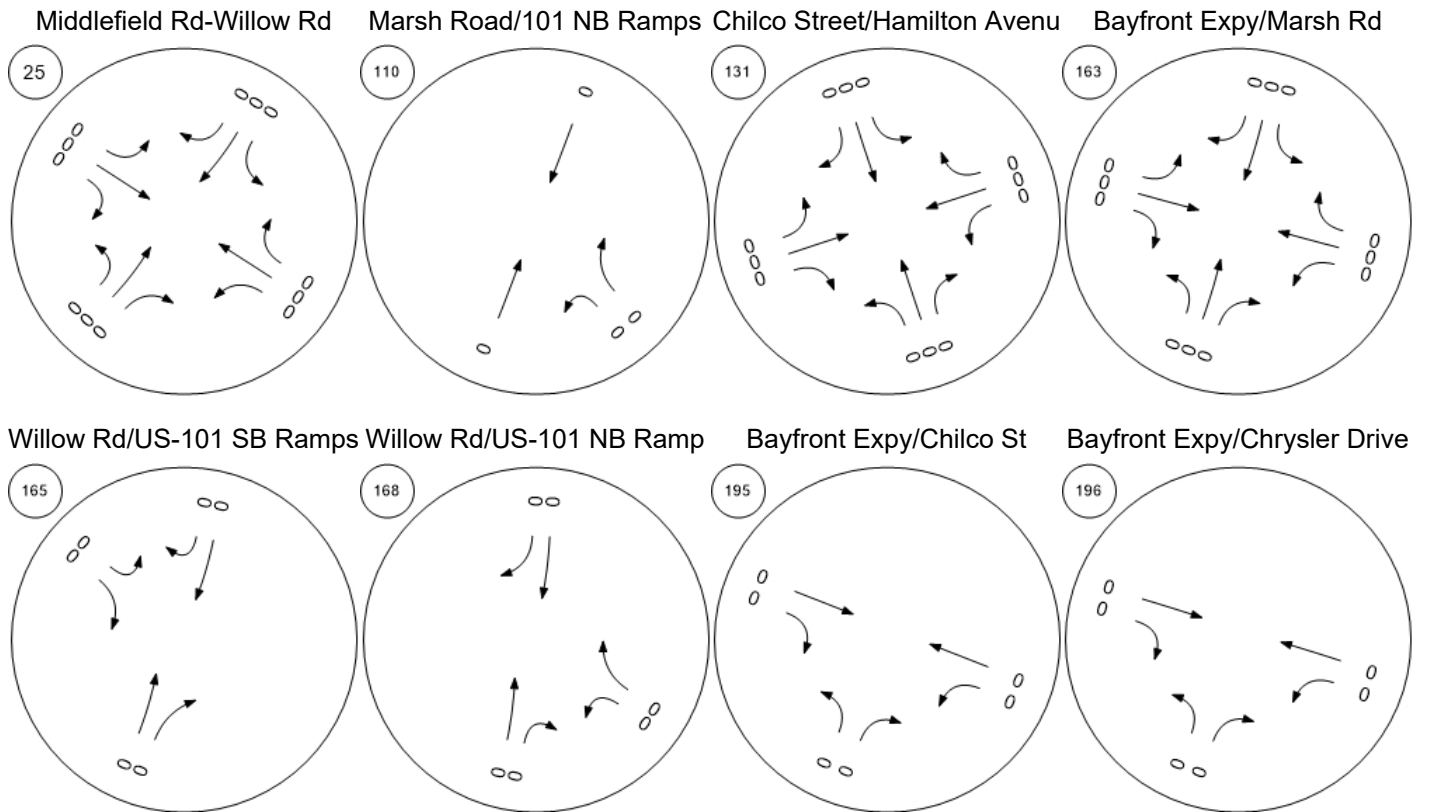
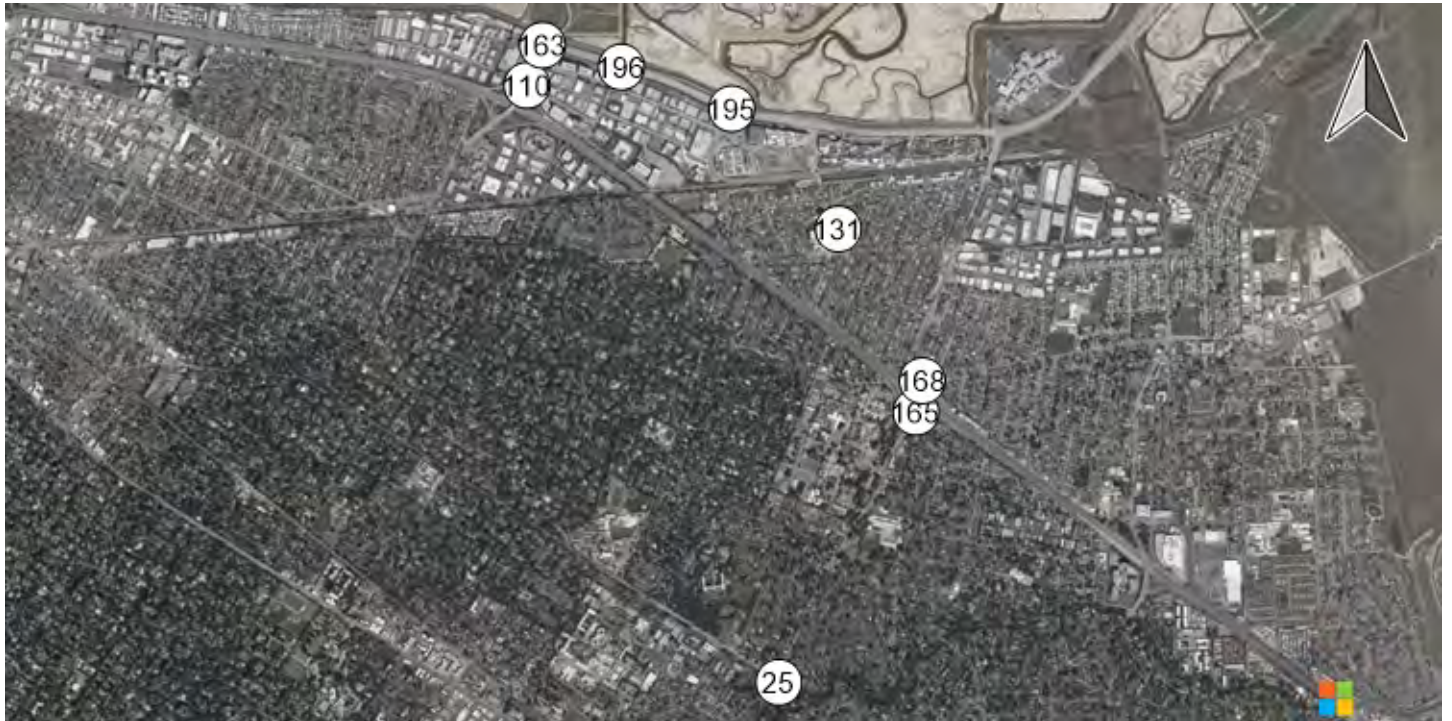
Willow Rd/Coleman Ave



Willow Rd/Gilbert Ave

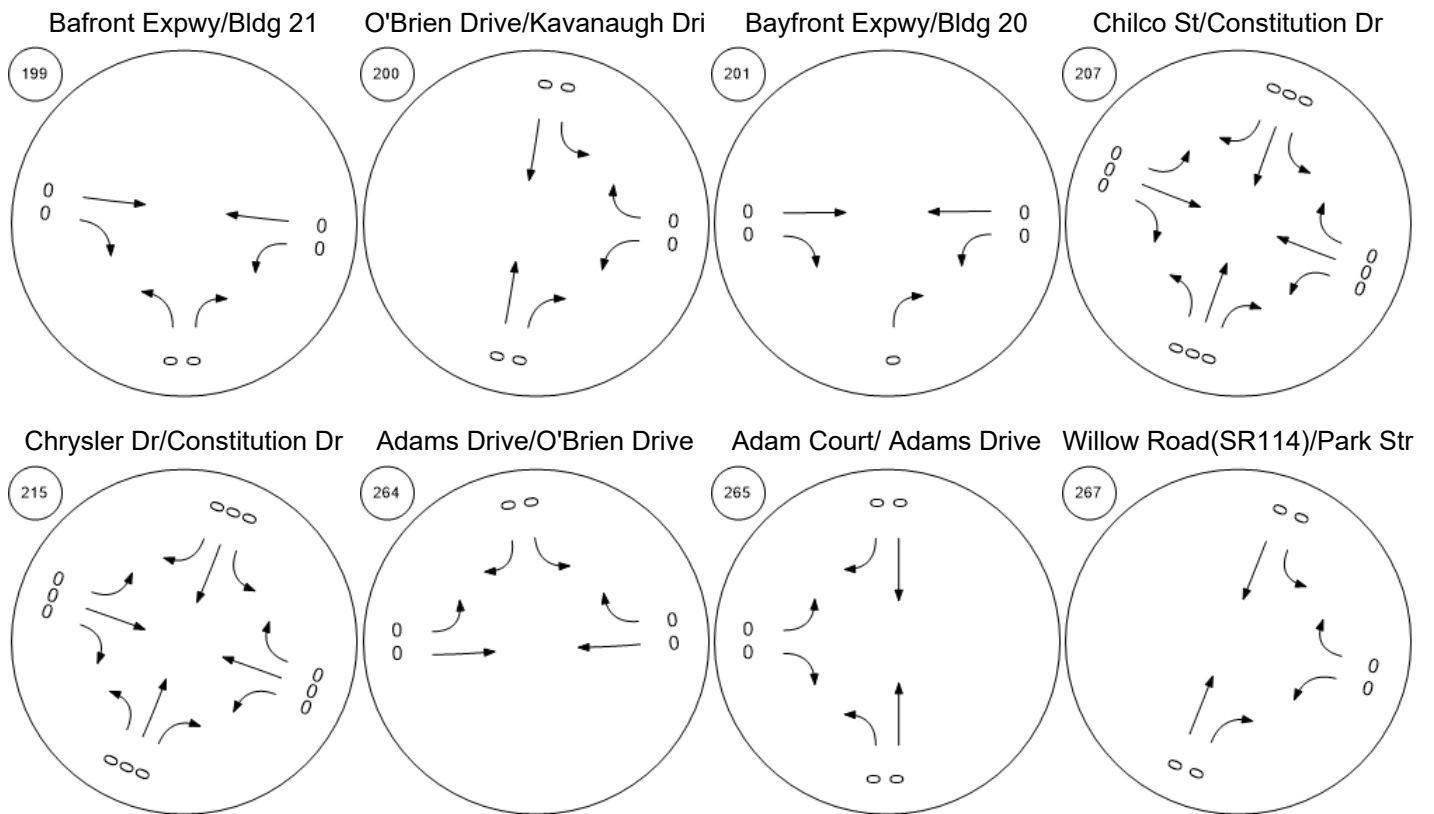


Traffic Volume - Net New Site Trips

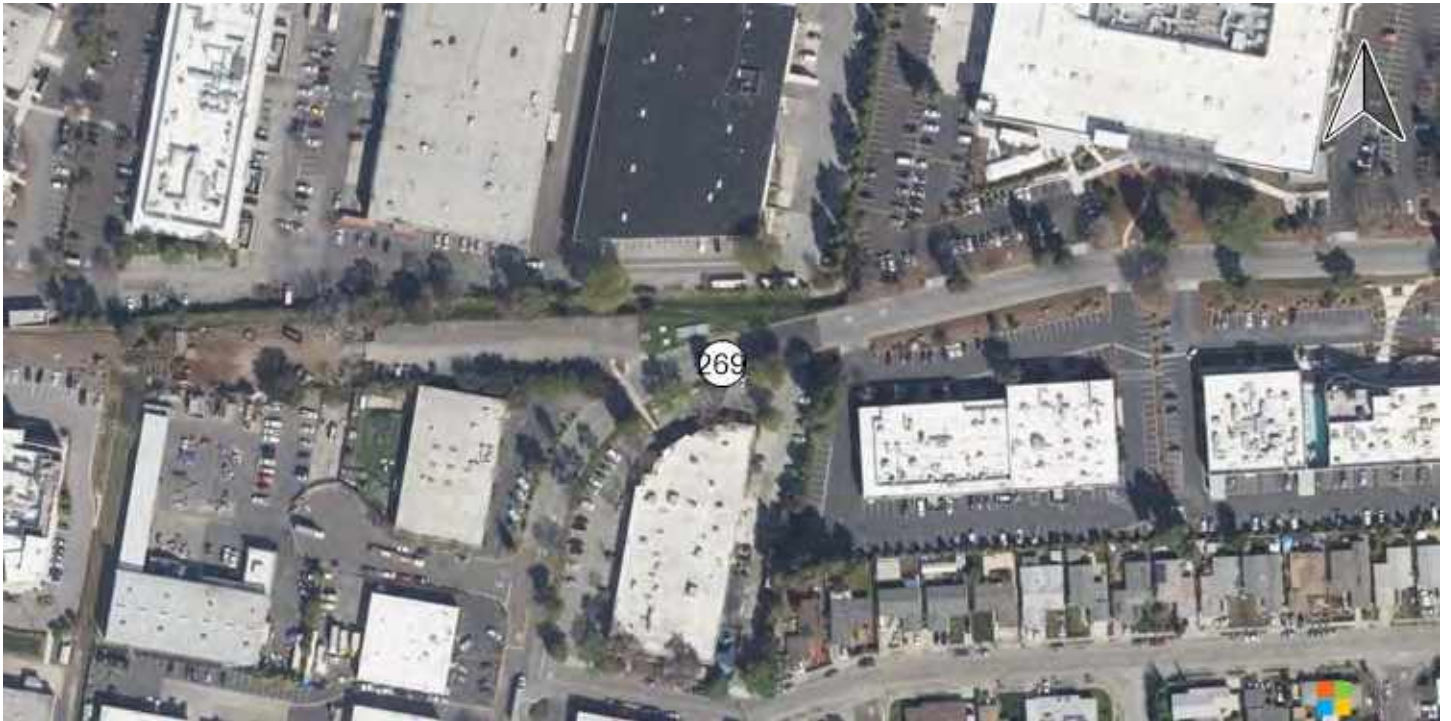




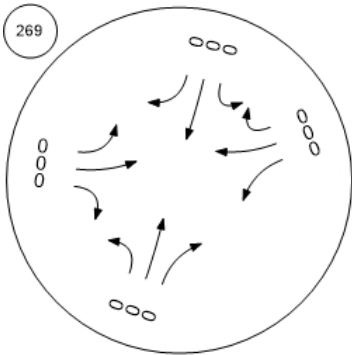
Traffic Volume - Net New Site Trips



Traffic Volume - Net New Site Trips



O'Brien Drive/Loop Road

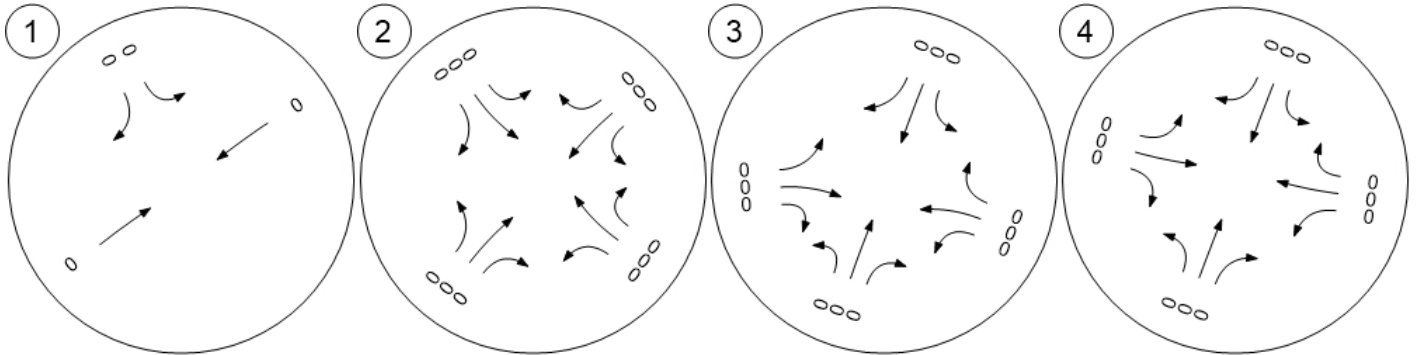


Traffic Volume - Other Volume

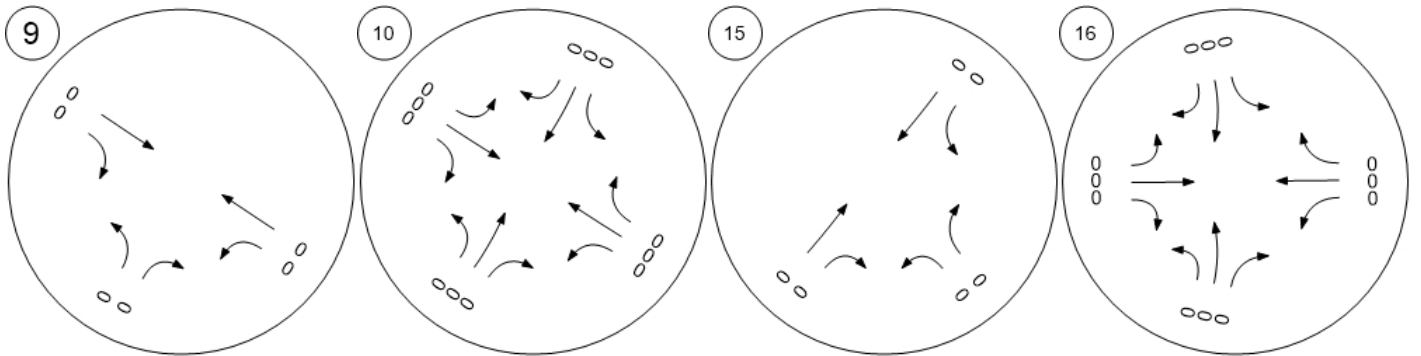


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



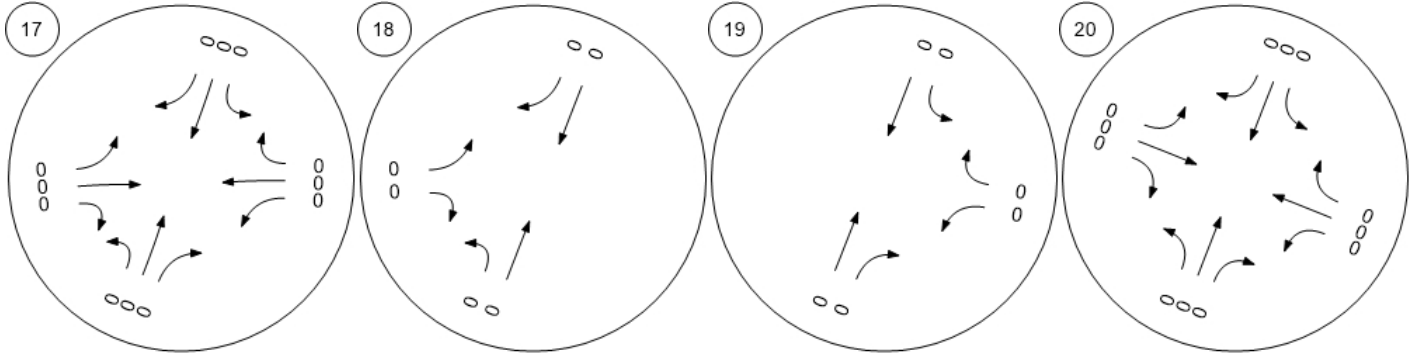
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



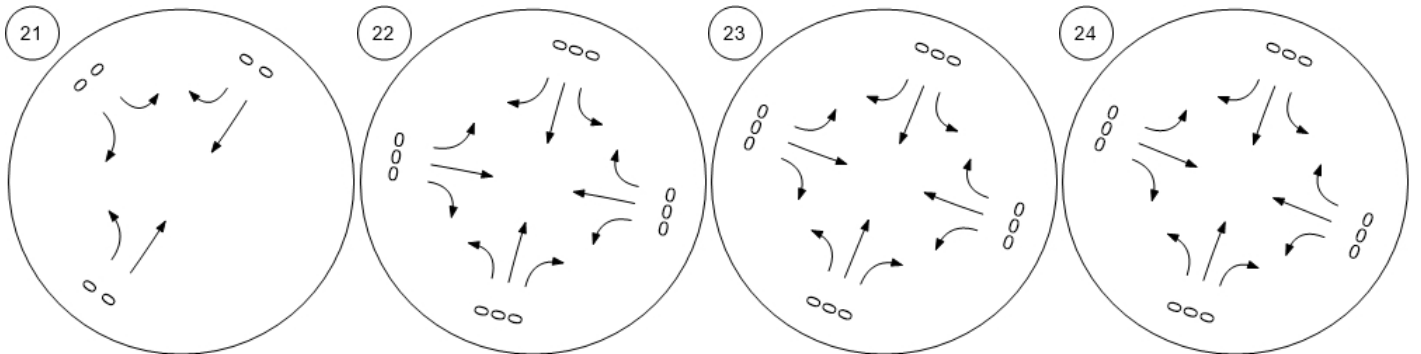
Traffic Volume - Other Volume



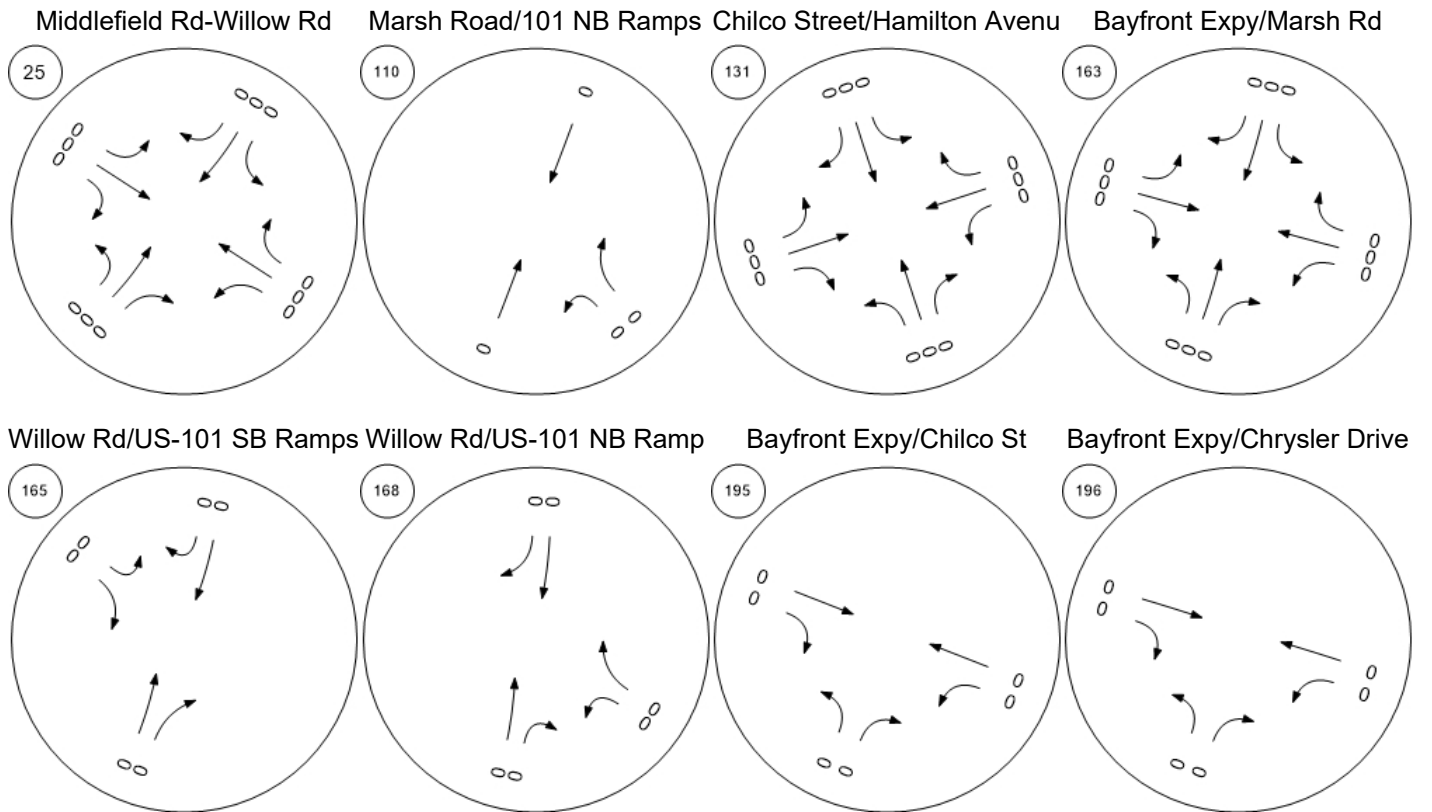
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



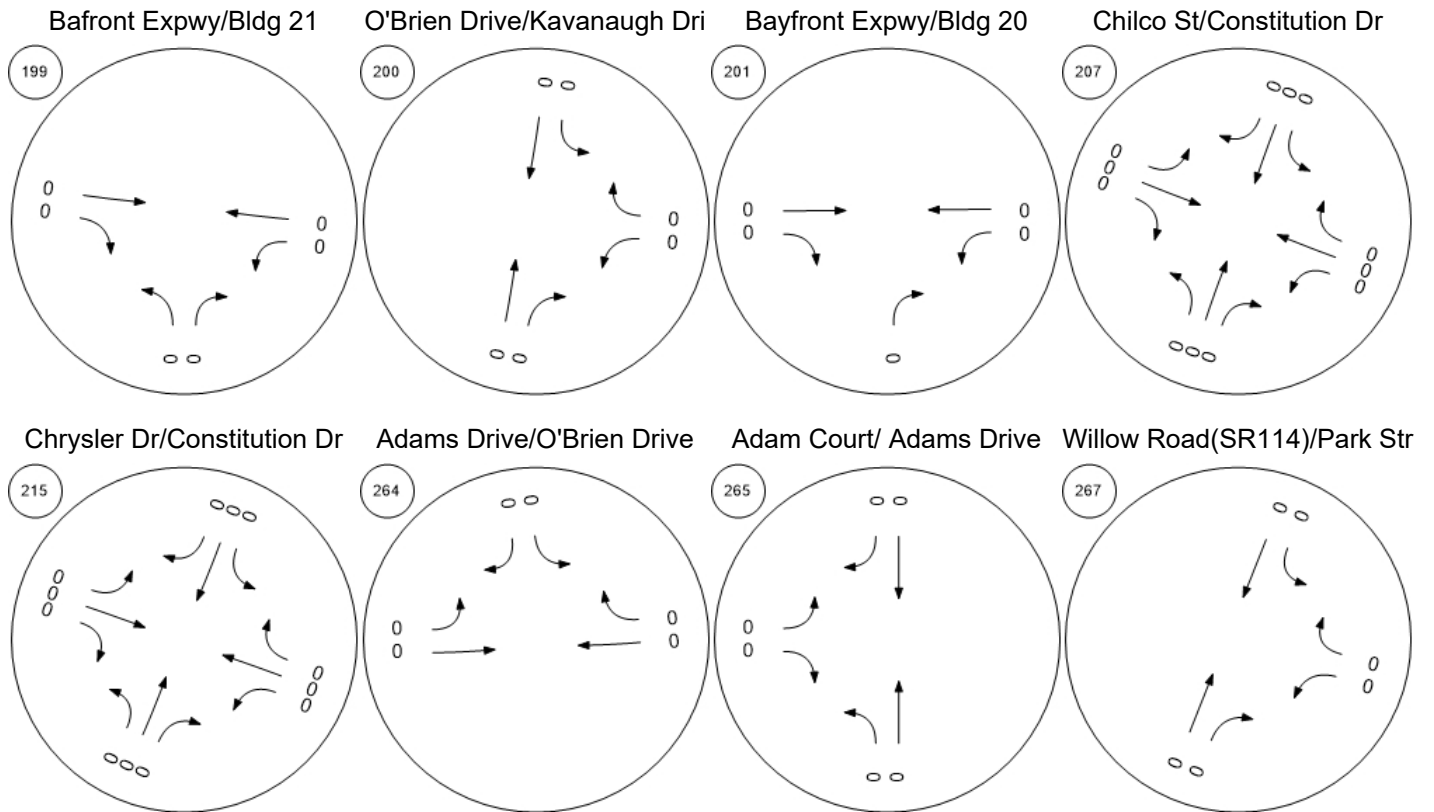
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



Traffic Volume - Other Volume



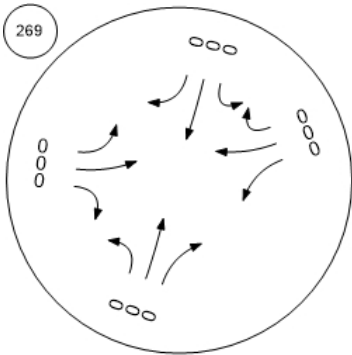
Traffic Volume - Other Volume



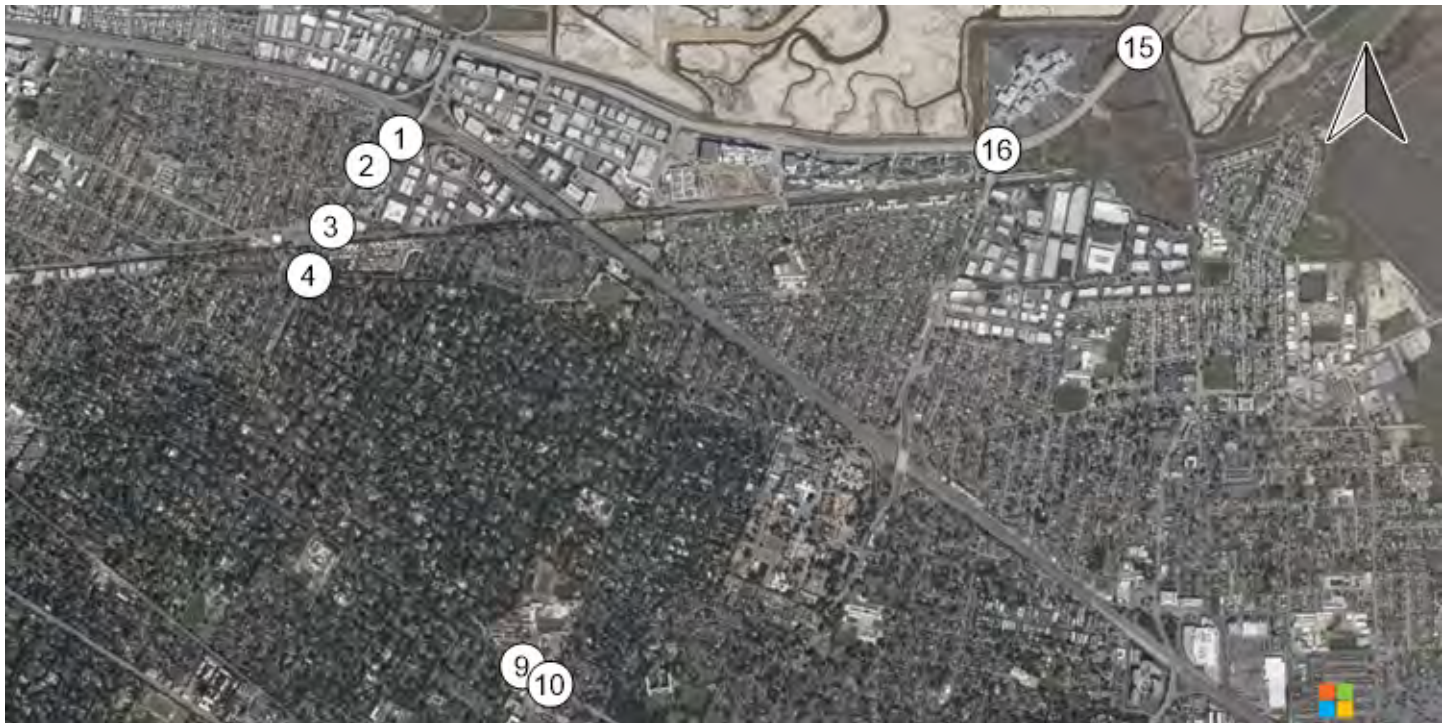
Traffic Volume - Other Volume



O'Brien Drive/Loop Road

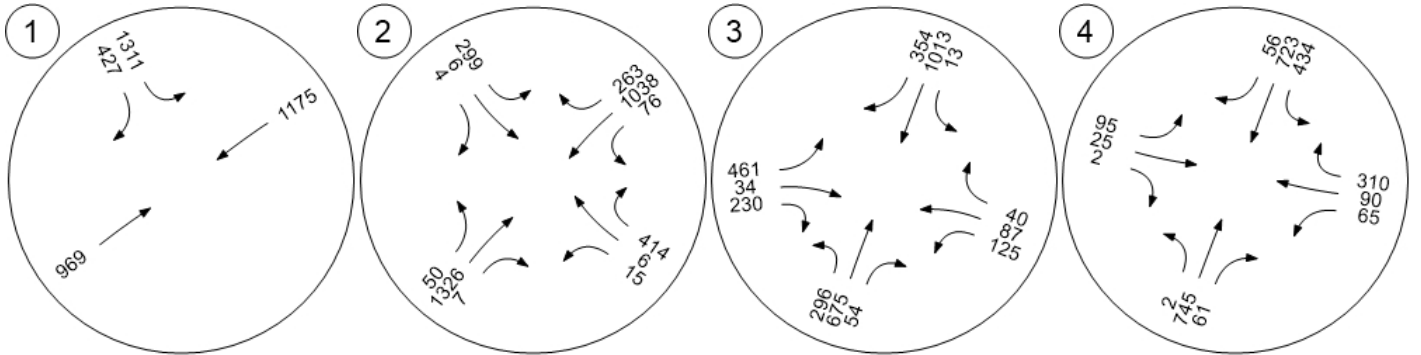


Traffic Volume - Future Total Volume

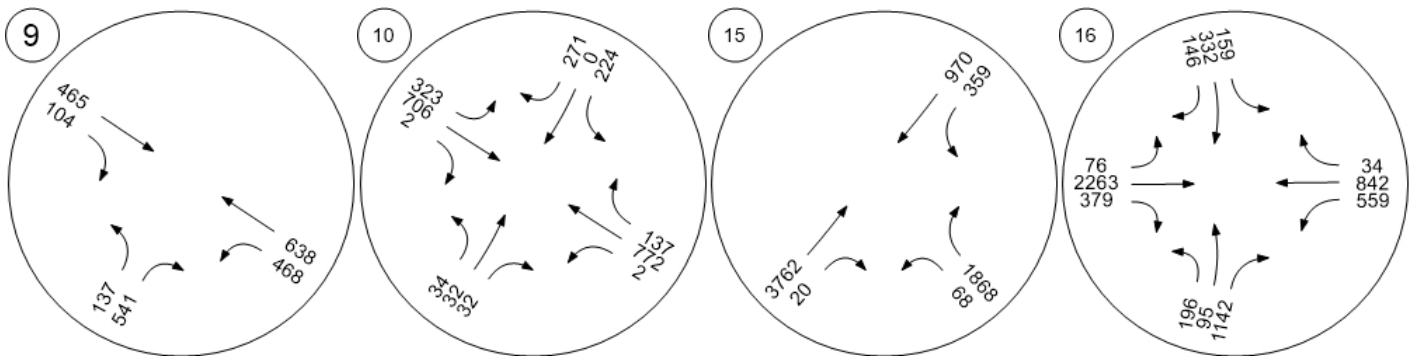


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow

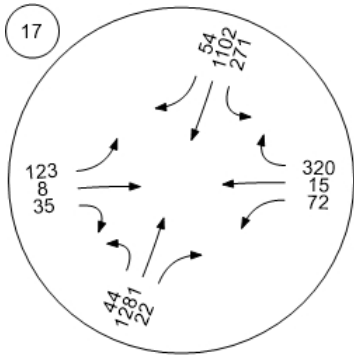




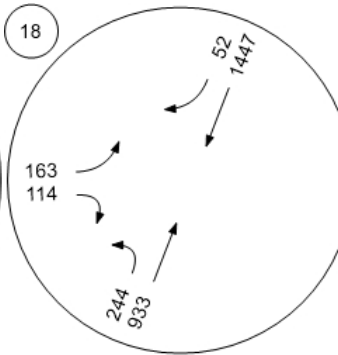
Traffic Volume - Future Total Volume



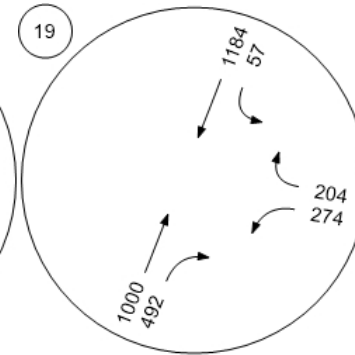
Willow Rd (SR 114)/Hamilton



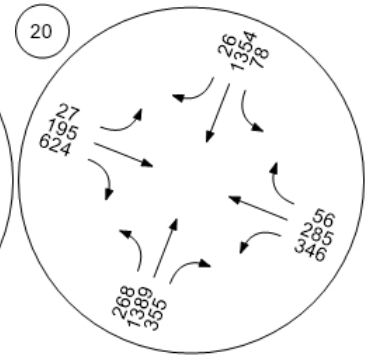
Willow Rd (SR 114)/Ivy Dr



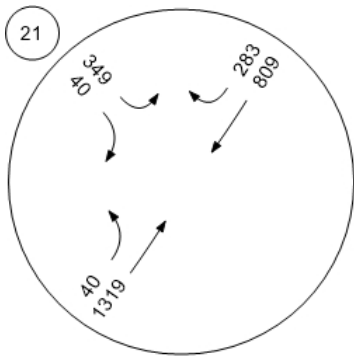
Willow Rd (SR 114)/O'Brien



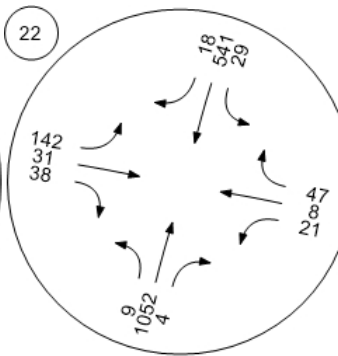
Willow Rd (SR 114)/Newbrid



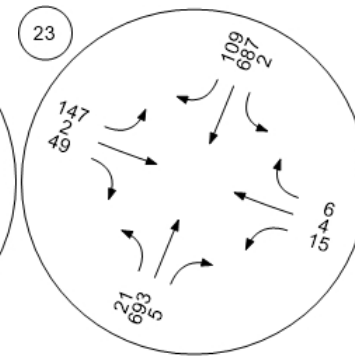
Willow Rd/Bay Rd



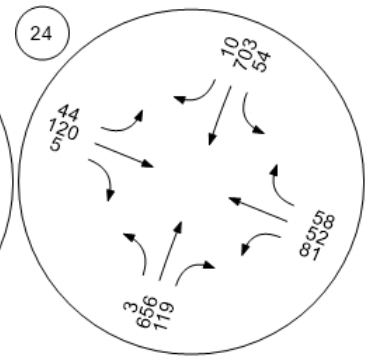
Willow Rd/Durham St-VA Me



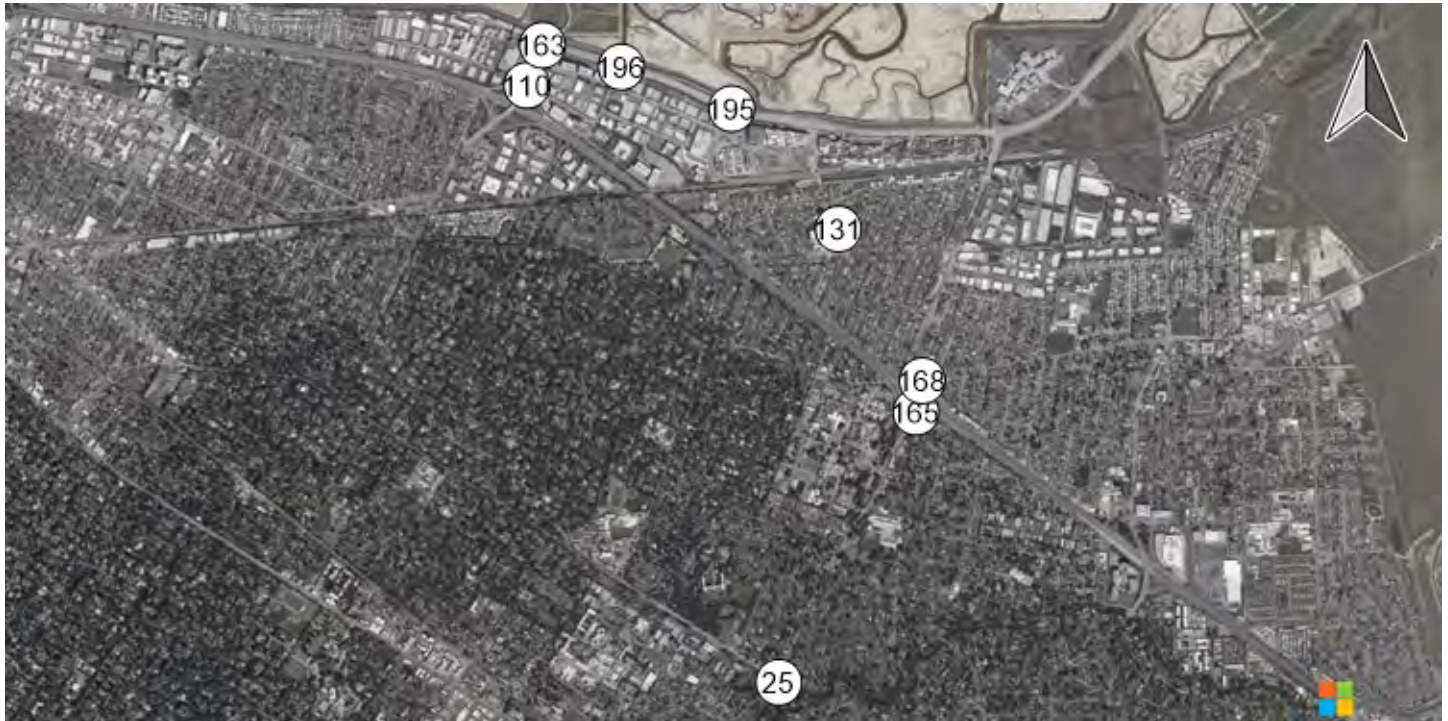
Willow Rd/Coleman Ave



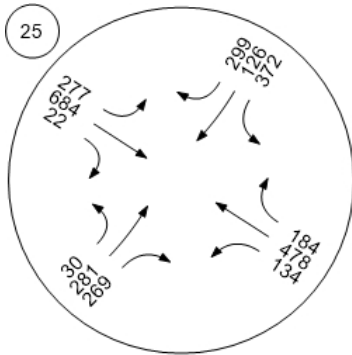
Willow Rd/Gilbert Ave



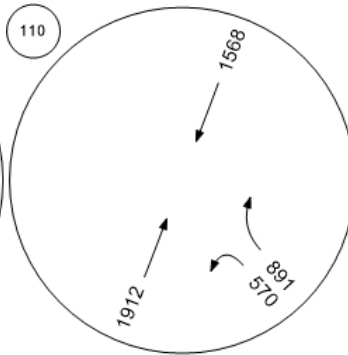
Traffic Volume - Future Total Volume



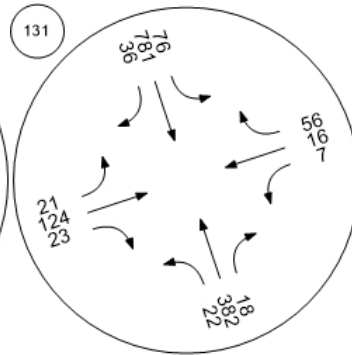
Middlefield Rd-Willow Rd



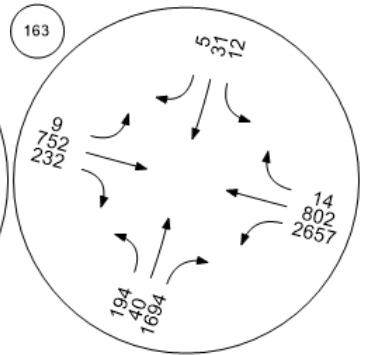
Marsh Road/101 NB Ramps



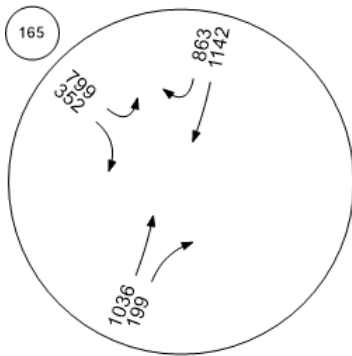
Chilco Street/Hamilton Avenue



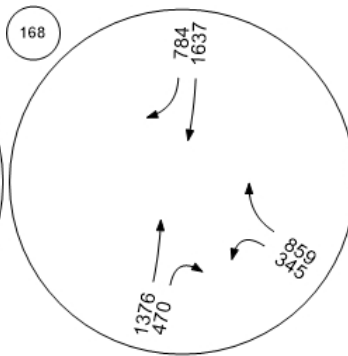
Bayfront Expy/Marsh Rd



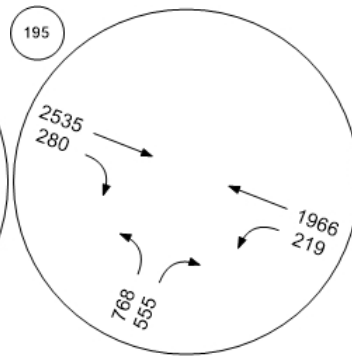
Willow Rd/US-101 SB Ramps



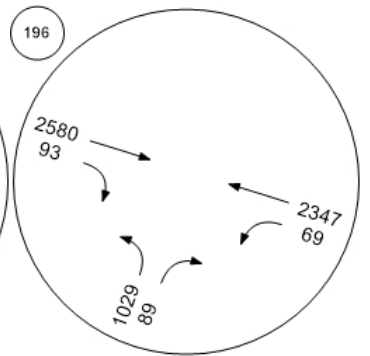
Willow Rd/US-101 NB Ramp



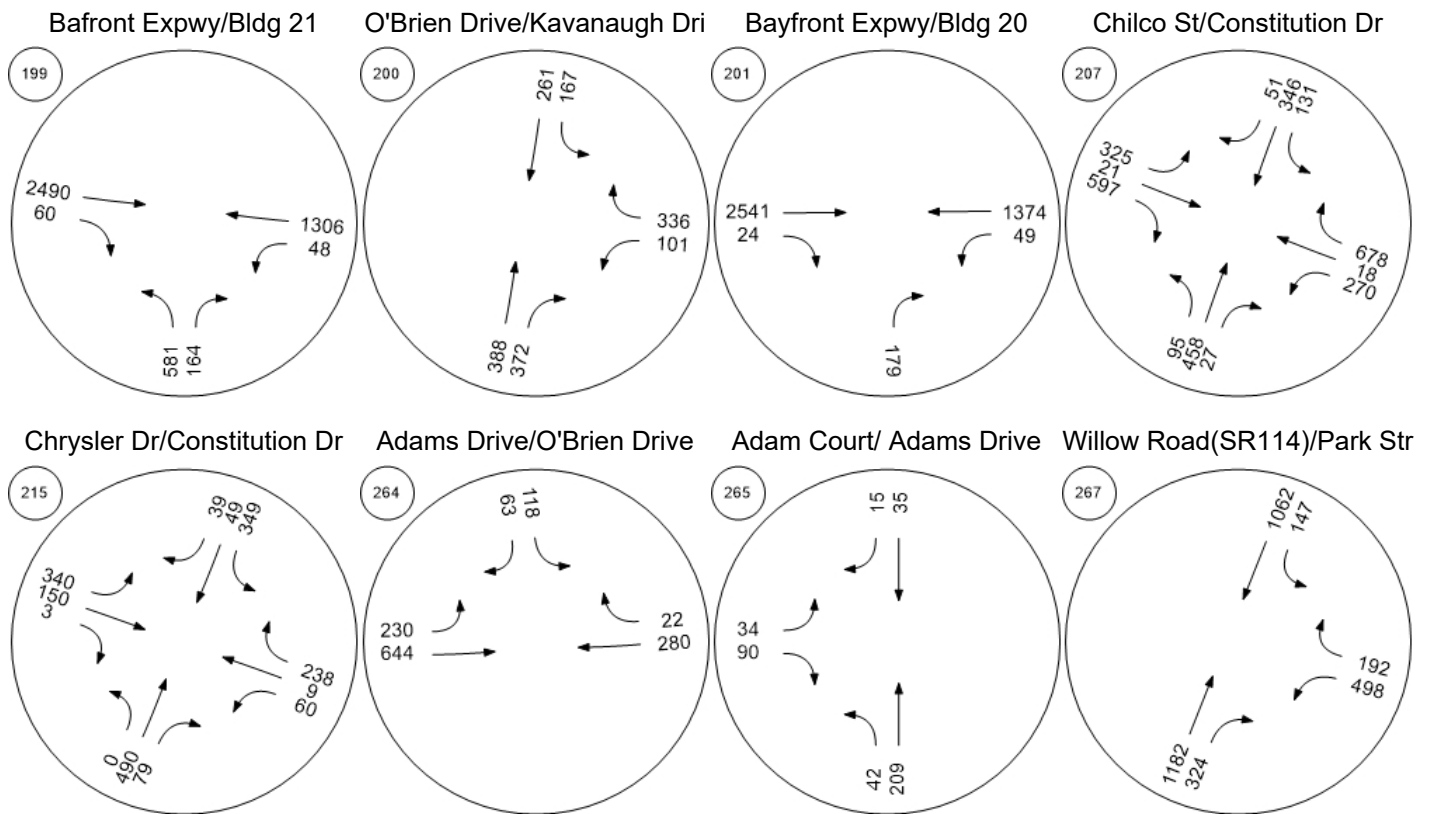
Bayfront Expy/Chilco St



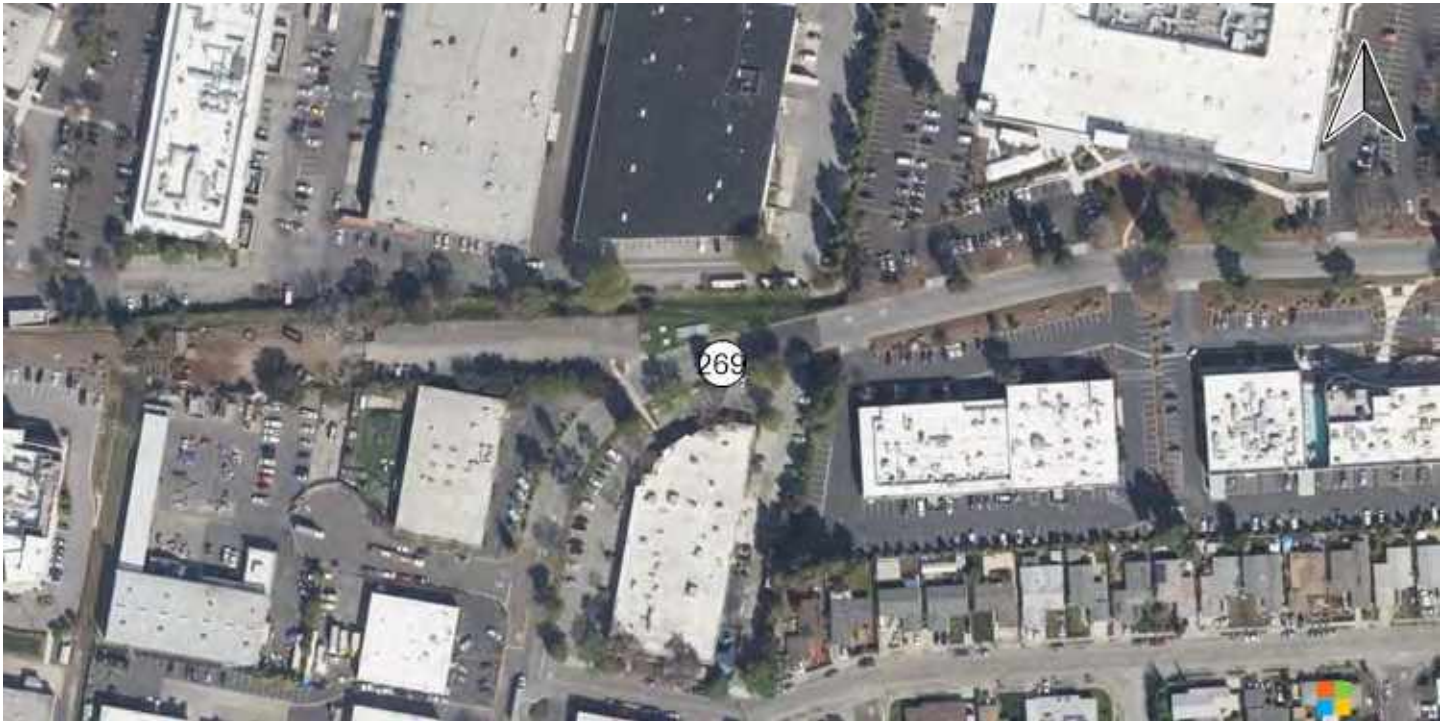
Bayfront Expy/Chrysler Drive



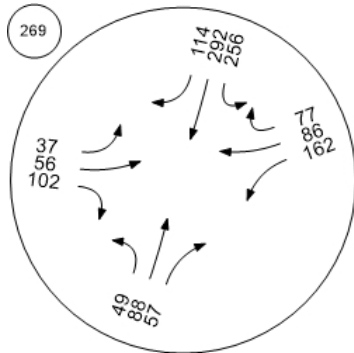
Traffic Volume - Future Total Volume



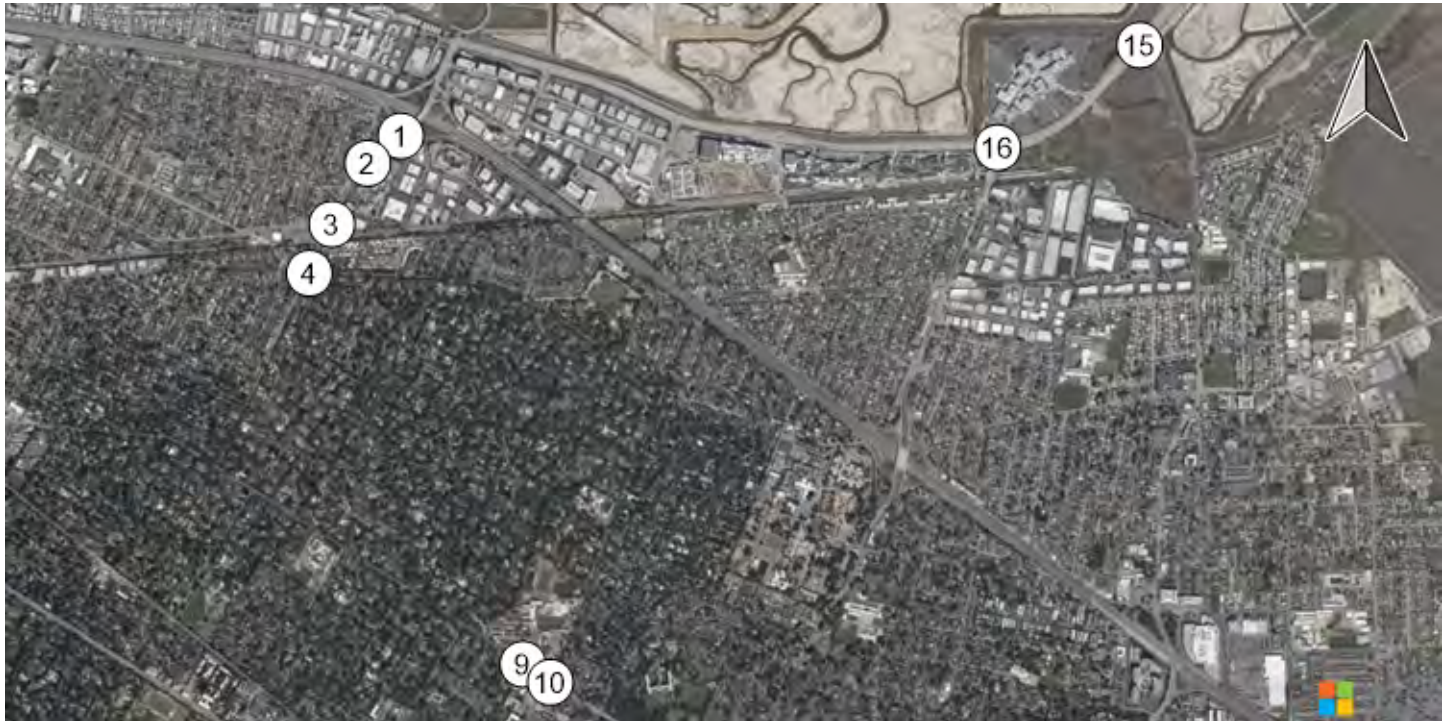
Traffic Volume - Future Total Volume



O'Brien Drive/Loop Road

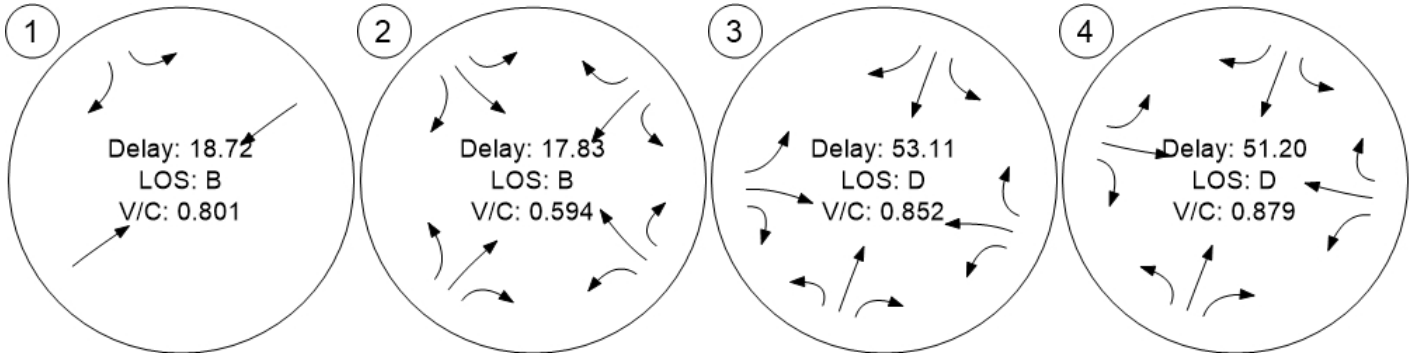


Traffic Conditions

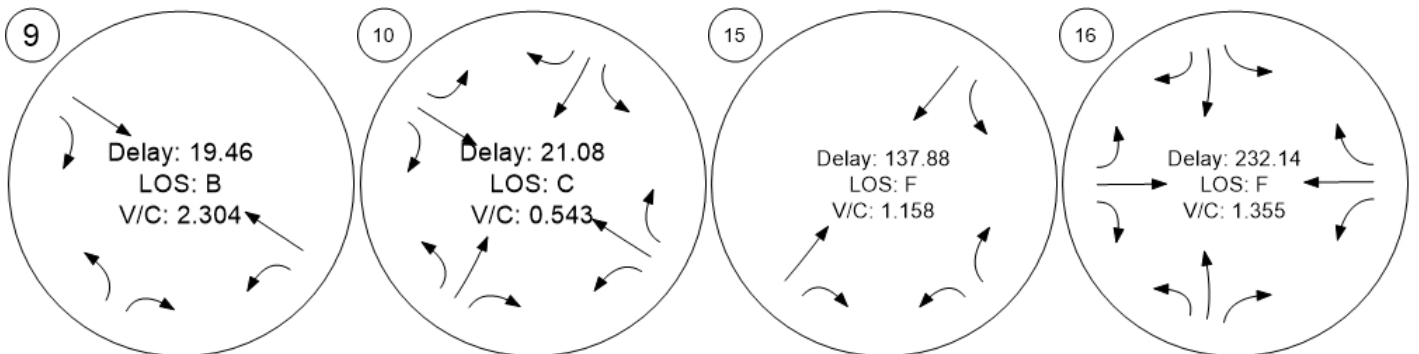


Marsh Rd (SR 84)/US 101 S Marsh Rd/Rolison Rd-Scott D Marsh Rd/Florence St-Bohan

Marsh Rd/Bay Rd



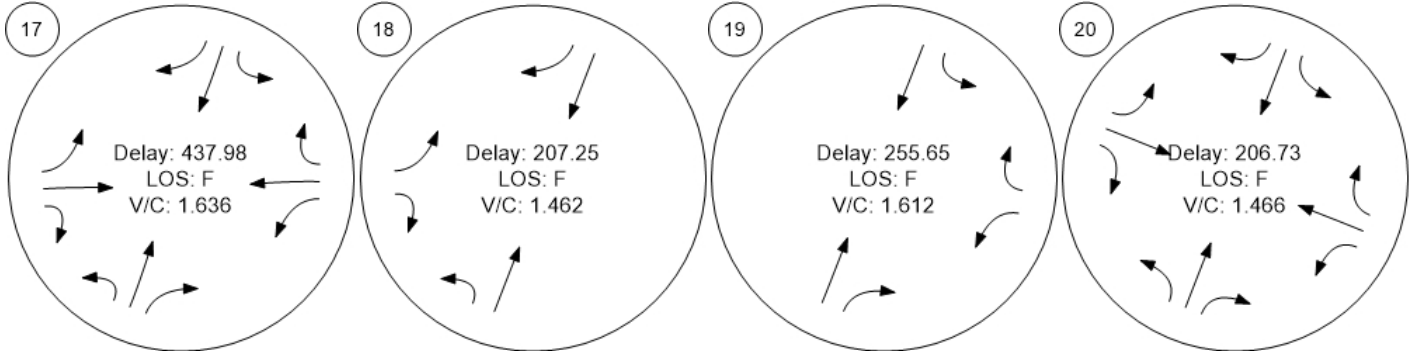
Middlefield Rd/Ravenswood Middlefield Rd/Ringwood Ave Bayfront Expy (SR 84)/Univer Bayfront Expy (SR 84)/Willow



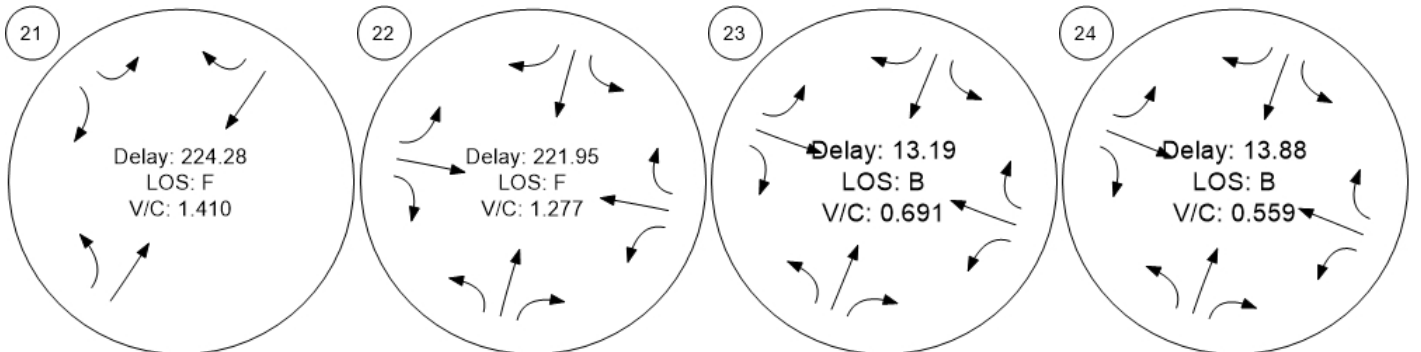
Traffic Conditions



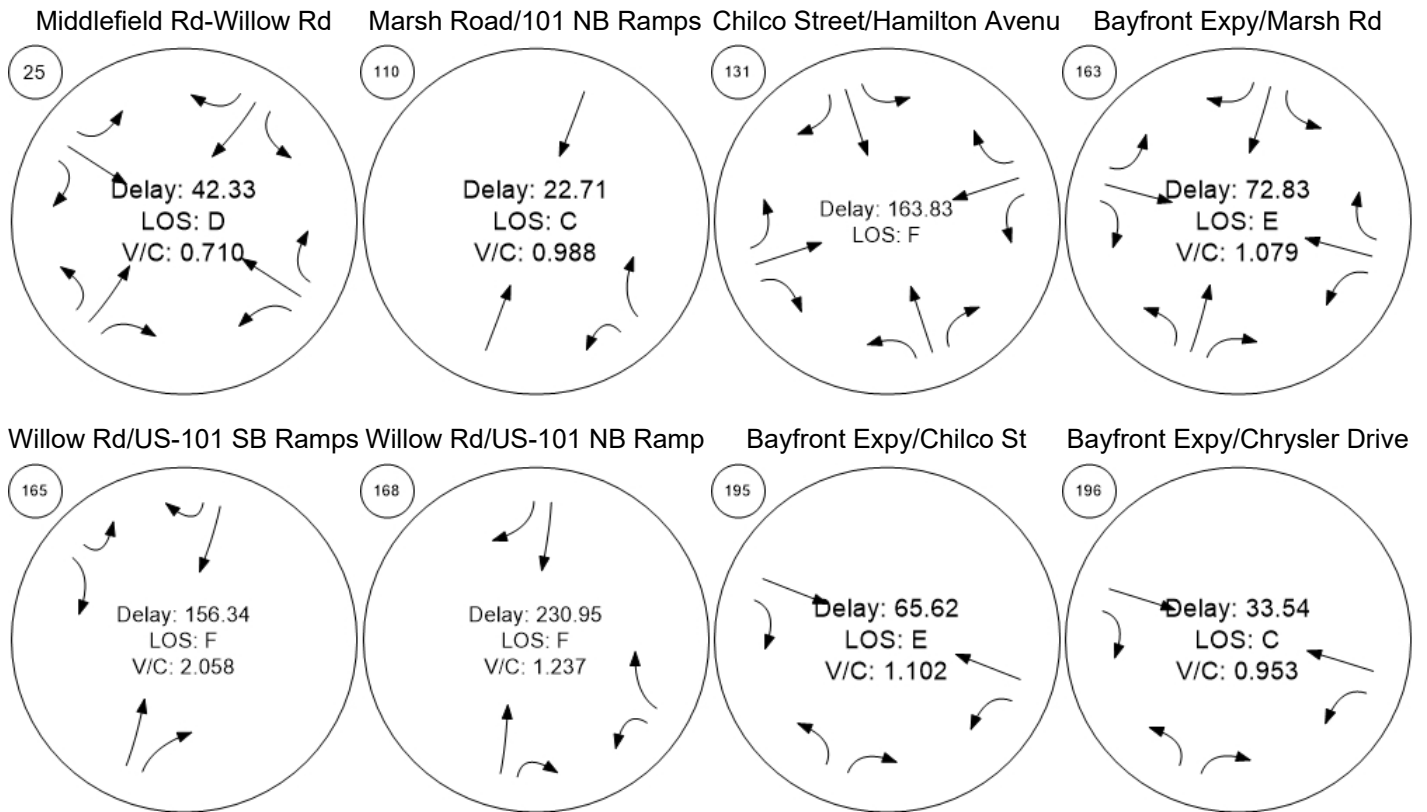
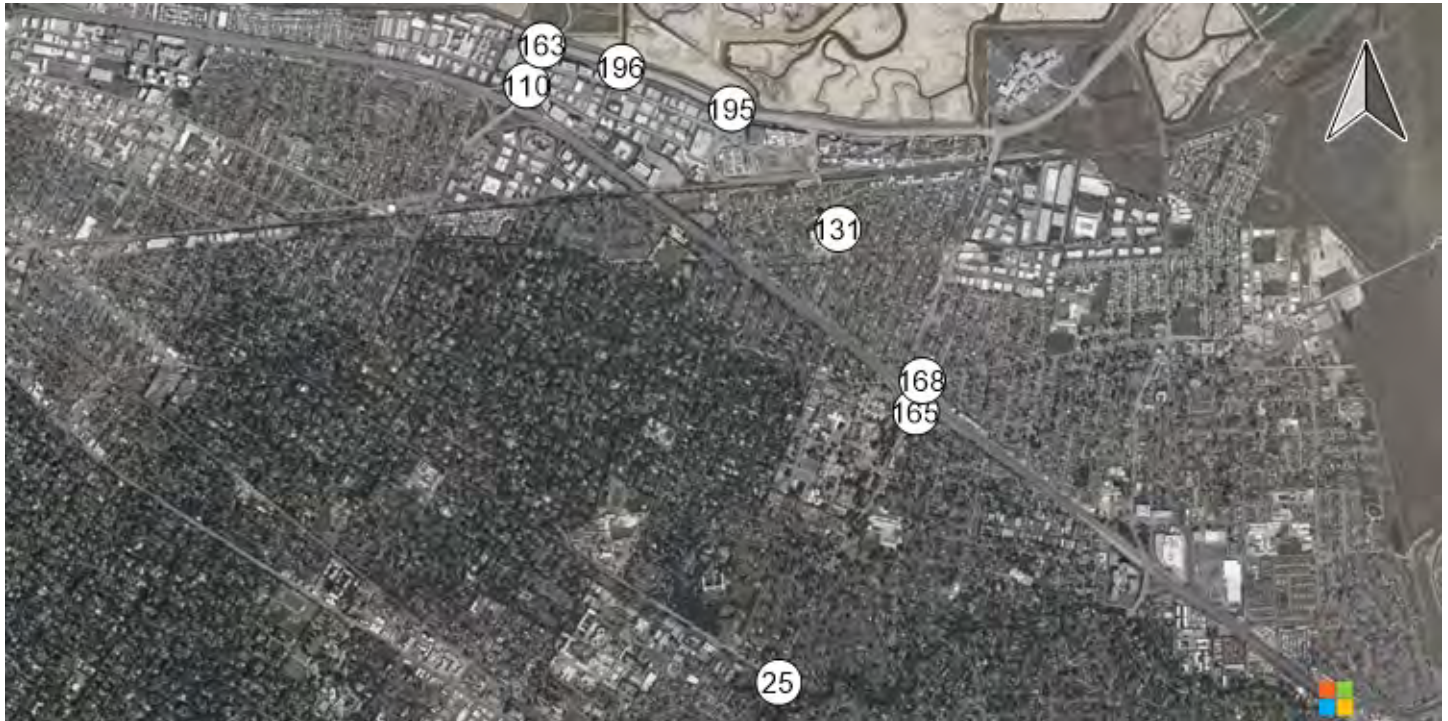
Willow Rd (SR 114)/Hamilton Willow Rd (SR 114)/Ivy Dr Willow Rd (SR 114)/O'Brien Willow Rd (SR 114)/Newbrid



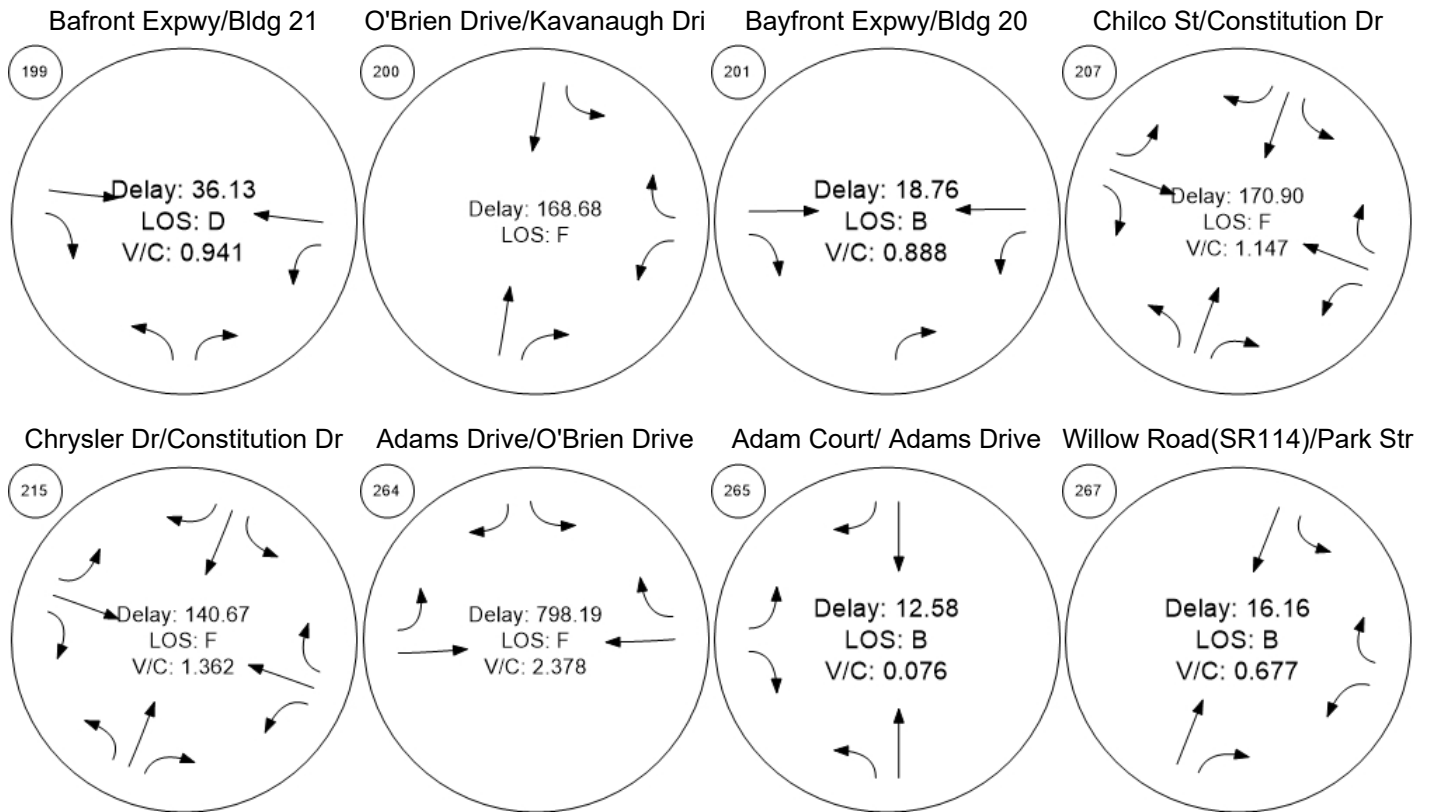
Willow Rd/Bay Rd Willow Rd/Durham St-VA Me Willow Rd/Coleman Ave Willow Rd/Gilbert Ave



Traffic Conditions

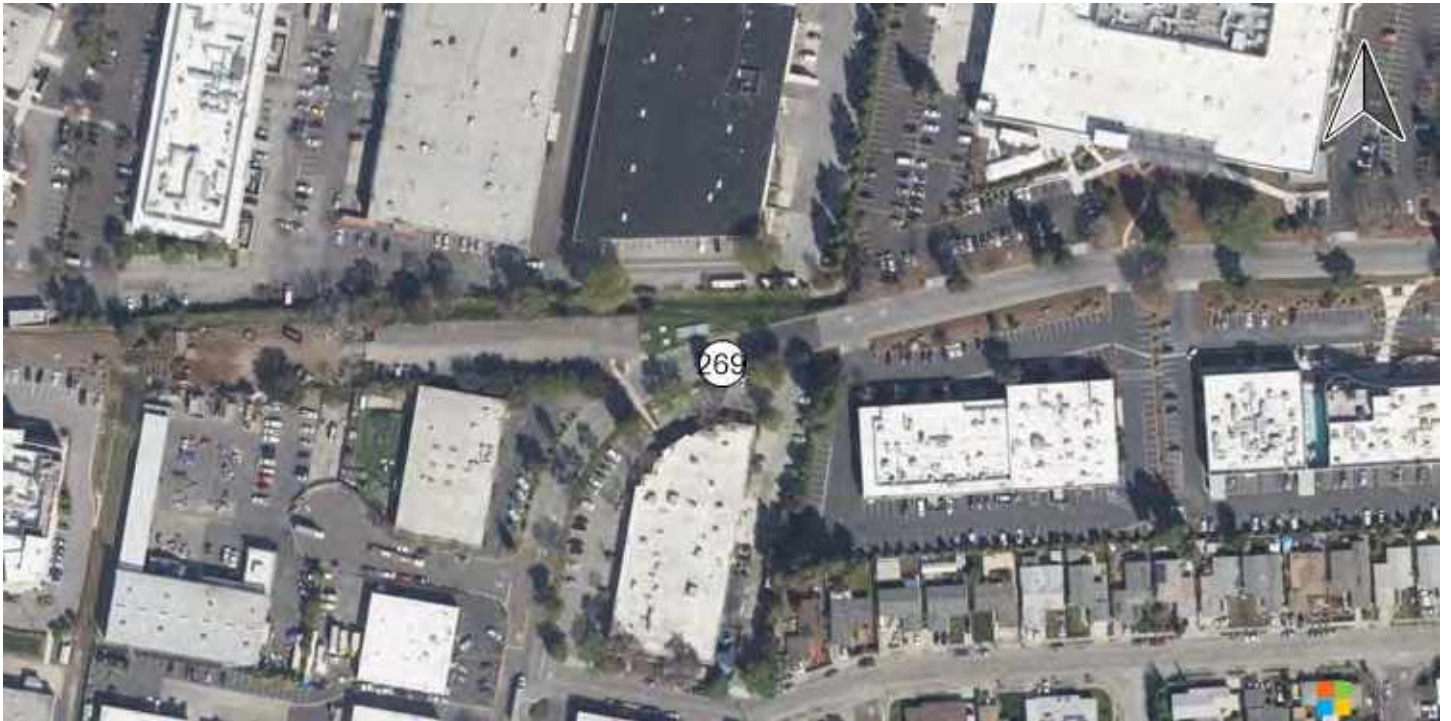


Traffic Conditions

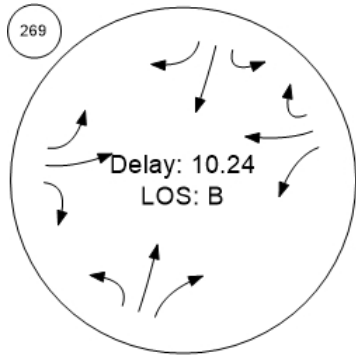




Traffic Conditions

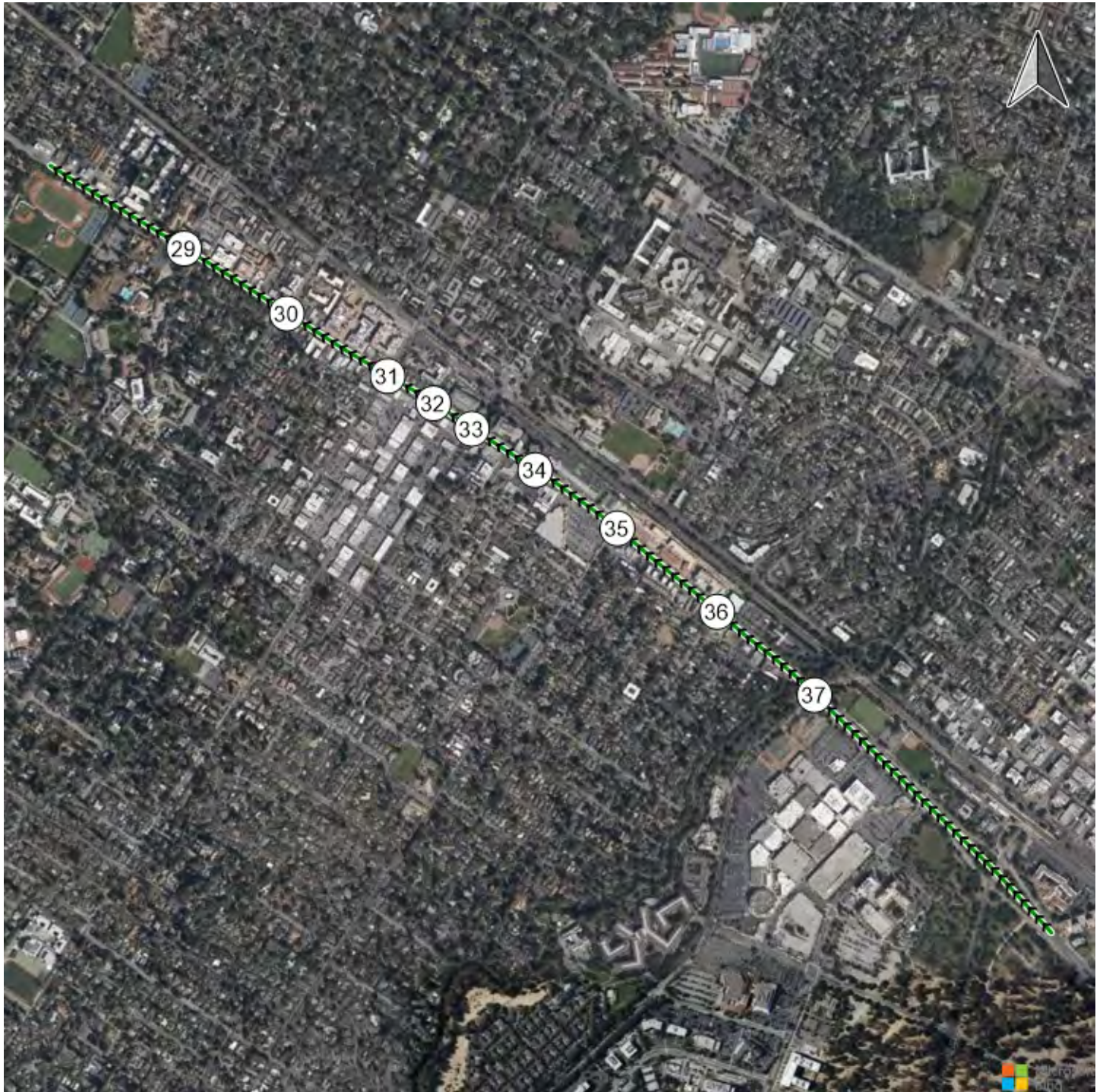


O'Brien Drive/Loop Road

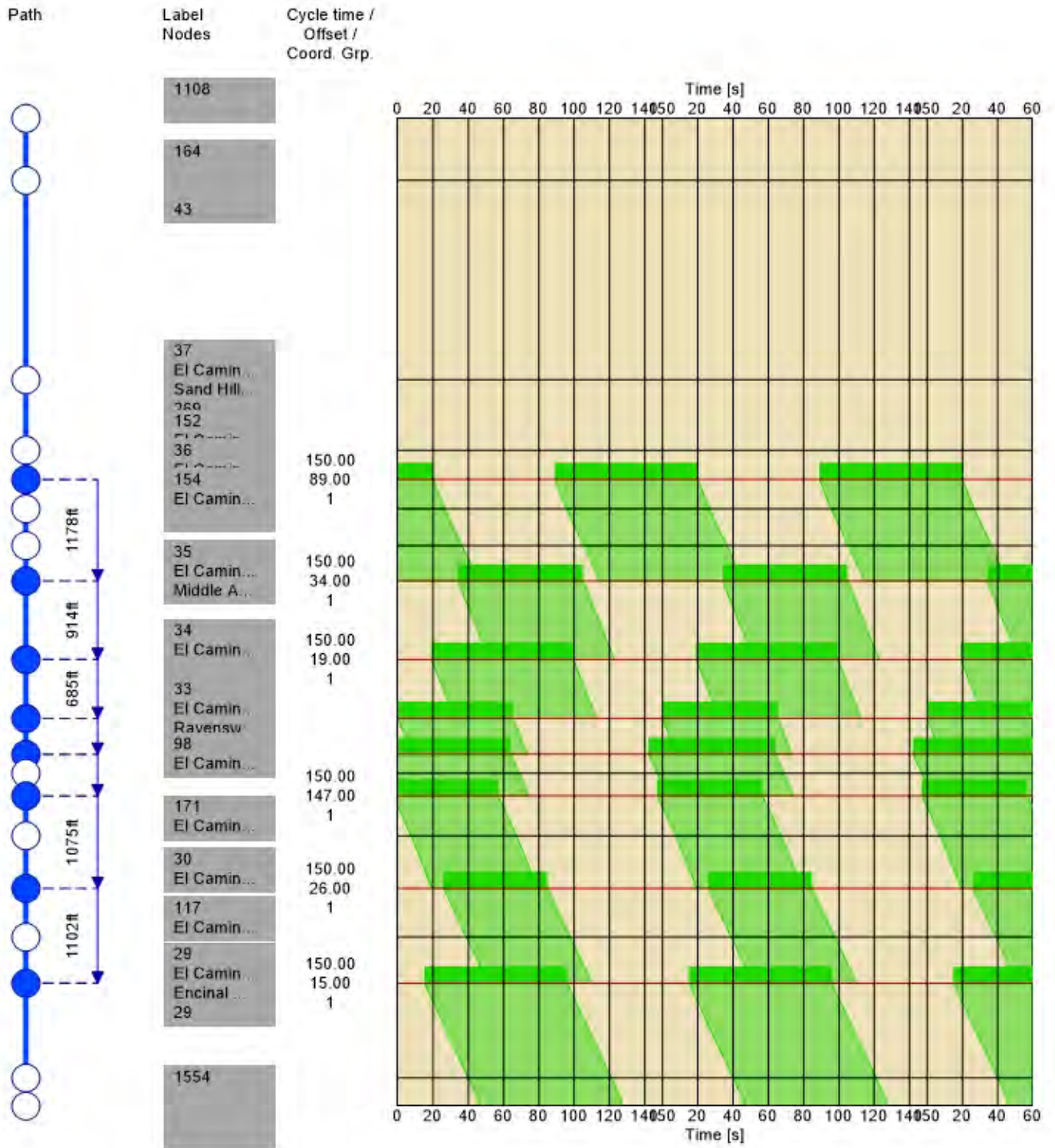


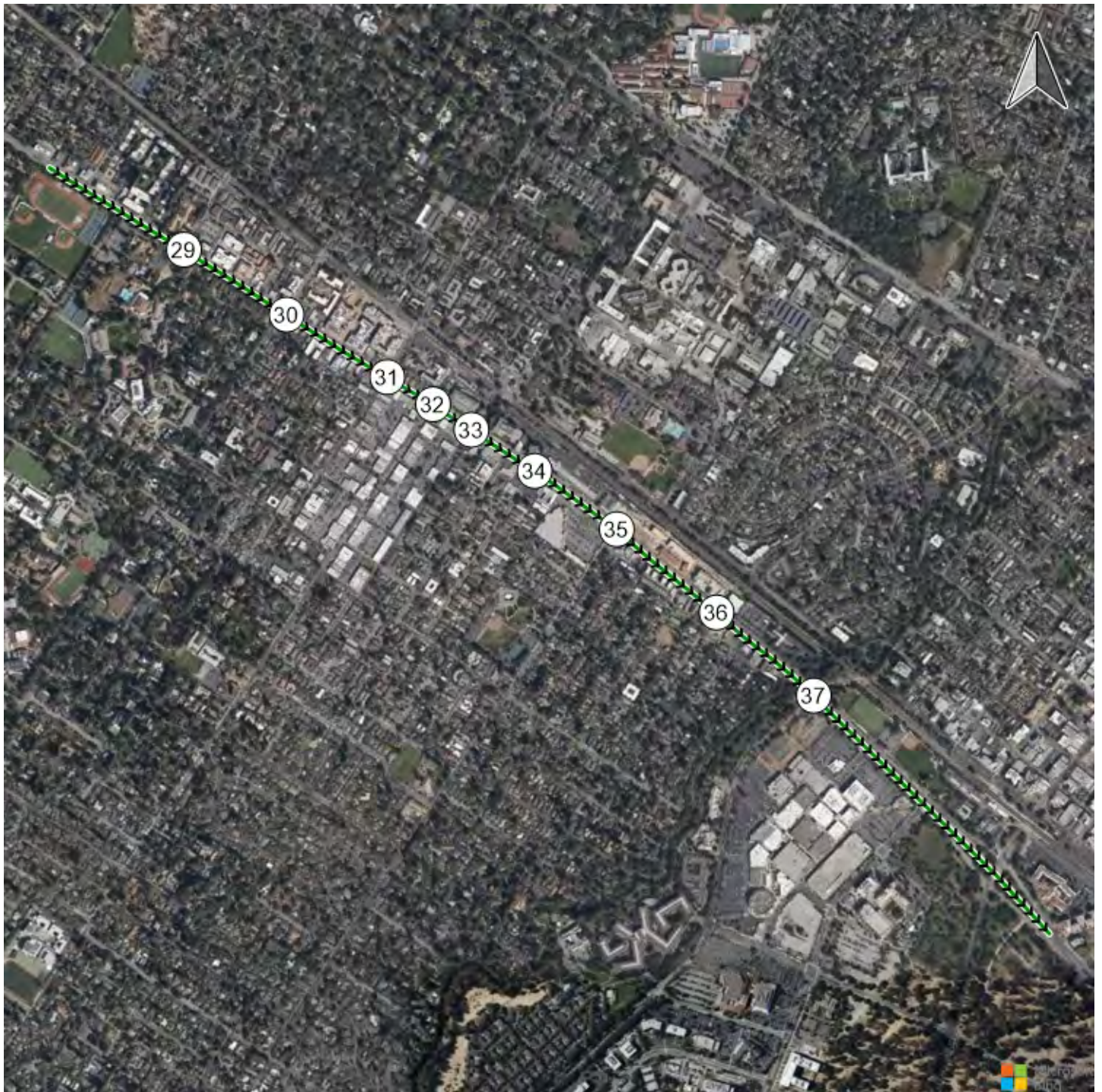
Time Space Diagram - Flowing Off

Route 1: ECR NB

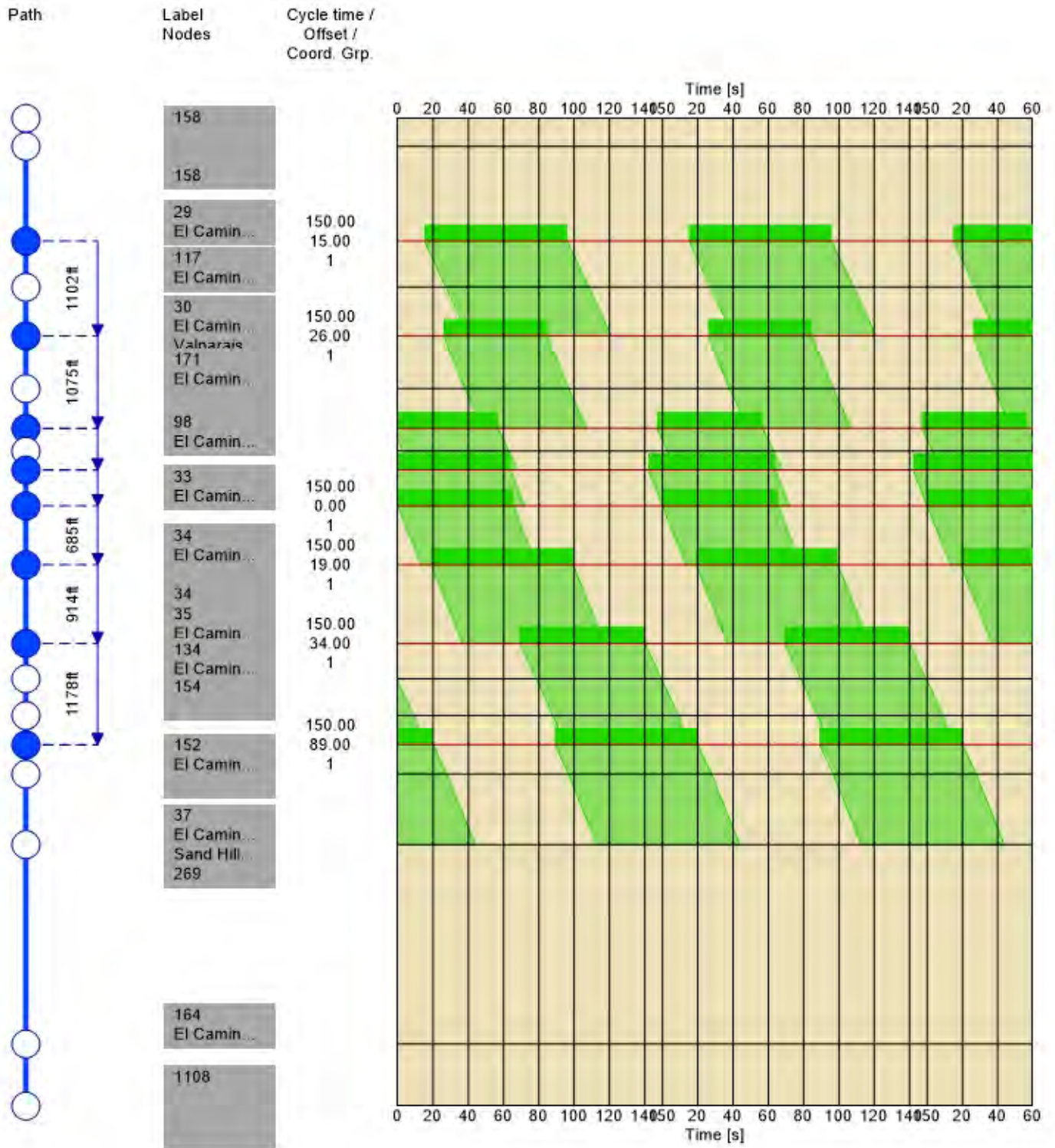


Route 1: ECR NB



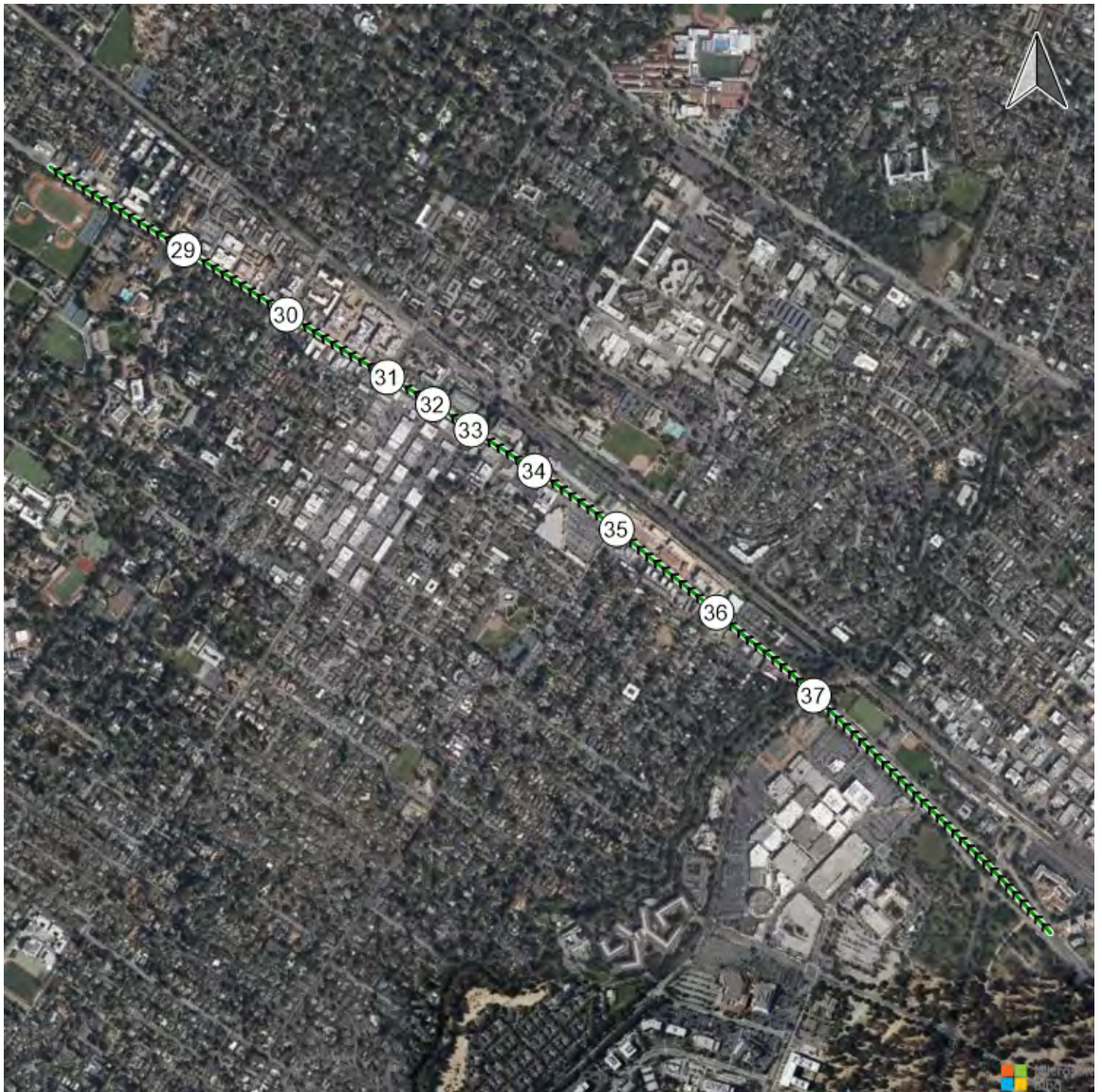


Route 2: ECR SB



Time Space Diagram - Arterial Band

Route 1: ECR NB

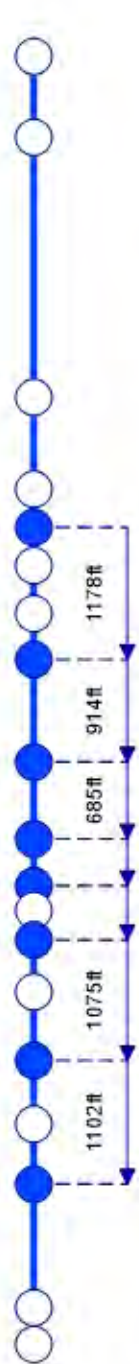


Route 1: ECR NB

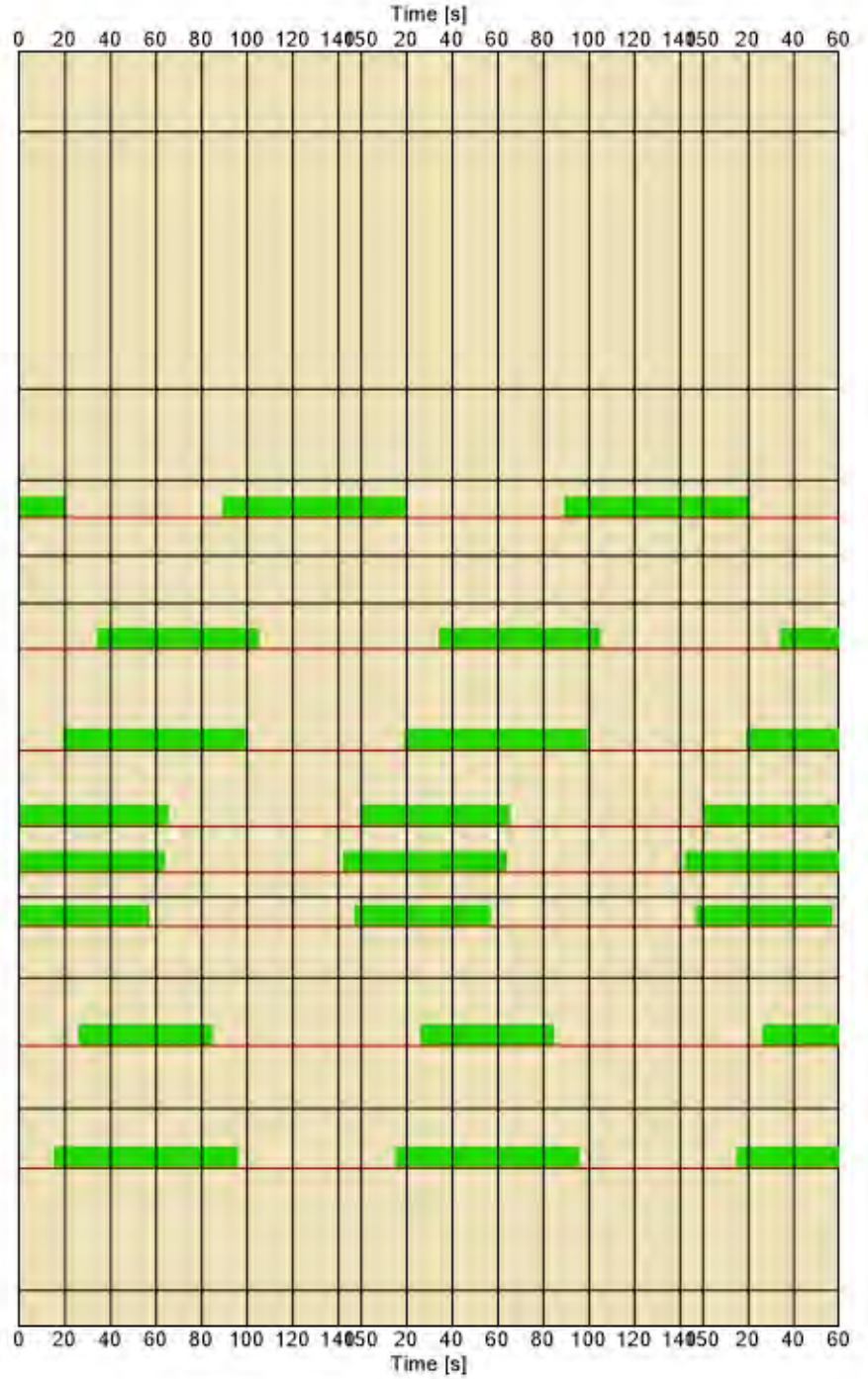
Path

Label  
Nodes

Cycle time /  
Offset /  
Coord. Grp

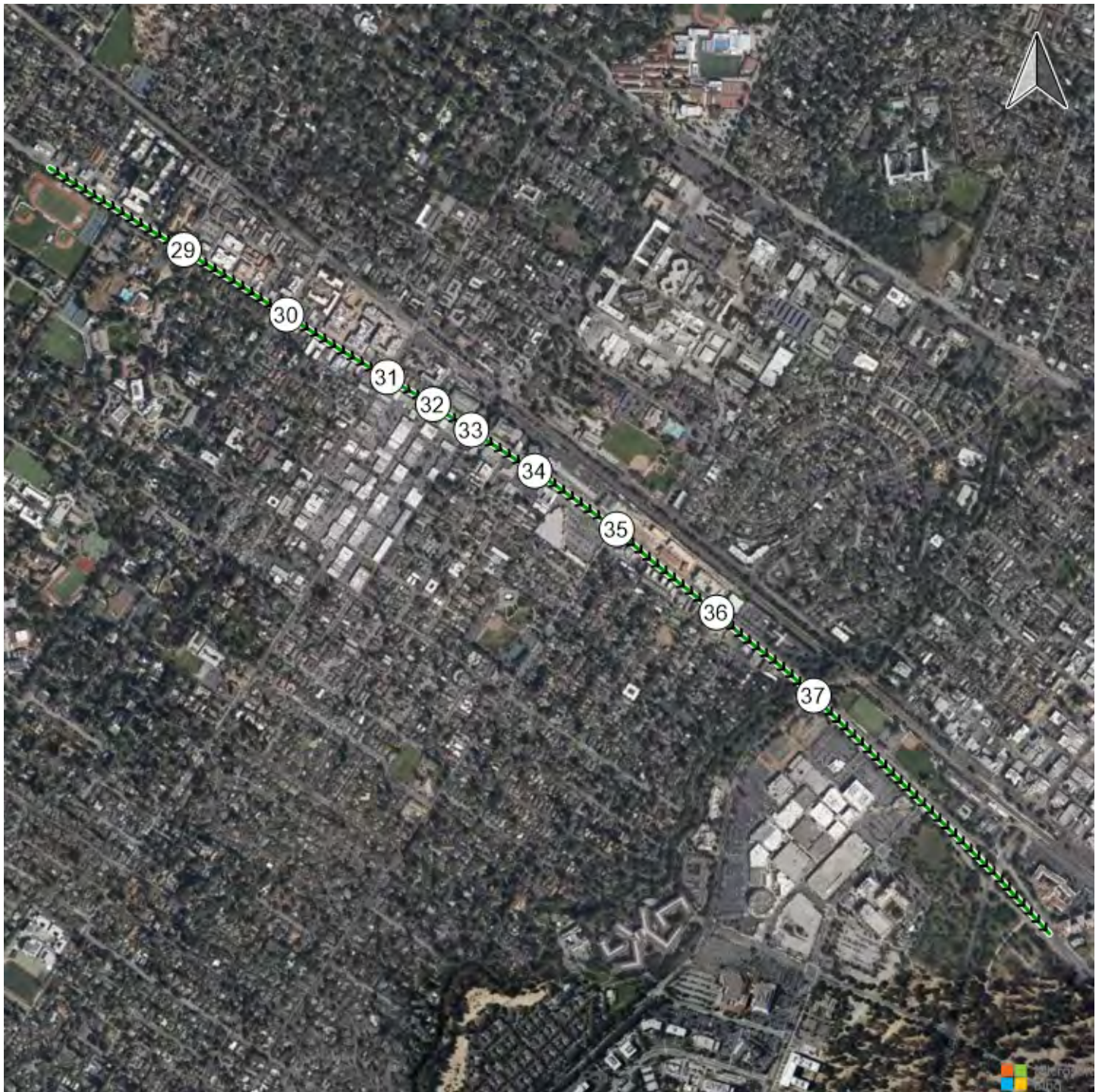


1108
164
43
37 El Camin... Sand Hill... 200 152
36 El Camin... 154 El Camin...
35 El Camin... Middle A...
34 El Camin...
33 El Camin... Ravensw 98 El Camin...
171 El Camin...
30 El Camin...
117 El Camin...
29 El Camin... Encinal... 29
1554



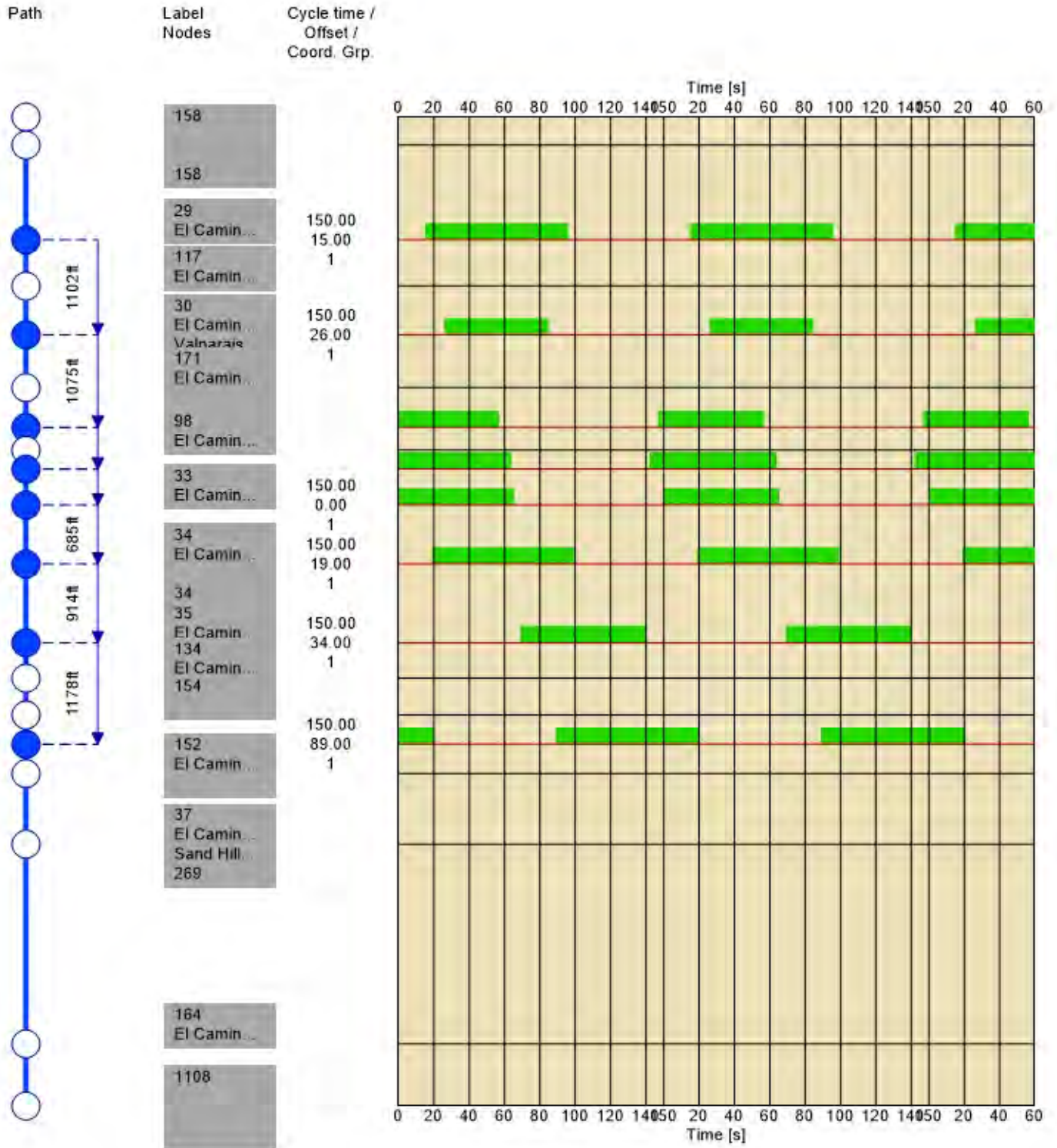
Time Space Diagram - Arterial Band

Route 2: ECR SB





Route 2: ECR SB



Vistro File: \\...\Vistro\_AllScenarios\_AM -  
ReducedTripCap\_10.7.2021.vistro  
Report File: \\...\Cumulative w Dumbarton + Project  
AM\_Imp.pdf

Scenario 25 Imp-Cumulative w/Dumbarton AM (2040 vols)+  
Project  
10/14/2021

### Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Marsh Rd/Florence St- Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.698	55.1	E
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	NB Left	1.602	234.3	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.375	147.6	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Left	0.927	20.5	C
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.064	101.6	F
131	Chilco Street/Hamilton Avenue	Signalized	HCM 6th Edition	WB Right	0.466	15.6	B
200	O'Brien Drive/Kavanaugh Drive	Signalized	HCM 6th Edition	WB Right	0.776	24.0	C
264	Adams Drive/O'Brien Drive	Signalized	HCM 6th Edition	EB Left	0.703	18.5	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	55.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Drive		
Base Volume Input [veh/h]	224	974	126	29	1014	413	611	77	224	38	21	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.60	5.60	7.40	5.10	3.00	6.50	8.50	4.50	25.90	37.50	28.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	15	0	0	0
Total Hourly Volume [veh/h]	224	974	126	29	1014	413	611	77	209	38	21	25
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	251	32	7	261	106	157	20	54	10	5	6
Total Analysis Volume [veh/h]	231	1004	130	30	1045	426	630	79	215	39	22	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		1			2			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			1			2	
v_co, Outbound Pedestrian Volume crossing		0			0			1			0	
v_ci, Inbound Pedestrian Volume crossing mi		0			1			0			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		2			0			6			0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	50.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lead	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	15	76	76	12	72	72	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	13	96	96	5	89	89	38	38	38	12	12
g / C, Green / Cycle	0.08	0.60	0.60	0.03	0.56	0.56	0.24	0.24	0.24	0.07	0.07
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.31	0.02	0.30	0.27	0.21	0.21	0.14	0.03	0.04
s, saturation flow rate [veh/h]	1752	1876	1792	1704	3472	1575	1717	1706	1526	1439	1212
c, Capacity [veh/h]	142	1132	1081	58	1932	877	409	407	364	106	90
d1, Uniform Delay [s]	73.44	18.16	18.25	75.88	22.50	21.55	58.55	58.41	53.79	70.46	71.37
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.17	0.16	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	310.01	1.64	1.76	2.58	1.09	1.93	8.69	8.10	1.14	1.56	3.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.62	0.51	0.52	0.51	0.54	0.49	0.87	0.87	0.59	0.37	0.54
d, Delay for Lane Group [s/veh]	383.45	19.80	20.01	78.45	23.59	23.48	67.24	66.52	54.93	72.02	75.03
Lane Group LOS	F	B	C	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	18.10	12.62	12.29	1.26	12.71	10.17	15.04	14.73	7.89	1.59	2.01
50th-Percentile Queue Length [ft/ln]	452.52	315.39	307.21	31.42	317.85	254.21	375.96	368.25	197.19	39.71	50.35
95th-Percentile Queue Length [veh/ln]	28.88	18.44	18.04	2.26	18.56	15.40	21.40	21.02	12.49	2.86	3.63
95th-Percentile Queue Length [ft/ln]	722.05	461.01	450.94	56.56	464.05	384.95	534.95	525.61	312.33	71.48	90.63

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	383.45	19.89	20.01	78.45	23.59	23.48	66.93	66.52	54.93	72.02	75.03	75.03
Movement LOS	F	B	C	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	81.43			24.66			64.10			73.68		
Approach LOS	F			C			E			E		
d_I, Intersection Delay [s/veh]	55.14											
Intersection LOS	E											
Intersection V/C	0.698											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.34	69.34	69.34	69.34
I_p,int, Pedestrian LOS Score for Intersection	2.988	3.135	2.508	2.056
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	843	400	410
d_b, Bicycle Delay [s]	24.53	26.77	51.32	50.53
I_b,int, Bicycle LOS Score for Intersection	2.686	2.798	3.109	1.703
Bicycle LOS	B	C	C	A

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	234.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.602

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑ ↑		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	135.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	



**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	266	1221	1418	25	172	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.30	5.70	10.30	22.20	0.00	6.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	266	1221	1418	25	172	95
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	332	385	7	47	26
Total Analysis Volume [veh/h]	289	1327	1541	27	187	103
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	4		9		3	
v_di, Inbound Pedestrian Volume crossing in	3		9		4	
v_co, Outbound Pedestrian Volume crossing	9		2		2	
v_ci, Inbound Pedestrian Volume crossing mi	9		2		2	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	8		1		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	16	106	90	90	24	24
Vehicle Extension [s]	2.0	2.0	2.0	2.0	2.0	2.0
Walk [s]	0	0	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	0.00
g_i, Effective Green Time [s]	13	106	90	90	16	32
g / C, Green / Cycle	0.10	0.82	0.70	0.70	0.13	0.25
(v / s)_i Volume / Saturation Flow Rate	0.36	0.86	1.00	1.01	0.11	0.13
s, saturation flow rate [veh/h]	795	1546	781	775	1732	792
c, Capacity [veh/h]	80	1267	544	540	219	198
d1, Uniform Delay [s]	58.39	11.71	19.72	19.72	55.52	41.90
k, delay calibration	0.50	0.50	0.50	0.50	0.17	0.29
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1210.33	38.72	209.34	213.84	13.25	5.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	3.62	1.05	1.44	1.45	0.85	0.52
d, Delay for Lane Group [s/veh]	1268.72	50.43	229.06	233.56	68.77	47.43
Lane Group LOS	F	F	F	F	E	D
Critical Lane Group	Yes	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	29.41	17.99	45.26	45.62	6.81	3.16
50th-Percentile Queue Length [ft/ln]	735.22	449.83	1131.52	1140.46	170.16	79.02
95th-Percentile Queue Length [veh/ln]	47.55	25.98	72.23	72.98	11.08	5.69
95th-Percentile Queue Length [ft/ln]	1188.82	649.59	1805.64	1824.51	277.12	142.24

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	1268.72	50.43	231.27	233.56	68.77	47.43
Movement LOS	F	F	F	F	E	D
d_A, Approach Delay [s/veh]	268.30		231.31		61.19	
Approach LOS	F		F		E	
d_I, Intersection Delay [s/veh]	234.32					
Intersection LOS	F					
Intersection V/C	1.602					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.166	3.152	2.155
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1570	1324	323
d_b, Bicycle Delay [s]	3.01	7.42	45.67
I_b,int, Bicycle LOS Score for Intersection	2.893	2.853	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	147.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.375

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	← ↑ →			← ↑ →			← ↑ →			← ↑ →		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			BayRoad		
Base Volume Input [veh/h]	143	1863	423	40	1365	7	17	93	421	260	114	305
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.70	6.60	2.00	10.00	30.00	10.80	4.10	1.80	2.90	7.50	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	44	0	0	34
Total Hourly Volume [veh/h]	143	1863	423	40	1365	7	17	93	377	260	114	271
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	495	113	11	363	2	5	25	100	69	30	72
Total Analysis Volume [veh/h]	152	1982	450	43	1452	7	18	99	401	277	121	288
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			3			3		
v_di, Inbound Pedestrian Volume crossing in	3			3			2			2		
v_co, Outbound Pedestrian Volume crossing	8			12			7			11		
v_ci, Inbound Pedestrian Volume crossing mi	7			11			8			12		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			5			14		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	40	40	21	40	40	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	9	60	60	7	58	58	63	32	32	31	37	37
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	0.00	0.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	0.00	0.00
g_i, Effective Green Time [s]	6	58	58	4	56	56	56	28	28	25	0	0
g / C, Green / Cycle	0.05	0.45	0.45	0.03	0.43	0.43	0.43	0.21	0.21	0.19	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.12	0.47	0.50	0.03	0.64	0.64	0.02	0.06	0.31	0.18	0.15	0.40
s, saturation flow rate [veh/h]	1270	3455	1627	1270	1491	781	1180	1577	1315	1536	800	723
c, Capacity [veh/h]	95	1541	726	75	642	336	544	338	282	297	0	0
d1, Uniform Delay [s]	64.17	36.00	36.00	64.54	37.00	37.00	22.70	42.78	50.53	51.64	0.00	0.00
k, delay calibration	0.23	0.50	0.50	0.04	0.50	0.50	0.11	0.04	0.50	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	295.33	36.68	73.22	2.55	229.13	236.42	0.02	0.18	209.19	5.77	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.61	1.05	1.12	0.57	1.49	1.49	0.03	0.29	1.42	0.93	10000.0	10000.0
d, Delay for Lane Group [s/veh]	359.50	72.68	109.22	67.09	266.13	273.42	22.72	42.96	259.72	57.40	0.00	0.00
Lane Group LOS	F	F	F	E	F	F	C	D	F	E	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	10.98	31.06	36.62	1.52	30.54	32.67	0.34	2.71	25.44	4.67	0.00	0.00
50th-Percentile Queue Length [ft/ln]	274.62	776.49	915.45	37.93	763.45	816.64	8.44	67.66	636.12	116.85	0.00	0.00
95th-Percentile Queue Length [veh/ln]	18.31	41.68	50.72	2.73	49.37	52.50	0.61	4.87	39.61	8.22	0.00	0.00
95th-Percentile Queue Length [ft/ln]	457.84	1041.88	1268.08	68.27	1234.27	1312.45	15.20	121.78	990.35	205.49	0.00	0.00



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	359.50	79.43	109.22	67.09	268.61	273.42	22.72	42.96	259.72	57.40	0.00	0.00
Movement LOS	F	E	F	E	F	F	C	D	F	E	A	A
d_A, Approach Delay [s/veh]	101.09			262.86			210.06			23.18		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	147.59											
Intersection LOS	F											
Intersection V/C	1.375											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	33.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	36.19	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.496	3.065	2.633	2.684
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	846	815	431	0
d_b, Bicycle Delay [s]	21.66	22.82	40.12	65.00
I_b,int, Bicycle LOS Score for Intersection	2.981	2.386	2.487	2.748
Bicycle LOS	C	B	B	B

**Sequence**

Ring 1	2	1	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.927

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	⇐		⇐		⇐⇐⇐	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	1
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	65	1387	1211	627	463	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	2.40	3.00	1.80	3.30	1.40
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	299	0	77
Total Hourly Volume [veh/h]	65	1387	1211	328	463	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	347	303	82	116	0
Total Analysis Volume [veh/h]	65	1387	1211	328	463	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		4		4	
v_ci, Inbound Pedestrian Volume crossing mi	0		4		4	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	1		2		1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	73	73	73	73	73	73
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	4	43	35	35	21	21
g / C, Green / Cycle	0.06	0.58	0.48	0.48	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.53	0.44	0.27	0.26	0.00
s, saturation flow rate [veh/h]	1318	2615	2770	1232	1801	841
c, Capacity [veh/h]	75	1523	1323	588	515	240
d1, Uniform Delay [s]	34.33	13.64	17.81	13.59	25.21	0.00
k, delay calibration	0.04	0.15	0.15	0.15	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.48	3.43	4.11	1.18	2.40	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.91	0.92	0.56	0.90	0.00
d, Delay for Lane Group [s/veh]	44.81	17.07	21.91	14.77	27.61	0.00
Lane Group LOS	D	B	C	B	C	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.33	9.01	8.84	3.53	3.80	0.00
50th-Percentile Queue Length [ft/ln]	33.34	225.32	220.93	88.37	95.07	0.00
95th-Percentile Queue Length [veh/ln]	2.40	13.94	13.71	6.36	6.84	0.00
95th-Percentile Queue Length [ft/ln]	60.00	348.41	342.81	159.07	171.12	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	44.81	17.07	21.91	14.77	27.61	0.00
Movement LOS	D	B	C	B	C	A
d_A, Approach Delay [s/veh]	18.31		20.39		27.61	
Approach LOS	B		C		C	
d_I, Intersection Delay [s/veh]	20.48					
Intersection LOS	C					
Intersection V/C	0.927					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	26.44
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.638
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	983	983	983
d_b, Bicycle Delay [s]	9.47	9.47	9.47
I_b,int, Bicycle LOS Score for Intersection	2.758	3.076	1.560
Bicycle LOS	C	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	101.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.064

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	22	909	7	36	928	108	67	14	32	59	12	348
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	6	0	0	0
Total Hourly Volume [veh/h]	22	909	7	36	928	108	67	14	26	59	12	348
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	237	2	9	242	28	17	4	7	15	3	91
Total Analysis Volume [veh/h]	23	947	7	38	967	113	70	15	27	61	13	363
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	8			3			3			9		
v_di, Inbound Pedestrian Volume crossing in	9			3			3			8		
v_co, Outbound Pedestrian Volume crossing	11			4			11			4		
v_ci, Inbound Pedestrian Volume crossing mi	11			4			11			4		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	2			1			6			2		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												1,8
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	C	R
C, Cycle Length [s]	164	164	164	164	164	164	164	164	164	164
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.50	2.50	0.00	2.50	2.50	2.50	2.50	2.50	0.00
g_i, Effective Green Time [s]	107	74	74	107	100	14	14	14	30	63
g / C, Green / Cycle	0.65	0.45	0.45	0.65	0.61	0.08	0.08	0.08	0.18	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.29	0.29	0.05	0.76	0.04	0.04	0.02	0.08	0.43
s, saturation flow rate [veh/h]	551	1445	1894	700	1414	952	1396	1336	960	842
c, Capacity [veh/h]	92	652	855	380	860	79	116	111	175	322
d1, Uniform Delay [s]	41.55	34.61	34.62	14.61	32.19	71.70	71.68	70.27	59.51	50.36
k, delay calibration	0.23	0.23	0.23	0.11	0.50	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.99	2.17	1.66	0.11	124.36	3.77	2.54	1.12	1.61	88.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.25	0.63	0.63	0.10	1.26	0.44	0.43	0.24	0.42	1.13
d, Delay for Lane Group [s/veh]	44.54	36.78	36.28	14.73	156.55	75.47	74.23	71.39	61.13	139.04
Lane Group LOS	D	D	D	B	F	E	E	E	E	F
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.39	13.31	17.34	0.53	63.10	1.52	2.16	1.13	2.86	21.17
50th-Percentile Queue Length [ft/ln]	9.69	332.69	433.54	13.36	1577.43	37.90	54.12	28.23	71.39	529.29
95th-Percentile Queue Length [veh/ln]	0.70	19.29	24.17	0.96	90.59	2.73	3.90	2.03	5.14	31.04
95th-Percentile Queue Length [ft/ln]	17.44	482.25	604.27	24.06	2264.81	68.22	97.41	50.82	128.50	776.06

**Movement, Approach, & Intersection Results**

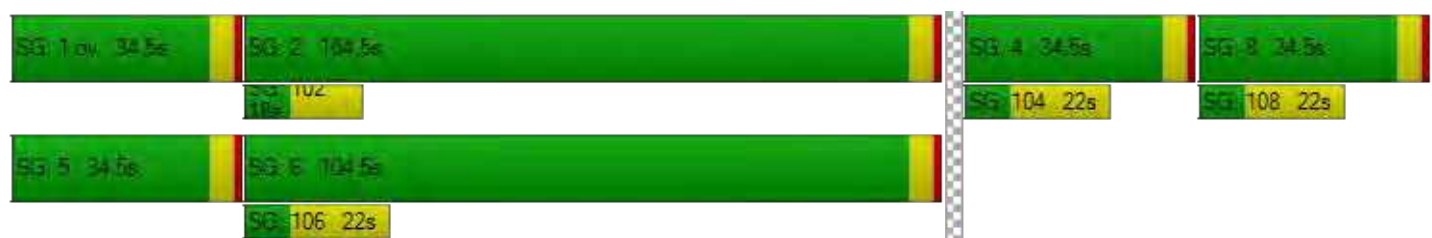
d_M, Delay for Movement [s/veh]	44.54	36.50	36.28	14.73	156.55	156.55	74.87	74.23	71.39	61.13	61.13	139.04
Movement LOS	D	D	D	B	F	F	E	E	E	E	E	F
d_A, Approach Delay [s/veh]	36.69			151.73			73.93			125.85		
Approach LOS	D			F			E			F		
d_I, Intersection Delay [s/veh]	101.65											
Intersection LOS	F											
Intersection V/C	1.064											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	71.50	71.50	71.50	71.50
l_p,int, Pedestrian LOS Score for Intersection	2.574	2.820	2.210	2.128
Crosswalk LOS	B	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	244	244	365	365
d_b, Bicycle Delay [s]	63.41	63.38	55.04	54.93
l_b,int, Bicycle LOS Score for Intersection	2.366	3.404	1.754	2.281
Bicycle LOS	B	C	A	B

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.466

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Base Volume Input [veh/h]	13	453	10	76	221	45	37	41	21	22	51	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	453	10	76	221	45	37	41	21	22	51	131
Peak Hour Factor	0.9570	0.9570	0.9570	0.8000	0.8000	0.8000	0.7830	0.7830	0.7830	0.9110	0.9110	0.9110
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	118	3	24	69	14	12	13	7	6	14	36
Total Analysis Volume [veh/h]	14	473	10	95	276	56	47	52	27	24	56	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			1			1		
v_di, Inbound Pedestrian Volume crossing in	1			1			2			2		
v_co, Outbound Pedestrian Volume crossing	2			4			5			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			5			4			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	60	0	0	60	0	0	30	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	56	56	26	26
g / C, Green / Cycle	0.62	0.62	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.30	0.31	0.10	0.15
s, saturation flow rate [veh/h]	1663	1361	1278	1475
c, Capacity [veh/h]	1076	896	424	470
d1, Uniform Delay [s]	9.13	8.86	24.83	26.73
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.43	1.82	1.78	3.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.46	0.48	0.30	0.48
d, Delay for Lane Group [s/veh]	10.56	10.68	26.62	30.16
Lane Group LOS	B	B	C	C
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	5.06	4.31	2.27	4.37
50th-Percentile Queue Length [ft/ln]	126.52	107.75	56.70	109.18
95th-Percentile Queue Length [veh/ln]	8.75	7.71	4.08	7.79
95th-Percentile Queue Length [ft/ln]	218.76	192.87	102.07	194.86

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	10.56	10.56	10.56	10.68	10.68	10.68	26.62	26.62	26.62	30.16	30.16	30.16
Movement LOS	B	B	B	B	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	10.56			10.68			26.62			30.16		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	15.63											
Intersection LOS	B											
Intersection V/C	0.466											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	36.45			36.45			36.45			36.45		
I_p,int, Pedestrian LOS Score for Intersection	2.152			2.315			1.859			2.037		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1244			1244			578			578		
d_b, Bicycle Delay [s]	6.42			6.42			22.76			22.76		
I_b,int, Bicycle LOS Score for Intersection	2.380			2.264			1.768			1.929		
Bicycle LOS	B			B			A			A		

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	Signalized	Delay (sec / veh):	24.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	┆		┆┆		┆┆	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh Drive	
Base Volume Input [veh/h]	646	270	74	384	210	257
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	646	270	74	384	210	257
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	184	77	21	109	60	73
Total Analysis Volume [veh/h]	734	307	84	436	239	292
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	0	0	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	66	0	0	66	24	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	62	62	62	20	20
g / C, Green / Cycle	0.69	0.69	0.69	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.59	0.16	0.24	0.14	0.19
s, saturation flow rate [veh/h]	1763	538	1855	1767	1577
c, Capacity [veh/h]	1215	197	1278	393	350
d1, Uniform Delay [s]	10.63	32.60	5.69	31.48	33.41
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.91	6.60	0.73	6.87	20.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.86	0.43	0.34	0.61	0.83
d, Delay for Lane Group [s/veh]	18.54	39.19	6.42	38.35	53.64
Lane Group LOS	B	D	A	D	D
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	15.11	2.02	3.05	5.33	7.90
50th-Percentile Queue Length [ft/ln]	377.66	50.50	76.19	133.15	197.60
95th-Percentile Queue Length [veh/ln]	21.48	3.64	5.49	9.11	12.51
95th-Percentile Queue Length [ft/ln]	537.01	90.91	137.14	227.77	312.87

**Movement, Approach, & Intersection Results**

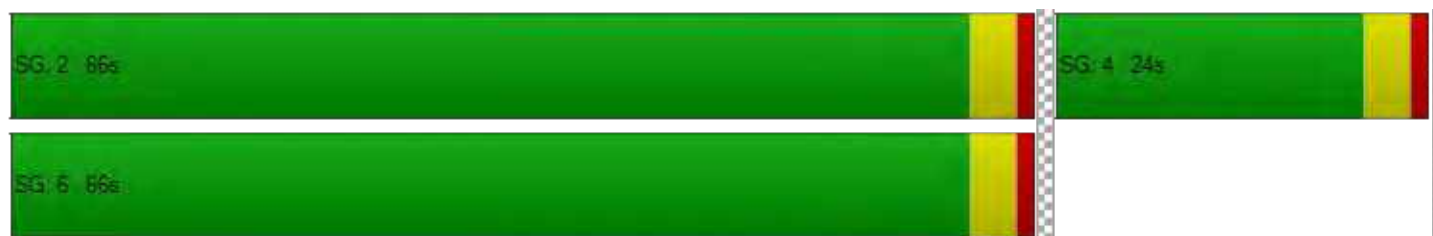
d_M, Delay for Movement [s/veh]	18.54	18.54	39.19	6.42	38.35	53.64
Movement LOS	B	B	D	A	D	D
d_A, Approach Delay [s/veh]	18.54		11.72		46.76	
Approach LOS	B		B		D	
d_I, Intersection Delay [s/veh]	24.01					
Intersection LOS	C					
Intersection V/C	0.776					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	0.000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1378	1378	444
d_b, Bicycle Delay [s]	4.36	4.36	27.22
I_b,int, Bicycle LOS Score for Intersection	3.277	2.418	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.703

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↔		↖		↗	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	33	72	149	336	738	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.10	5.10	5.10	5.10	5.10	5.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	72	149	336	738	110
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	23	48	109	240	36
Total Analysis Volume [veh/h]	43	94	194	436	958	143
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	4	8	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	19	0	0	71	71	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	L	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	67	67	67
g / C, Green / Cycle	0.17	0.74	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.09	0.39	0.24	0.62
s, saturation flow rate [veh/h]	1604	499	1823	1783
c, Capacity [veh/h]	267	234	1357	1327
d1, Uniform Delay [s]	34.17	33.91	3.86	7.69
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.86	27.24	0.63	6.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.51	0.83	0.32	0.83
d, Delay for Lane Group [s/veh]	41.03	61.16	4.49	13.80
Lane Group LOS	D	E	A	B
Critical Lane Group	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.20	6.06	2.24	12.35
50th-Percentile Queue Length [ft/ln]	79.96	151.62	56.11	308.68
95th-Percentile Queue Length [veh/ln]	5.76	10.10	4.04	18.11
95th-Percentile Queue Length [ft/ln]	143.92	252.59	100.99	452.75

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	41.03	41.03	61.16	4.49	13.80	13.80
Movement LOS	D	D	E	A	B	B
d_A, Approach Delay [s/veh]	41.03		21.94		13.80	
Approach LOS	D		C		B	
d_I, Intersection Delay [s/veh]	18.54					
Intersection LOS	B					
Intersection V/C	0.703					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.223	2.488	2.487
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	1489	1489
d_b, Bicycle Delay [s]	31.25	2.94	2.94
I_b,int, Bicycle LOS Score for Intersection	1.786	2.599	3.376
Bicycle LOS	A	B	C

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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AM\_Imp.pdf

Scenario 25 Imp-Cumulative w/Dumbarton AM (2040 vols)+  
Project  
10/14/2021

### Turning Movement Volume: Summary

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St- Bohannon Dr	224	974	126	29	1014	413	611	77	224	38	21	25	3776

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	266	1221	1418	25	172	95	3197

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	143	1863	423	40	1365	7	17	93	421	260	114	305	5051

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	65	1387	1211	627	463	60	3813

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	22	909	7	36	928	108	67	14	32	59	12	348	2542

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	13	453	10	76	221	45	37	41	21	22	51	131	1121

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	646	270	74	384	210	257	1841

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	33	72	149	336	738	110	1438

Vistro File: \\...\Vistro\_AllScenarios\_AM -  
ReducedTripCap\_10.7.2021.vistroScenario 25 Imp-Cumulative w/Dumbarton AM (2040 vols)+  
ProjectReport File: \\...\Cumulative w Dumbarton + Project  
AM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	224	974	126	29	1014	413	611	77	224	38	21	25	3776
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>224</b>	<b>974</b>	<b>126</b>	<b>29</b>	<b>1014</b>	<b>413</b>	<b>611</b>	<b>77</b>	<b>224</b>	<b>38</b>	<b>21</b>	<b>25</b>	<b>3776</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	266	1221	1418	25	172	95	3197
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>266</b>	<b>1221</b>	<b>1418</b>	<b>25</b>	<b>172</b>	<b>95</b>	<b>3197</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	Final Base	143	1863	423	40	1365	7	17	93	421	260	114	305	5051
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>143</b>	<b>1863</b>	<b>423</b>	<b>40</b>	<b>1365</b>	<b>7</b>	<b>17</b>	<b>93</b>	<b>421</b>	<b>260</b>	<b>114</b>	<b>305</b>	<b>5051</b>

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	65	1387	1211	627	463	60	3813
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>65</b>	<b>1387</b>	<b>1211</b>	<b>627</b>	<b>463</b>	<b>60</b>	<b>3813</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	22	909	7	36	928	108	67	14	32	59	12	348	2542
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>909</b>	<b>7</b>	<b>36</b>	<b>928</b>	<b>108</b>	<b>67</b>	<b>14</b>	<b>32</b>	<b>59</b>	<b>12</b>	<b>348</b>	<b>2542</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	13	453	10	76	221	45	37	41	21	22	51	131	1121
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>453</b>	<b>10</b>	<b>76</b>	<b>221</b>	<b>45</b>	<b>37</b>	<b>41</b>	<b>21</b>	<b>22</b>	<b>51</b>	<b>131</b>	<b>1121</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	646	270	74	384	210	257	1841
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>646</b>	<b>270</b>	<b>74</b>	<b>384</b>	<b>210</b>	<b>257</b>	<b>1841</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	33	72	149	336	738	110	1438
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>33</b>	<b>72</b>	<b>149</b>	<b>336</b>	<b>738</b>	<b>110</b>	<b>1438</b>

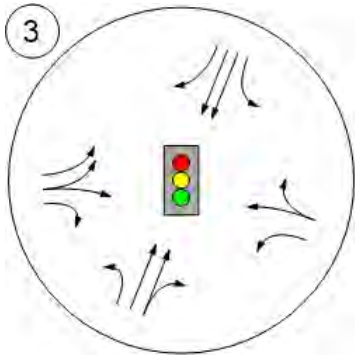
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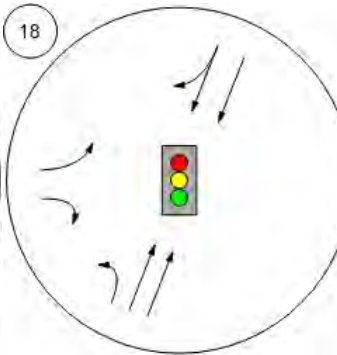
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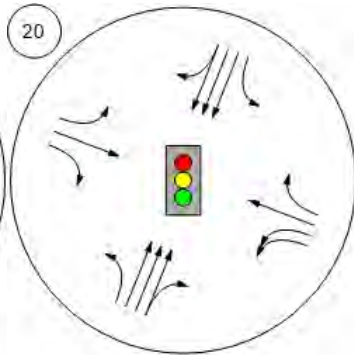
Marsh Rd/Florence St-Bohan



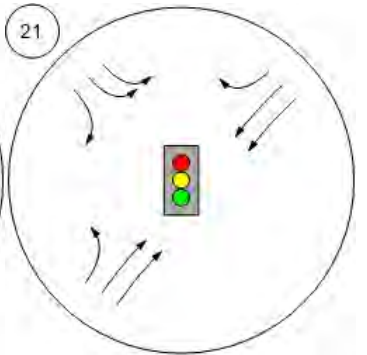
Willow Rd (SR 114)/Ivy Dr



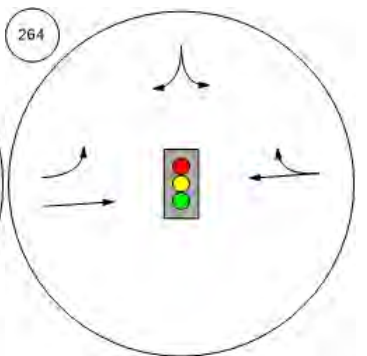
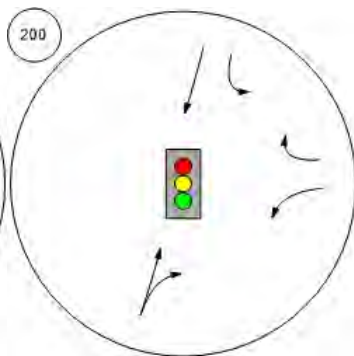
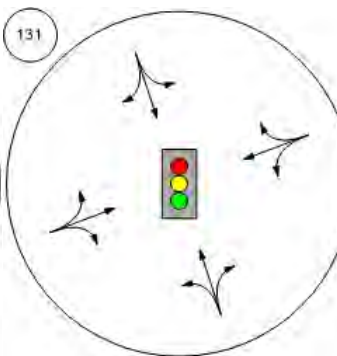
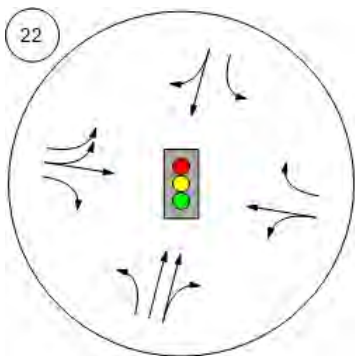
Willow Rd (SR 114)/Newbrid



Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu



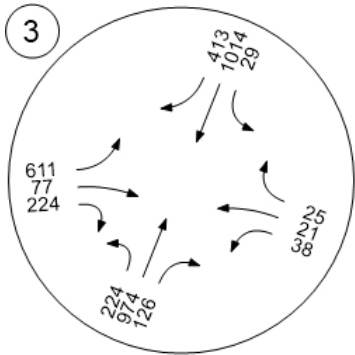
O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive



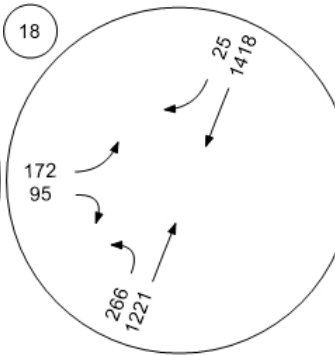
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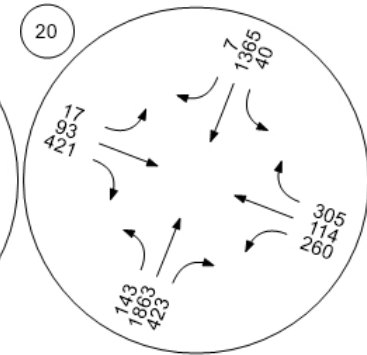
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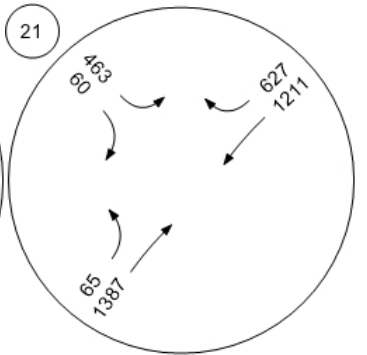
Willow Rd (SR 114)/Ivy Dr



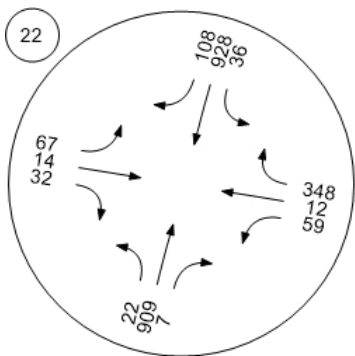
Willow Rd (SR 114)/Newbrid



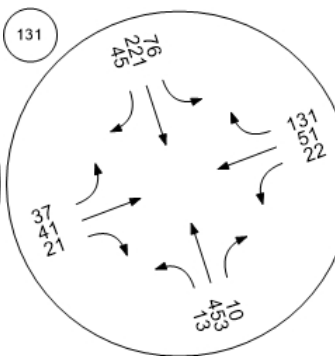
Willow Rd/Bay Rd



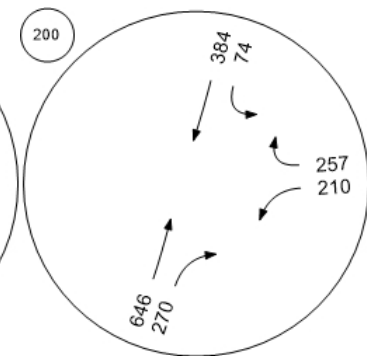
Willow Rd/Durham St-VA Me



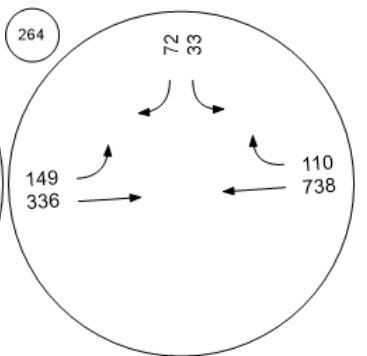
Chilco Street/Hamilton Avenu



O'Brien Drive/Kavanaugh Dri



Adams Drive/O'Brien Drive



Traffic Volume - In-Process Volume

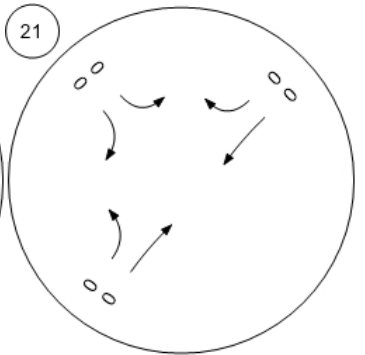
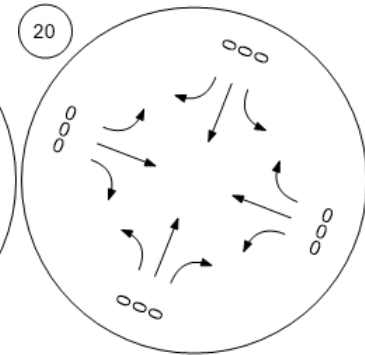
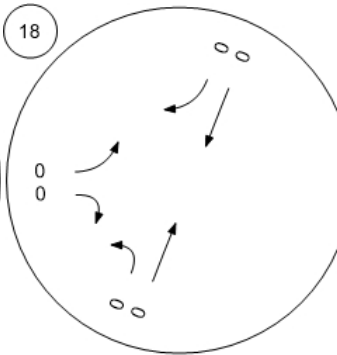
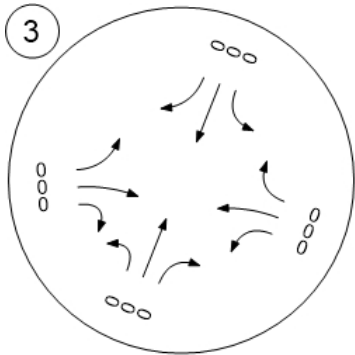


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd

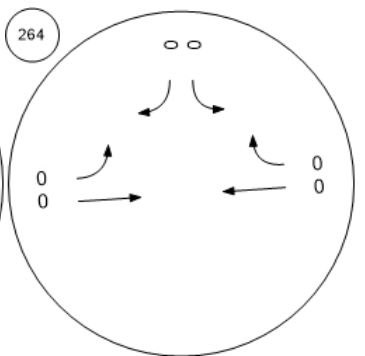
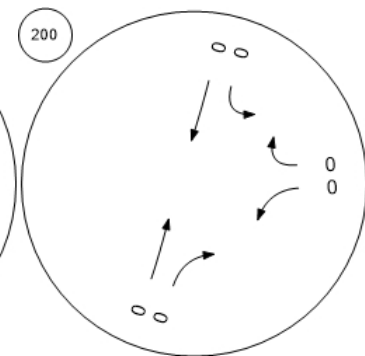
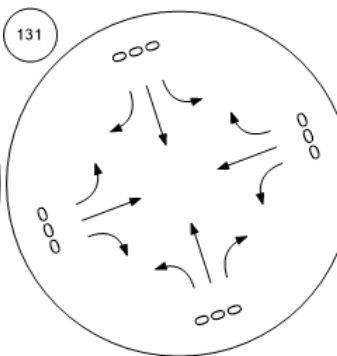
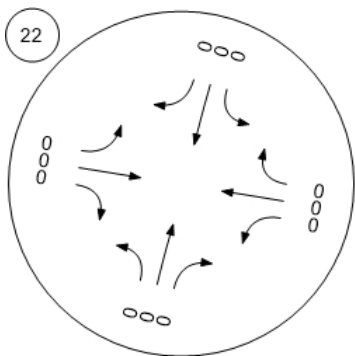


Willow Rd/Durham St-VA Me

Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri

Adams Drive/O'Brien Drive



Traffic Volume - Net New Site Trips

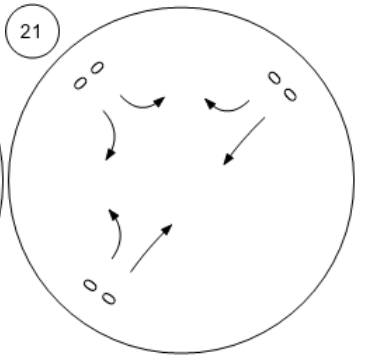
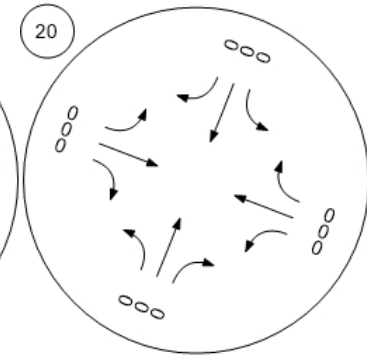
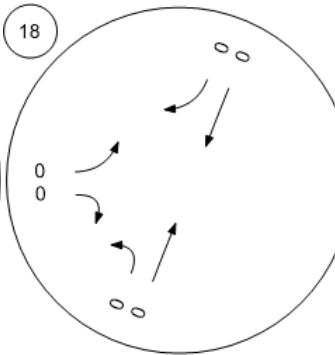
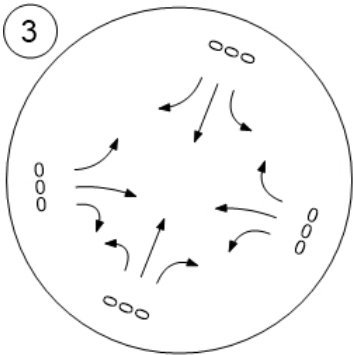


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

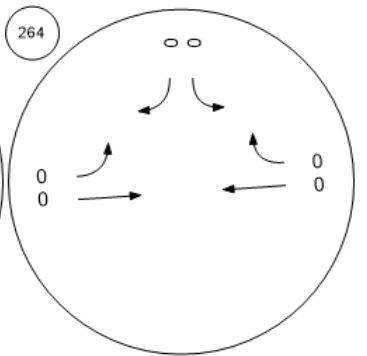
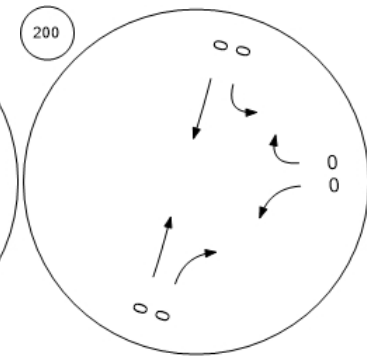
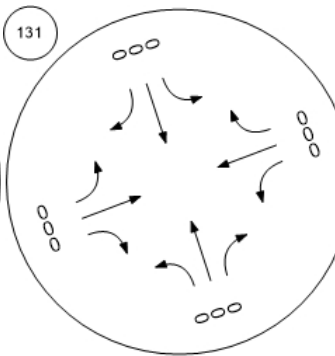
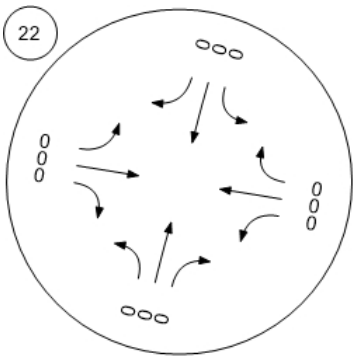
Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive



Traffic Volume - Other Volume

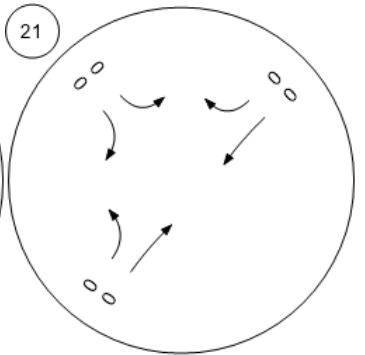
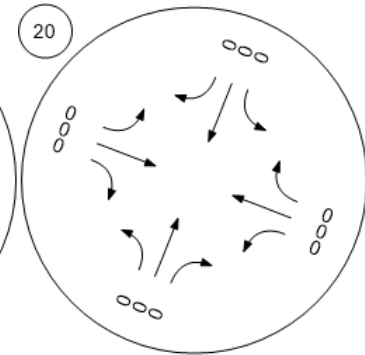
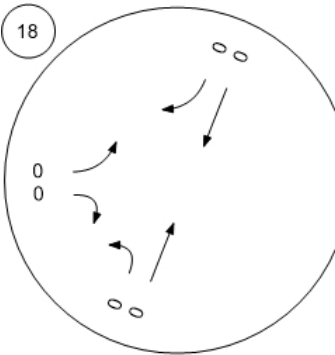
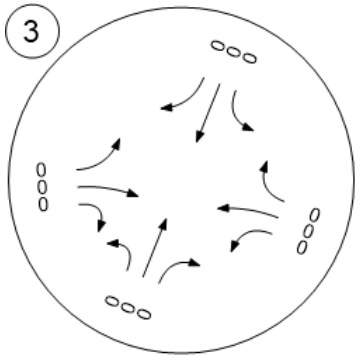


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd

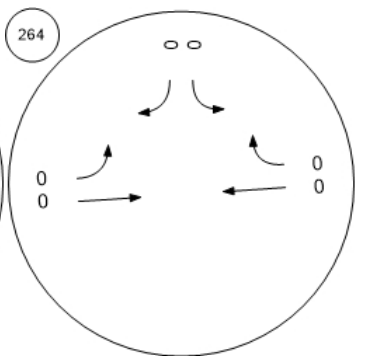
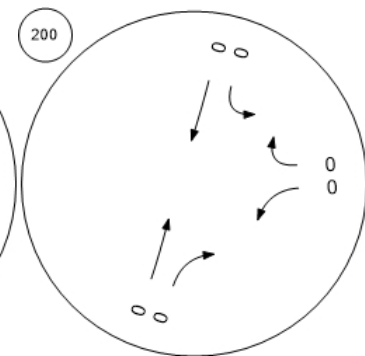
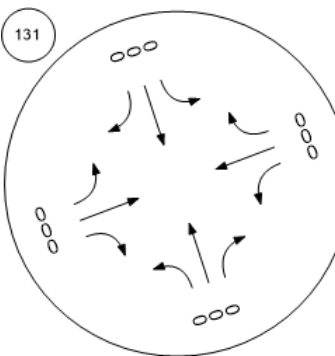
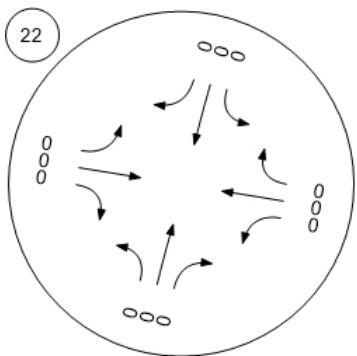


Willow Rd/Durham St-VA Me

Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri

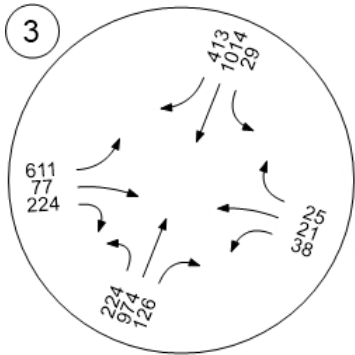
Adams Drive/O'Brien Drive



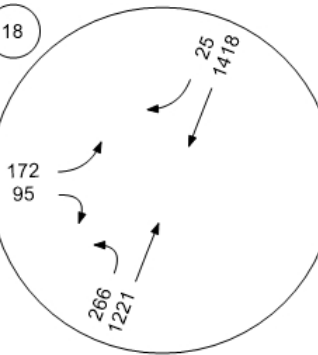
Traffic Volume - Future Total Volume



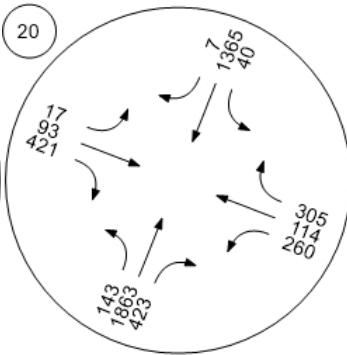
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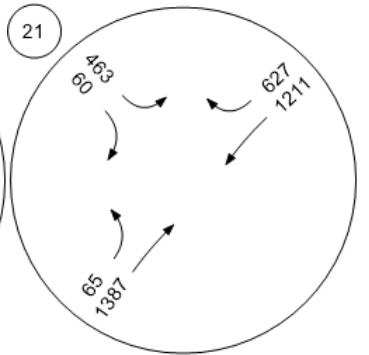
Willow Rd (SR 114)/Ivy Dr



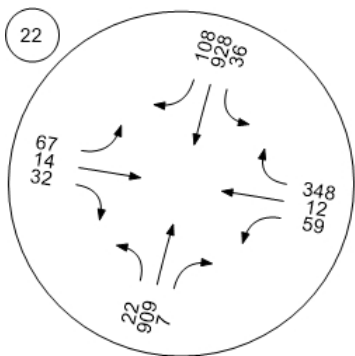
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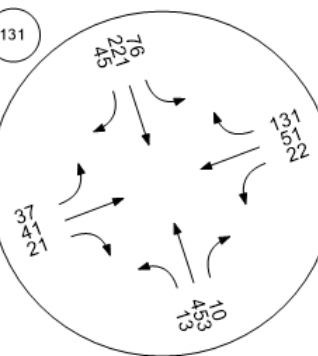
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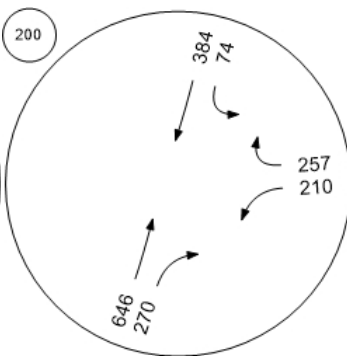
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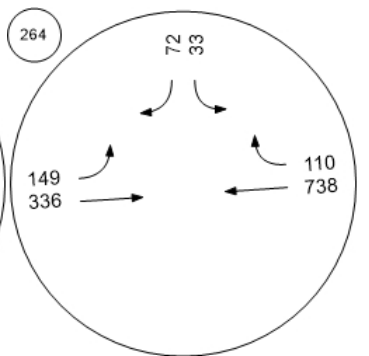
Chilco Street/Hamilton Avenu



O'Brien Drive/Kavanaugh Dri



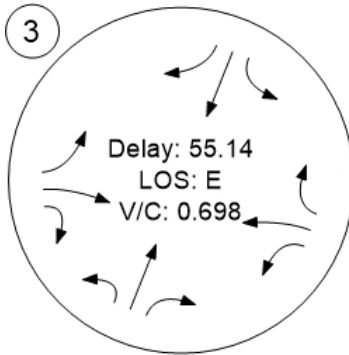
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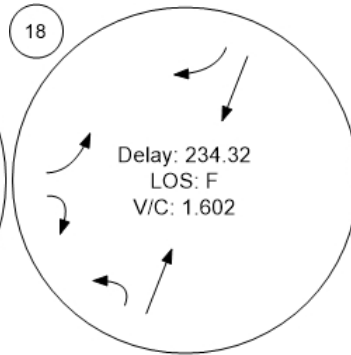
Traffic Conditions



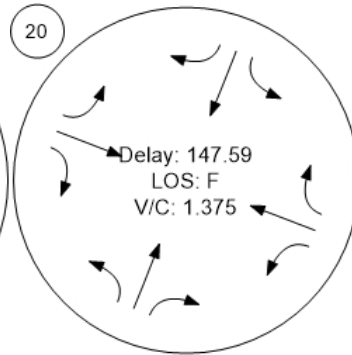
Marsh Rd/Florence St-Bohan



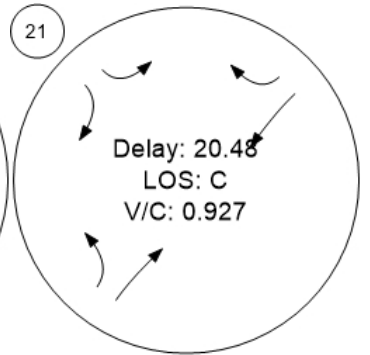
Willow Rd (SR 114)/Ivy Dr



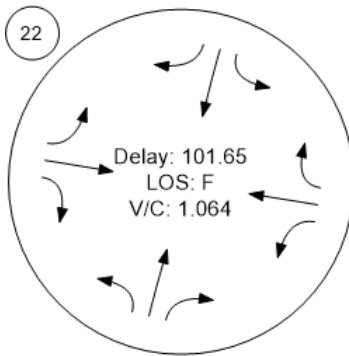
Willow Rd (SR 114)/Newbrid



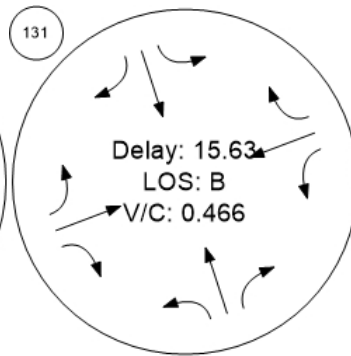
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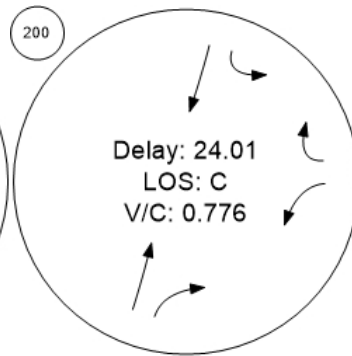
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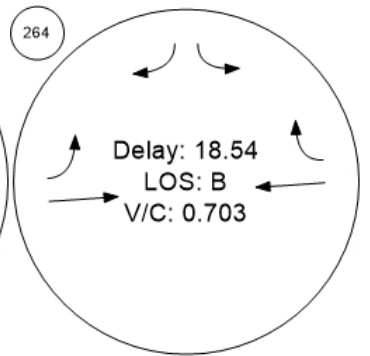
Chilco Street/Hamilton Avenu



O'Brien Drive/Kavanaugh Dri

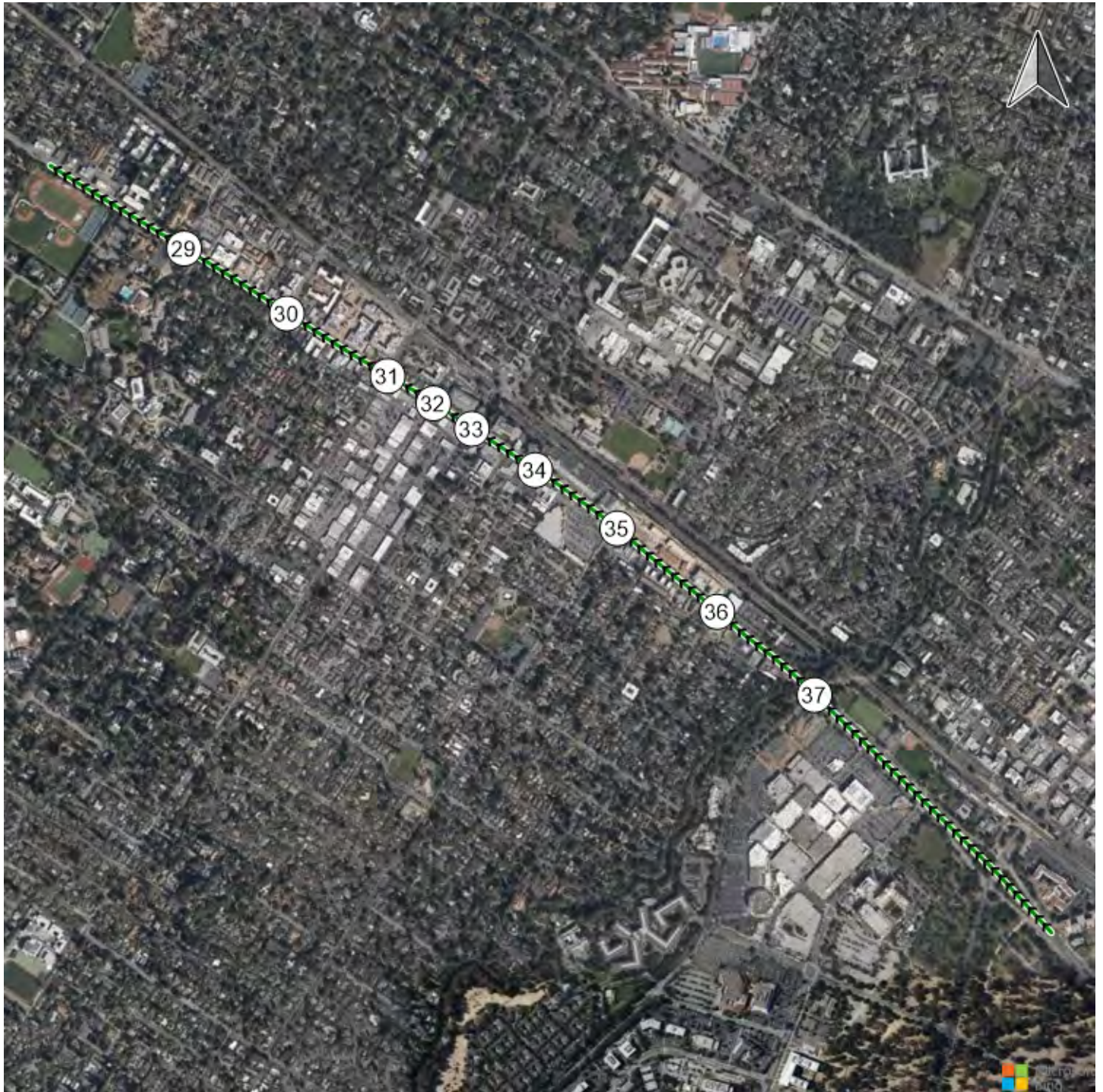


Adams Drive/O'Brien Drive



Time Space Diagram - Flowing Off

Route 1: ECR NB



Generated with  PTV VISTRO

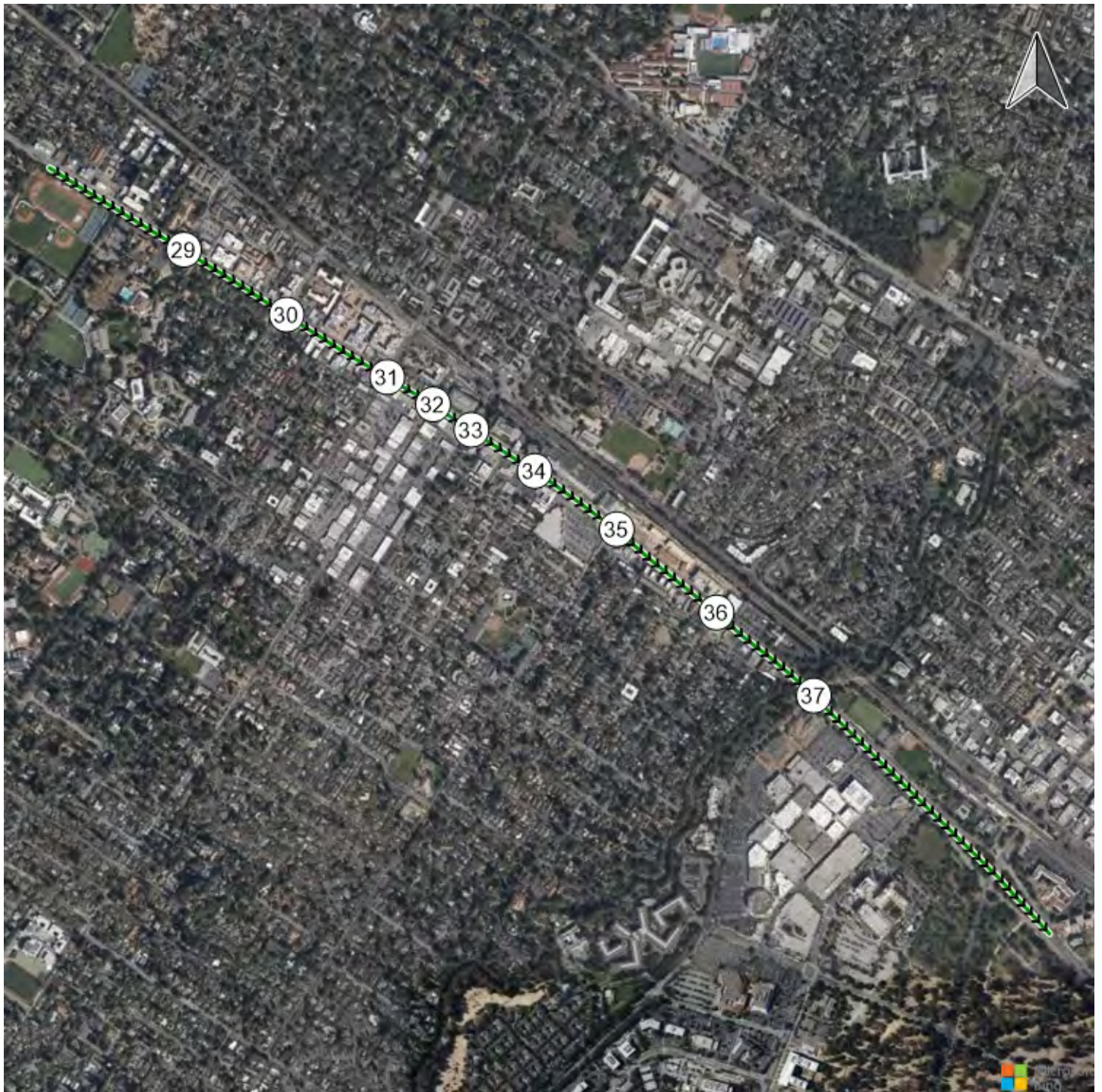
Version 2021 (SP 0-4)

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Route 1: ECR NB

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Generated with 

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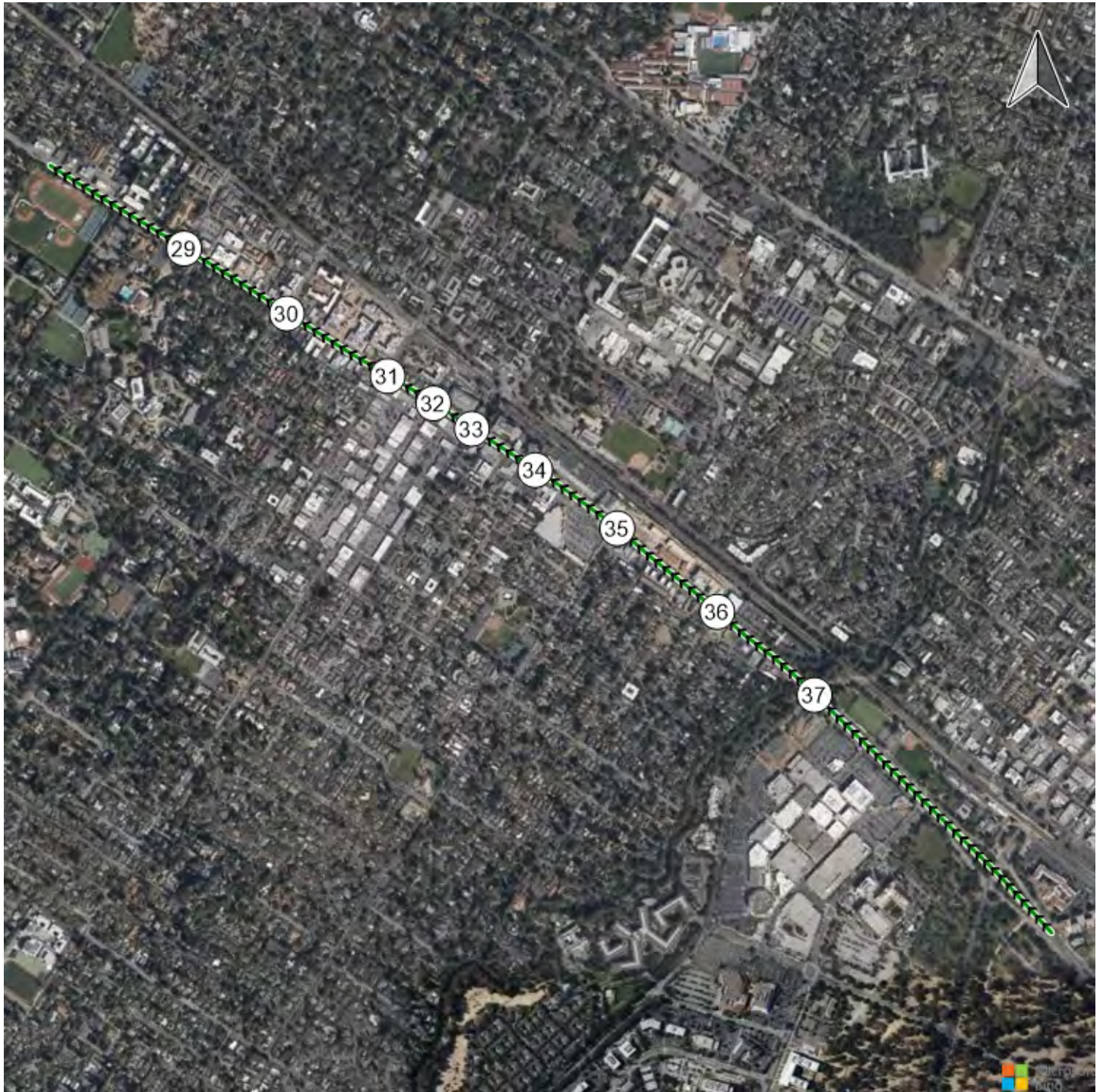
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Route 2: ECR SB

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Time Space Diagram - Arterial Band

Route 1: ECR NB



Generated with 

Version 2021 (SP 0-4)

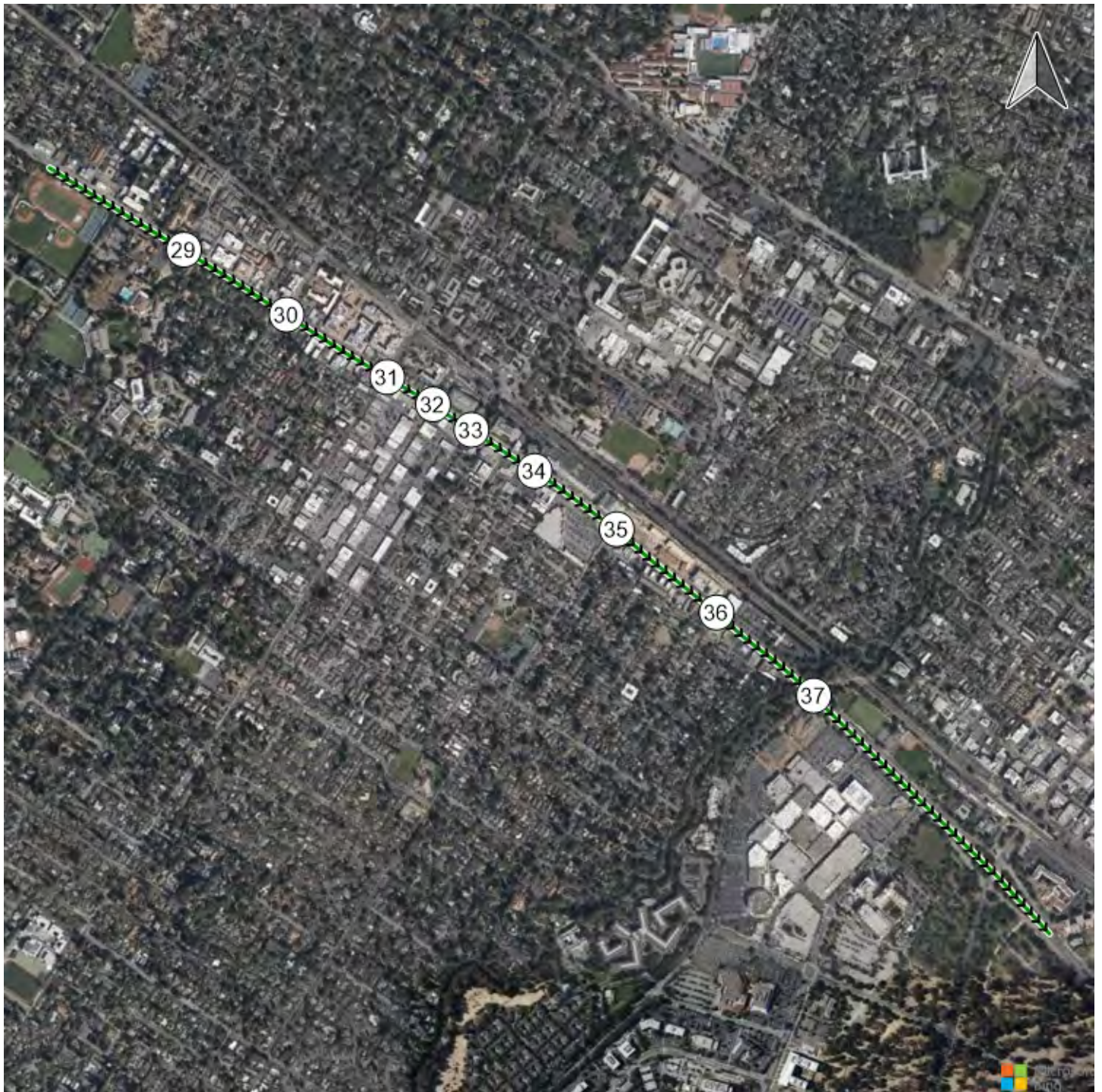
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Route 1: ECR NB

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Time Space Diagram - Arterial Band

Route 2: ECR SB



Generated with 

Version 2021 (SP 0-4)

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Route 2: ECR SB

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Vistro File: \\...\Vistro\_AllScenarios\_PM -  
ReducedTripCap\_10.7.2021.vistro  
Report File: \\...\Cumulative w Dumbarton + Project  
PM\_Imp.pdf

Scenario 25 Imp-Cumulative w/dumbarton PM (2040 vols)+  
Project  
10/14/2021

### Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Marsh Rd/Florence St- Bohannon Dr	Signalized	HCM 6th Edition	NB Left	0.732	48.1	D
18	Willow Rd (SR 114)/Ivy Dr	Signalized	HCM 6th Edition	NB Left	1.429	194.9	F
20	Willow Rd (SR 114) /Newbridge St	Signalized	HCM 6th Edition	NB Left	1.373	186.5	F
21	Willow Rd/Bay Rd	Signalized	HCM 6th Edition	NEB Thru	1.232	98.3	F
22	Willow Rd/Durham St-VA Med Entrance	Signalized	HCM 6th Edition	SB Thru	1.213	204.1	F
131	Chilco Street/Hamilton Avenue	Signalized	HCM 6th Edition	EB Thru	0.732	15.2	B
200	O'Brien Drive/Kavanaugh Drive	Signalized	HCM 6th Edition	WB Right	0.768	31.6	C
264	Adams Drive/O'Brien Drive	Signalized	HCM 6th Edition	SB Left	0.559	12.9	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 3: Marsh Rd/Florence St-Bohannon Dr**

Control Type:	Signalized	Delay (sec / veh):	48.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

**Intersection Setup**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	155.00	100.00	100.00	90.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		



**Volumes**

Name	Marsh Road			Marsh Road			Florence Street			Bohannon Avenue		
Base Volume Input [veh/h]	296	675	54	13	1013	354	461	34	230	125	87	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.70	3.20	6.00	6.70	2.20	4.00	2.50	0.00	0.80	4.10	0.00	6.90
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	174	0	0	0
Total Hourly Volume [veh/h]	296	675	54	13	1013	354	461	34	56	125	87	40
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	181	15	3	272	95	124	9	15	34	23	11
Total Analysis Volume [veh/h]	318	726	58	14	1089	381	496	37	60	134	94	43
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		2			1			1			1	
v_di, Inbound Pedestrian Volume crossing in		1			1			2			1	
v_co, Outbound Pedestrian Volume crossing		0			3			3			1	
v_ci, Inbound Pedestrian Volume crossing mi		1			3			3			0	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		1			2			3			1	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	31.0
Offset Reference	LagCoordGreen
Permissive Mode	SingleBand
Lost time [s]	4.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	5	2	2	1	6	6	4	3	4	8	4	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lag	-	-	-	-	-
Minimum Green [s]	4	12	12	4	12	12	8	8	8	0	8	0
Maximum Green [s]	0	0	0	0	0	0	0	0	0	0	0	0
Amber [s]	3.0	3.6	3.6	3.0	3.6	3.6	3.2	3.0	3.2	0.0	3.2	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	22	55	55	12	45	45	37	36	37	0	37	0
Vehicle Extension [s]	2.0	5.0	5.0	2.0	5.0	5.0	2.5	2.5	2.5	0.0	2.5	0.0
Walk [s]	0	7	7	0	7	7	7	7	7	0	7	0
Pedestrian Clearance [s]	0	12	12	0	16	16	25	25	25	0	25	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minimum Recall	No	Yes		No	Yes			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	20.0	20.0	0.0	0.0	0.0	20.0	20.0	20.0	0.0	20.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	R	L	C	R	L	C
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
g_i, Effective Green Time [s]	20	87	87	4	71	71	26	26	26	16	16
g / C, Green / Cycle	0.14	0.62	0.62	0.03	0.50	0.50	0.18	0.18	0.18	0.11	0.11
(v / s)_i Volume / Saturation Flow Rate	0.18	0.21	0.22	0.01	0.31	0.25	0.15	0.15	0.04	0.08	0.08
s, saturation flow rate [veh/h]	1771	1852	1797	1714	3555	1521	1774	1821	1572	1751	1788
c, Capacity [veh/h]	252	1151	1117	45	1796	769	324	333	287	196	201
d1, Uniform Delay [s]	59.92	12.74	12.76	66.82	24.67	22.62	54.78	54.78	48.47	59.64	59.65
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.08	0.08	0.08	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	145.03	0.82	0.85	1.45	1.53	2.28	3.66	3.56	0.26	3.08	3.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.26	0.34	0.35	0.31	0.61	0.50	0.81	0.81	0.21	0.68	0.68
d, Delay for Lane Group [s/veh]	204.95	13.56	13.61	68.27	26.20	24.90	58.44	58.34	48.74	62.72	62.68
Lane Group LOS	F	B	B	E	C	C	E	E	D	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	19.05	6.14	6.00	0.51	13.06	8.62	9.31	9.54	1.83	4.79	4.89
50th-Percentile Queue Length [ft/ln]	476.29	153.52	150.01	12.71	326.61	215.62	232.66	238.60	45.83	119.65	122.26
95th-Percentile Queue Length [veh/ln]	28.96	10.20	10.02	0.91	18.99	13.44	14.31	14.61	3.30	8.37	8.52
95th-Percentile Queue Length [ft/ln]	723.93	255.12	250.44	22.87	474.80	336.03	357.73	365.26	82.49	209.34	212.93

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	204.95	13.59	13.61	68.27	26.20	24.90	58.39	58.34	48.74	62.72	62.68	62.68
Movement LOS	F	B	B	E	C	C	E	E	D	E	E	E
d_A, Approach Delay [s/veh]	68.81			26.26			57.41			62.70		
Approach LOS	E			C			E			E		
d_I, Intersection Delay [s/veh]	48.07											
Intersection LOS	D											
Intersection V/C	0.732											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	59.37			59.37			59.37			59.37		
l_p,int, Pedestrian LOS Score for Intersection	2.959			3.137			2.717			2.064		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	721			578			458			469		
d_b, Bicycle Delay [s]	28.63			35.41			41.66			41.01		
l_b,int, Bicycle LOS Score for Intersection	2.469			2.784			2.825			2.007		
Bicycle LOS	B			C			C			B		

**Sequence**

Ring 1	1	2	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 18: Willow Rd (SR 114)/Ivy Dr**

Control Type:	Signalized	Delay (sec / veh):	194.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.429

**Intersection Setup**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↩ ↑		↑ ↩		↩↩	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	85.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road (SR 114)		Willow Road (SR 114)		Ivy Drive	
Base Volume Input [veh/h]	244	933	1447	52	163	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.50	3.30	2.80	0.00	0.00	2.10
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	244	933	1447	52	163	114
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	66	251	389	14	44	31
Total Analysis Volume [veh/h]	262	1003	1556	56	175	123
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	3		7		2	
v_di, Inbound Pedestrian Volume crossing in	2		6		3	
v_co, Outbound Pedestrian Volume crossing	6		3		3	
v_ci, Inbound Pedestrian Volume crossing mi	7		3		3	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		5		2	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	9.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Overlap
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						4,5
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	4	10	10	10	11	11
Maximum Green [s]	21	30	30	30	21	21
Amber [s]	3.0	4.0	4.0	4.0	3.0	3.0
All red [s]	0.0	0.0	0.0	0.0	0.0	0.0
Split [s]	12	98	86	86	32	32
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0
Walk [s]	0	10	7	7	5	5
Pedestrian Clearance [s]	0	0	22	22	24	24
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	2.0	2.0	2.0	1.0	1.0
Minimum Recall	No	Yes	Yes		No	No
Maximum Recall	No	No	No		No	No
Pedestrian Recall	No	No	No		No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	6.0	6.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	C	L	R
C, Cycle Length [s]	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	4.00	4.00	4.00	3.00	3.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	2.00	2.00	2.00	1.00	0.00
g_i, Effective Green Time [s]	9	103	91	91	20	32
g / C, Green / Cycle	0.07	0.79	0.70	0.70	0.15	0.25
(v / s)_i Volume / Saturation Flow Rate	0.21	0.64	0.97	0.98	0.14	0.11
s, saturation flow rate [veh/h]	1270	1576	831	819	1253	1114
c, Capacity [veh/h]	89	1251	583	574	191	272
d1, Uniform Delay [s]	60.38	7.58	19.40	19.40	54.23	41.53
k, delay calibration	0.50	0.50	0.50	0.50	0.14	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	911.28	5.47	182.88	191.72	19.02	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	2.96	0.80	1.38	1.40	0.92	0.45
d, Delay for Lane Group [s/veh]	971.66	13.05	202.28	211.12	73.25	41.96
Lane Group LOS	F	B	F	F	E	D
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	25.29	6.62	44.13	44.91	6.64	3.40
50th-Percentile Queue Length [ft/ln]	632.28	165.46	1103.26	1122.75	166.03	84.89
95th-Percentile Queue Length [veh/ln]	40.48	10.84	69.22	70.84	10.87	6.11
95th-Percentile Queue Length [ft/ln]	1012.12	270.94	1730.43	1770.91	271.68	152.79



**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	971.66	13.05	206.54	211.12	73.25	41.96
Movement LOS	F	B	F	F	E	D
d_A, Approach Delay [s/veh]	211.59		206.70		60.34	
Approach LOS	F		F		E	
d_I, Intersection Delay [s/veh]	194.91					
Intersection LOS	F					
Intersection V/C	1.429					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.26	56.26	54.42
I_p,int, Pedestrian LOS Score for Intersection	3.084	3.057	2.158
Crosswalk LOS	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1447	1262	446
d_b, Bicycle Delay [s]	4.96	8.86	39.23
I_b,int, Bicycle LOS Score for Intersection	2.603	2.890	1.560
Bicycle LOS	B	C	A

**Sequence**

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 20: Willow Rd (SR 114)/Newbridge St**

Control Type:	Signalized	Delay (sec / veh):	186.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.373

**Intersection Setup**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐			⇐			⇐			⇐  ⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	0	0	1	0	0	0
Entry Pocket Length [ft]	390.00	100.00	100.00	185.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	1	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	100.00	0.00	0.00	49.21	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road (SR 114)			Willow Road (SR 114)			Newbridge Street			Bay Road		
Base Volume Input [veh/h]	268	1389	355	78	1354	26	27	195	624	346	285	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.30	4.40	5.30	0.00	3.40	0.00	0.00	4.40	0.50	3.80	4.40	1.30
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	175	0	0	45
Total Hourly Volume [veh/h]	268	1389	355	78	1354	26	27	195	449	346	285	11
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	382	98	21	372	7	7	54	123	95	78	3
Total Analysis Volume [veh/h]	295	1526	390	86	1488	29	30	214	493	380	313	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing		11			20			10			19	
v_di, Inbound Pedestrian Volume crossing in		10			19			11			20	
v_co, Outbound Pedestrian Volume crossing		3			7			7			3	
v_ci, Inbound Pedestrian Volume crossing mi		3			7			7			3	
v_ab, Corner Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			5			4			6	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	5	2	2	1	6	6	7	4	4	3	8	8
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lag	-	-	Lead	-	-	Lag	-	-
Minimum Green [s]	4	12	12	4	12	12	5	4	4	4	5	5
Maximum Green [s]	21	40	40	21	40	40	30	25	25	21	30	30
Amber [s]	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0
All red [s]	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0
Split [s]	22	46	46	21	45	45	63	32	32	31	22	22
Vehicle Extension [s]	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	3.0
Walk [s]	0	5	5	0	7	7	0	5	5	5	0	0
Pedestrian Clearance [s]	0	19	19	0	16	16	0	23	23	23	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.0	3.0	3.0	1.0	3.0	3.0	2.0	2.0	2.0	1.0	2.0	2.0
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	20.0	20.0	20.0	20.0	20.0	20.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	3.00	5.00	5.00	3.00	5.00	5.00	4.00	4.00	4.00	3.00	0.00	0.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.00	3.00	3.00	1.00	3.00	3.00	2.00	2.00	2.00	1.00	0.00	0.00
g_i, Effective Green Time [s]	19	53	53	14	47	47	52	32	32	16	0	0
g / C, Green / Cycle	0.15	0.41	0.41	0.10	0.36	0.36	0.40	0.25	0.25	0.13	0.00	0.00
(v / s)_i Volume / Saturation Flow Rate	0.28	0.52	0.54	0.08	0.54	0.54	0.03	0.22	0.32	0.11	0.24	0.01
s, saturation flow rate [veh/h]	1072	2481	1171	1083	1853	961	1083	965	1544	3409	1303	1598
c, Capacity [veh/h]	196	1009	476	152	676	351	467	240	383	427	0	0
d1, Uniform Delay [s]	58.91	38.57	38.57	58.59	41.28	41.28	25.69	47.21	48.23	55.96	0.00	0.00
k, delay calibration	0.50	0.50	0.50	0.04	0.50	0.50	0.11	0.35	0.50	0.04	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	253.32	132.78	156.58	1.23	222.15	231.04	0.06	27.89	147.50	2.57	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	1.51	1.28	1.32	0.57	1.48	1.48	0.06	0.89	1.29	0.89	10000.0	10000.0
d, Delay for Lane Group [s/veh]	312.22	171.34	195.15	59.82	263.43	272.32	25.75	75.09	195.73	58.53	0.00	0.00
Lane Group LOS	F	F	F	E	F	F	C	E	F	E	F	F
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	20.17	34.01	35.24	2.88	31.67	33.71	0.61	8.52	27.89	6.29	0.00	0.00
50th-Percentile Queue Length [ft/ln]	504.36	850.17	881.00	71.91	791.66	842.65	15.21	213.03	697.21	157.24	0.00	0.00
95th-Percentile Queue Length [veh/ln]	32.15	50.85	53.26	5.18	50.31	53.30	1.10	13.31	41.75	10.40	0.00	0.00
95th-Percentile Queue Length [ft/ln]	803.79	1271.16	1331.59	129.44	1257.72	1332.60	27.38	332.71	1043.66	260.06	0.00	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	312.22	175.03	195.15	59.82	266.36	272.32	25.75	75.09	195.73	58.53	0.00	0.00
Movement LOS	F	F	F	E	F	F	C	E	F	E	A	A
d_A, Approach Delay [s/veh]	196.89			255.39			153.78			31.55		
Approach LOS	F			F			F			C		
d_I, Intersection Delay [s/veh]	186.51											
Intersection LOS	F											
Intersection V/C	1.373											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	18.0	11.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	56.31	48.25	54.47	56.31
I_p,int, Pedestrian LOS Score for Intersection	3.494	3.023	3.195	2.892
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	631	615	431	0
d_b, Bicycle Delay [s]	30.47	31.23	40.10	65.00
I_b,int, Bicycle LOS Score for Intersection	2.776	2.441	3.064	2.797
Bicycle LOS	C	B	C	C

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 21: Willow Rd/Bay Rd**

Control Type:	Signalized	Delay (sec / veh):	98.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.232

**Intersection Setup**

Name	Willow Road		Willow Road		Bay Road	
Approach	Northeastbound		Southwestbound		Southeastbound	
Lane Configuration	⇐		⇐		⇐⇐⇐	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	175.00
No. of Lanes in Exit Pocket	0	1	0	0	0	1
Exit Pocket Length [ft]	0.00	100.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00		35.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		No		Yes	

**Volumes**

Name	Willow Road		Willow Road		Bay Road	
Base Volume Input [veh/h]	40	1319	809	283	349	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.60	2.20	0.00	1.00	1.50
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	223	0	47
Total Hourly Volume [veh/h]	40	1319	809	60	349	0
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	340	209	15	90	0
Total Analysis Volume [veh/h]	41	1360	834	62	360	0
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		1		2	
v_ci, Inbound Pedestrian Volume crossing mi	0		2		1	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	10		6		3	



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	48
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	8.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	11.00

**Phasing & Timing**

Control Type	Protected	Permissive	Permissive	Permissive	Split	Split
Signal Group	5	2	6	6	4	4
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lag	-
Minimum Green [s]	4	10	20	20	4	4
Maximum Green [s]	16	36	36	36	36	36
Amber [s]	3.0	4.5	4.5	4.5	3.2	3.2
All red [s]	0.5	1.0	1.0	1.0	1.0	1.0
Split [s]	30	30	30	30	30	30
Vehicle Extension [s]	2.0	4.0	4.0	4.0	2.0	2.0
Walk [s]	0	0	7	7	0	0
Pedestrian Clearance [s]	0	0	18	18	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	1.5	3.5	3.5	3.5	2.2	2.2
Minimum Recall	No	Yes	Yes		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	R	L	R
C, Cycle Length [s]	67	67	67	67	67	67
L, Total Lost Time per Cycle [s]	3.50	5.50	5.50	5.50	4.20	4.20
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	1.50	3.50	3.50	3.50	2.20	2.20
g_i, Effective Green Time [s]	2	40	35	35	17	17
g / C, Green / Cycle	0.03	0.61	0.52	0.52	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.02	0.81	0.50	0.08	0.22	0.00
s, saturation flow rate [veh/h]	1810	1678	1684	754	1651	756
c, Capacity [veh/h]	58	1017	878	393	411	188
d1, Uniform Delay [s]	31.98	13.15	15.16	8.32	24.08	0.00
k, delay calibration	0.04	0.28	0.15	0.15	0.04	0.04
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.62	155.66	8.69	0.26	2.39	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.70	1.34	0.95	0.16	0.88	0.00
d, Delay for Lane Group [s/veh]	37.61	168.82	23.85	8.59	26.47	0.00
Lane Group LOS	D	F	C	A	C	A
Critical Lane Group	No	Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.72	27.67	5.81	0.42	2.67	0.00
50th-Percentile Queue Length [ft/ln]	18.03	691.75	145.17	10.41	66.79	0.00
95th-Percentile Queue Length [veh/ln]	1.30	44.07	9.76	0.75	4.81	0.00
95th-Percentile Queue Length [ft/ln]	32.45	1101.80	243.97	18.74	120.23	0.00

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	37.61	168.82	23.85	8.59	26.47	0.00
Movement LOS	D	F	C	A	C	A
d_A, Approach Delay [s/veh]	164.98		22.79		26.47	
Approach LOS	F		C		C	
d_I, Intersection Delay [s/veh]	98.26					
Intersection LOS	F					
Intersection V/C	1.232					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	23.20
I_p,int, Pedestrian LOS Score for Intersection	0.000	0.000	2.493
Crosswalk LOS	F	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1081	1081	1081
d_b, Bicycle Delay [s]	7.06	7.04	7.03
I_b,int, Bicycle LOS Score for Intersection	2.715	2.483	1.560
Bicycle LOS	B	B	A

**Sequence**

Ring 1	-	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 22: Willow Rd/Durham St-VA Med Entrance**

Control Type:	Signalized	Delay (sec / veh):	204.1
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.213

**Intersection Setup**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			10.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Willow Road			Willow Road			VA Medical Center			Durham Street		
Base Volume Input [veh/h]	9	1052	4	29	541	18	142	31	38	21	8	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	50.00	2.10	0.00	0.00	2.60	27.60	4.30	0.00	17.90	0.00	0.00	6.20
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	18	0	0	0
Total Hourly Volume [veh/h]	9	1052	4	29	541	18	142	31	20	21	8	47
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	292	1	8	150	5	39	9	6	6	2	13
Total Analysis Volume [veh/h]	10	1169	4	32	601	20	158	34	22	23	9	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	9			1			2			10		
v_di, Inbound Pedestrian Volume crossing in	10			2			1			9		
v_co, Outbound Pedestrian Volume crossing	5			5			4			5		
v_ci, Inbound Pedestrian Volume crossing mi	4			5			5			5		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	3			9			1			1		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	40
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	7.00

**Phasing & Timing**

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Overlap
Signal Group	5	2	2	1	6	6	4	4	4	8	8	8
Auxiliary Signal Groups												1,8
Lead / Lag	Lead	-	-	Lead	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	30	30	4	30	30	4	4	4	4	4	4
Maximum Green [s]	30	100	100	30	100	100	30	30	30	30	30	30
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Split [s]	0	30	30	0	30	30	30	30	30	30	30	30
Vehicle Extension [s]	3.0	5.0	5.0	3.0	5.0	5.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	7	7	7	7	7	7	7
Pedestrian Clearance [s]	0	11	11	0	15	15	15	15	15	15	15	15
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Minimum Recall	Yes	Yes		No	Yes			No			No	No
Maximum Recall	No	No		No	No			No			No	No
Pedestrian Recall	No	No		No	No			No			No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	20.0	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	C	L	C	L	C	R	C	R
C, Cycle Length [s]	143	143	143	143	143	143	143	143	143	143
L, Total Lost Time per Cycle [s]	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.50	2.50	0.00	2.50	2.50	2.50	2.50	2.50	0.00
g_i, Effective Green Time [s]	109	100	100	109	103	12	12	12	8	17
g / C, Green / Cycle	0.77	0.70	0.70	0.77	0.73	0.08	0.08	0.08	0.05	0.12
(v / s)_i Volume / Saturation Flow Rate	0.02	0.99	0.99	0.06	1.06	0.05	0.05	0.05	0.02	0.03
s, saturation flow rate [veh/h]	515	590	589	575	584	1748	1840	445	1834	1501
c, Capacity [veh/h]	103	413	413	177	423	148	156	38	100	180
d1, Uniform Delay [s]	42.19	21.39	21.39	40.17	19.67	63.19	63.18	62.67	64.95	57.18
k, delay calibration	0.23	0.50	0.50	0.11	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.87	202.77	203.00	0.49	223.32	4.41	4.14	13.47	1.81	0.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.10	1.42	1.42	0.18	1.47	0.63	0.63	0.58	0.32	0.29
d, Delay for Lane Group [s/veh]	43.06	224.16	224.39	40.66	242.98	67.61	67.32	76.14	66.76	58.06
Lane Group LOS	D	F	F	D	F	E	E	E	E	E
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.09	35.91	35.88	0.24	38.83	3.58	3.74	0.93	1.18	1.78
50th-Percentile Queue Length [ft/ln]	2.28	897.64	896.96	5.95	970.77	89.45	93.38	23.28	29.59	44.43
95th-Percentile Queue Length [veh/ln]	0.16	58.00	57.97	0.43	63.40	6.44	6.72	1.68	2.13	3.20
95th-Percentile Queue Length [ft/ln]	4.10	1449.97	1449.19	10.71	1585.01	161.01	168.08	41.90	53.26	79.98

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.06	224.28	224.39	40.66	242.98	242.98	67.49	67.32	76.14	66.76	66.76	58.06
Movement LOS	D	F	F	D	F	F	E	E	E	E	E	E
d_A, Approach Delay [s/veh]	222.75			233.07			68.35			61.37		
Approach LOS	F			F			E			E		
d_I, Intersection Delay [s/veh]	204.07											
Intersection LOS	F											
Intersection V/C	1.213											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	60.69	60.69	60.69	60.69
I_p,int, Pedestrian LOS Score for Intersection	2.528	2.750	2.211	2.036
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	281	281	421	421
d_b, Bicycle Delay [s]	52.75	52.91	44.45	44.45
I_b,int, Bicycle LOS Score for Intersection	2.536	2.637	1.942	1.698
Bicycle LOS	B	B	A	A

**Sequence**

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report**  
**Intersection 131: Chilco Street/Hamilton Avenue**

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

**Intersection Setup**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Chilco Street			Chilco Street			Hamilton Avenue			Hamilton Avenue		
	22	382	18	76	781	36	21	124	23	7	16	56
Base Volume Input [veh/h]	22	382	18	76	781	36	21	124	23	7	16	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	382	18	76	781	36	21	124	23	7	16	56
Peak Hour Factor	0.9260	0.9260	0.9260	0.9240	0.9240	0.9240	0.8830	0.8830	0.8830	0.9210	0.9210	0.9210
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	103	5	21	211	10	6	35	7	2	4	15
Total Analysis Volume [veh/h]	24	413	19	82	845	39	24	140	26	8	17	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	2			2			1			2		
v_di, Inbound Pedestrian Volume crossing in	1			2			2			2		
v_co, Outbound Pedestrian Volume crossing	2			1			1			3		
v_ci, Inbound Pedestrian Volume crossing mi	3			1			1			2		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	71	0	0	71	0	0	19	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	67	67	15	15
g / C, Green / Cycle	0.74	0.74	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.29	0.61	0.12	0.06
s, saturation flow rate [veh/h]	1594	1575	1597	1509
c, Capacity [veh/h]	1229	1216	311	295
d1, Uniform Delay [s]	4.04	7.19	35.36	33.17
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.86	5.41	8.64	2.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.37	0.79	0.61	0.29
d, Delay for Lane Group [s/veh]	4.90	12.61	44.01	35.66
Lane Group LOS	A	B	D	D
Critical Lane Group	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	2.49	9.96	4.66	1.84
50th-Percentile Queue Length [ft/ln]	62.31	249.11	116.45	46.07
95th-Percentile Queue Length [veh/ln]	4.49	15.14	8.20	3.32
95th-Percentile Queue Length [ft/ln]	112.15	378.53	204.94	82.92

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	4.90	4.90	4.90	12.61	12.61	12.61	44.01	44.01	44.01	35.66	35.66	35.66
Movement LOS	A	A	A	B	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	4.90			12.61			44.01			35.66		
Approach LOS	A			B			D			D		
d_I, Intersection Delay [s/veh]	15.22											
Intersection LOS	B											
Intersection V/C	0.732											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0			9.0			9.0			9.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	36.45			36.45			36.45			36.45		
I_p,int, Pedestrian LOS Score for Intersection	2.379			2.464			1.860			1.992		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1489			1489			333			333		
d_b, Bicycle Delay [s]	2.94			2.94			31.25			31.25		
I_b,int, Bicycle LOS Score for Intersection	2.312			3.154			1.873			1.702		
Bicycle LOS	B			C			A			A		

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 200: O'Brien Drive/Kavanaugh Drive**

Control Type:	Signalized	Delay (sec / veh):	31.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

**Intersection Setup**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	No		Yes		No	

**Volumes**

Name	O'Brien Drive		O'Brien Drive		Kavanaugh	
Base Volume Input [veh/h]	388	372	167	261	101	336
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.80	4.80	4.80	4.80	4.80	4.80
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	388	372	167	261	101	336
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	107	48	75	29	97
Total Analysis Volume [veh/h]	446	428	192	300	116	386
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Split	Split
Signal Group	2	0	0	6	4	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lead	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	63	0	0	63	27	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	L	C	L	R
C, Cycle Length [s]	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	59	59	59	23	23
g / C, Green / Cycle	0.66	0.66	0.66	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.52	0.31	0.16	0.07	0.25
s, saturation flow rate [veh/h]	1683	620	1828	1741	1554
c, Capacity [veh/h]	1103	242	1198	445	397
d1, Uniform Delay [s]	11.11	35.10	6.39	26.72	33.18
k, delay calibration	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.86	23.01	0.50	1.42	38.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.79	0.79	0.25	0.26	0.97
d, Delay for Lane Group [s/veh]	16.97	58.11	6.89	28.14	71.88
Lane Group LOS	B	E	A	C	E
Critical Lane Group	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	12.21	5.79	2.22	2.13	12.35
50th-Percentile Queue Length [ft/ln]	305.29	144.78	55.55	53.25	308.64
95th-Percentile Queue Length [veh/ln]	17.94	9.74	4.00	3.83	18.11
95th-Percentile Queue Length [ft/ln]	448.56	243.45	100.00	95.86	452.69

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.97	16.97	58.11	6.89	28.14	71.88
Movement LOS	B	B	E	A	C	E
d_A, Approach Delay [s/veh]	16.97		26.88		61.77	
Approach LOS	B		C		E	
d_I, Intersection Delay [s/veh]	31.62					
Intersection LOS	C					
Intersection V/C	0.768					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	0.0	9.0	0.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	36.45	0.00
I_p,int, Pedestrian LOS Score for Intersection	0.000	2.372	0.000
Crosswalk LOS	F	B	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1311	1311	511
d_b, Bicycle Delay [s]	5.34	5.34	24.94
I_b,int, Bicycle LOS Score for Intersection	3.002	2.371	1.560
Bicycle LOS	C	B	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 264: Adams Drive/O'Brien Drive**

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.559

**Intersection Setup**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↔		↖		↗	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Adams Drive		O'Brien Drive		O'Brien Drive	
Base Volume Input [veh/h]	118	63	230	644	280	22
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.60	5.60	5.60	5.60	5.60	5.60
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	118	63	230	644	280	22
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	19	69	194	84	7
Total Analysis Volume [veh/h]	142	76	277	776	337	27
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing in	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive
Signal Group	2	0	0	4	6	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	-	-
Minimum Green [s]	5	0	0	5	5	0
Maximum Green [s]	30	0	0	30	30	0
Amber [s]	3.0	0.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	1.0	1.0	0.0
Split [s]	20	0	0	70	70	0
Vehicle Extension [s]	3.0	0.0	0.0	3.0	3.0	0.0
Walk [s]	5	0	0	5	5	0
Pedestrian Clearance [s]	10	0	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	2.0	2.0	0.0
Minimum Recall	No			No	No	
Maximum Recall	No			No	No	
Pedestrian Recall	No			No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	L	C	C
C, Cycle Length [s]	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	66	66	66
g / C, Green / Cycle	0.18	0.73	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.13	0.28	0.43	0.20
s, saturation flow rate [veh/h]	1660	988	1816	1792
c, Capacity [veh/h]	295	716	1332	1314
d1, Uniform Delay [s]	35.02	7.96	5.59	4.02
k, delay calibration	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.27	1.58	1.87	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.74	0.39	0.58	0.28
d, Delay for Lane Group [s/veh]	50.29	9.54	7.46	4.54
Lane Group LOS	D	A	A	A
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	5.69	2.64	5.82	1.92
50th-Percentile Queue Length [ft/ln]	142.16	65.94	145.42	47.97
95th-Percentile Queue Length [veh/ln]	9.60	4.75	9.77	3.45
95th-Percentile Queue Length [ft/ln]	239.93	118.69	244.30	86.35

**Movement, Approach, & Intersection Results**

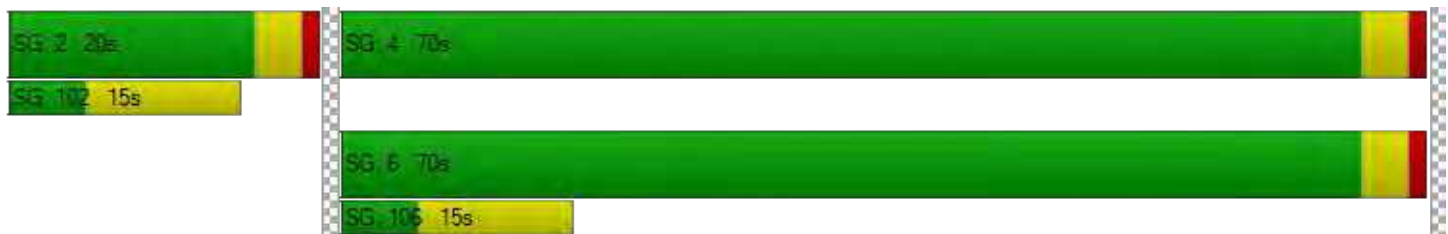
d_M, Delay for Movement [s/veh]	50.29	50.29	9.54	7.46	4.54	4.54
Movement LOS	D	D	A	A	A	A
d_A, Approach Delay [s/veh]	50.29		8.01		4.54	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	12.87					
Intersection LOS	B					
Intersection V/C	0.559					

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.365	2.418	2.341
Crosswalk LOS	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	356	1467	1467
d_b, Bicycle Delay [s]	30.42	3.20	3.20
I_b,int, Bicycle LOS Score for Intersection	1.919	3.297	2.160
Bicycle LOS	A	C	B

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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ReducedTripCap\_10.7.2021.vistro  
Report File: \\...\Cumulative w Dumbarton + Project  
PM\_Imp.pdf

Scenario 25 Imp-Cumulative w/dumbarton PM (2040 vols)+  
Project  
10/14/2021

### Turning Movement Volume: Summary

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Marsh Rd/Florence St- Bohannon Dr	296	675	54	13	1013	354	461	34	230	125	87	40	3382

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	244	933	1447	52	163	114	2953

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
20	Willow Rd (SR 114)/Newbridge St	268	1389	355	78	1354	26	27	195	624	346	285	56	5003

ID	Intersection Name	Northeastbound		Southwestbound		Southeastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	40	1319	809	283	349	40	2840

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	9	1052	4	29	541	18	142	31	38	21	8	47	1940

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	22	382	18	76	781	36	21	124	23	7	16	56	1562

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	388	372	167	261	101	336	1625



ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	118	63	230	644	280	22	1357

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PM\_Imp.pdf

10/14/2021

**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
3	Marsh Rd/Florence St-Bohannon Dr	Final Base	296	675	54	13	1013	354	461	34	230	125	87	40	3382	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>296</b>	<b>675</b>	<b>54</b>	<b>13</b>	<b>1013</b>	<b>354</b>	<b>461</b>	<b>34</b>	<b>230</b>	<b>125</b>	<b>87</b>	<b>40</b>	<b>3382</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	Willow Rd (SR 114)/Ivy Dr	Final Base	244	933	1447	52	163	114	2953
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>244</b>	<b>933</b>	<b>1447</b>	<b>52</b>	<b>163</b>	<b>114</b>	<b>2953</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
20	Willow Rd (SR 114)/Newbridge St	Final Base	268	1389	355	78	1354	26	27	195	624	346	285	56	5003	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>268</b>	<b>1389</b>	<b>355</b>	<b>78</b>	<b>1354</b>	<b>26</b>	<b>27</b>	<b>195</b>	<b>624</b>	<b>346</b>	<b>285</b>	<b>56</b>	<b>5003</b>	

ID	Intersection Name	Volume Type	Northeastbound		Southwestbound		Southeastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
21	Willow Rd/Bay Rd	Final Base	40	1319	809	283	349	40	2840
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>40</b>	<b>1319</b>	<b>809</b>	<b>283</b>	<b>349</b>	<b>40</b>	<b>2840</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
22	Willow Rd/Durham St-VA Med Entrance	Final Base	9	1052	4	29	541	18	142	31	38	21	8	47	1940
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>1052</b>	<b>4</b>	<b>29</b>	<b>541</b>	<b>18</b>	<b>142</b>	<b>31</b>	<b>38</b>	<b>21</b>	<b>8</b>	<b>47</b>	<b>1940</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
131	Chilco Street/Hamilton Avenue	Final Base	22	382	18	76	781	36	21	124	23	7	16	56	1562
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>22</b>	<b>382</b>	<b>18</b>	<b>76</b>	<b>781</b>	<b>36</b>	<b>21</b>	<b>124</b>	<b>23</b>	<b>7</b>	<b>16</b>	<b>56</b>	<b>1562</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
200	O'Brien Drive/Kavanaugh Drive	Final Base	388	372	167	261	101	336	1625
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>388</b>	<b>372</b>	<b>167</b>	<b>261</b>	<b>101</b>	<b>336</b>	<b>1625</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
264	Adams Drive/O'Brien Drive	Final Base	118	63	230	644	280	22	1357
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>118</b>	<b>63</b>	<b>230</b>	<b>644</b>	<b>280</b>	<b>22</b>	<b>1357</b>

Study Intersections



Lane Configuration and Traffic Control

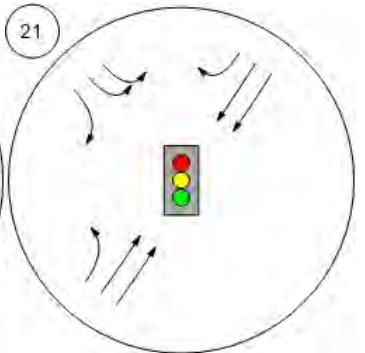
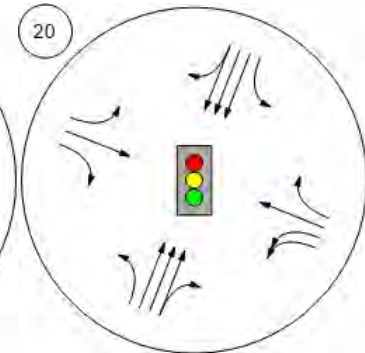
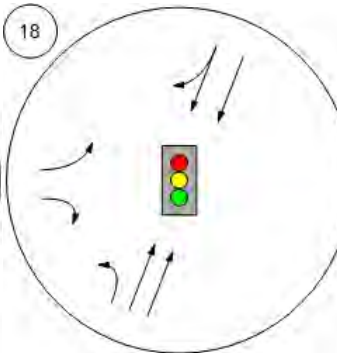
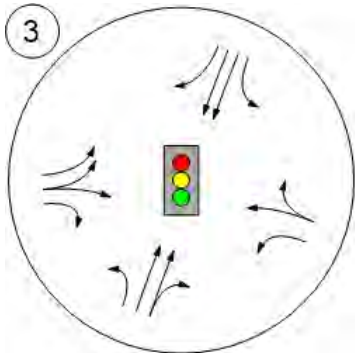


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

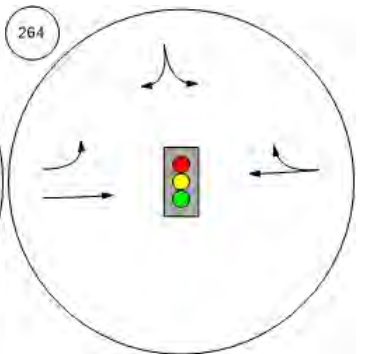
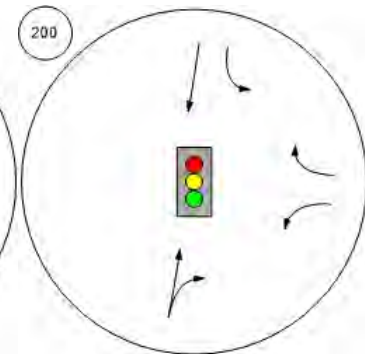
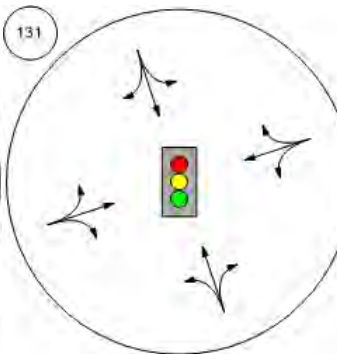
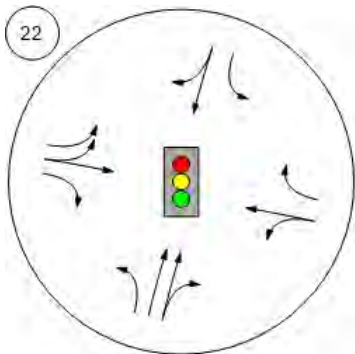
Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu

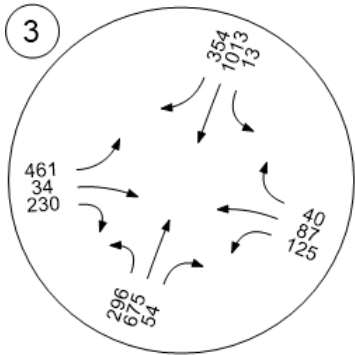
O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive



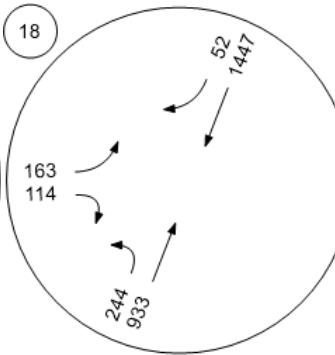
Traffic Volume - Base Volume



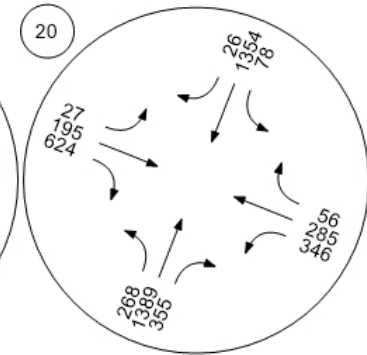
Marsh Rd/Florence St-Bohan



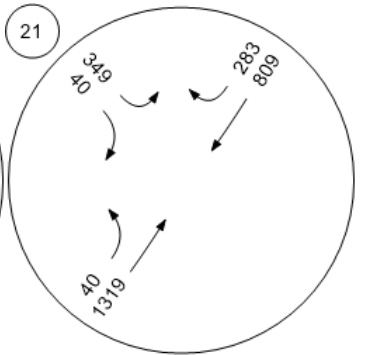
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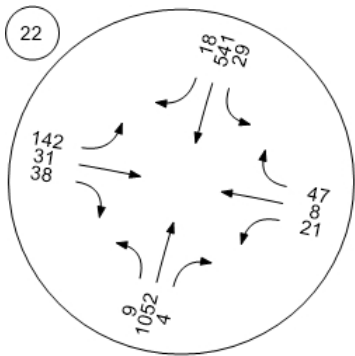
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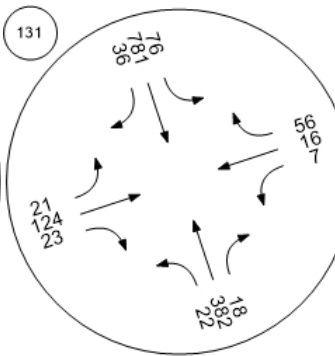
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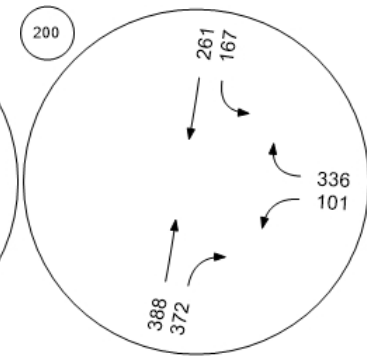
Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu



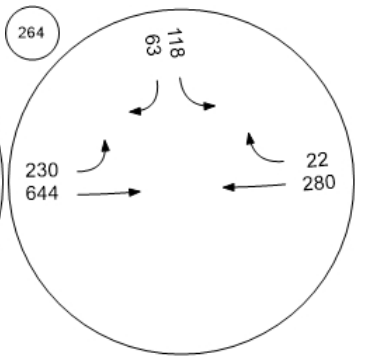
O'Brien Drive/Kavanaugh Dri



Adams Drive/O'Brien Drive



Adams Drive/O'Brien Drive



Traffic Volume - In-Process Volume

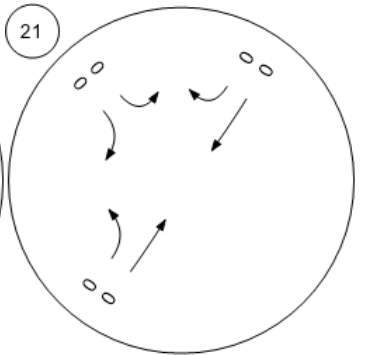
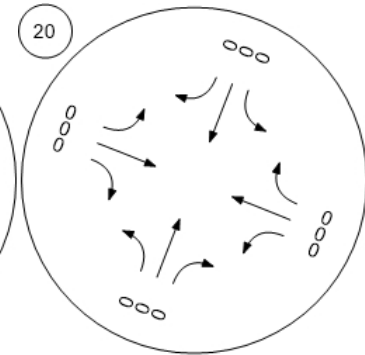
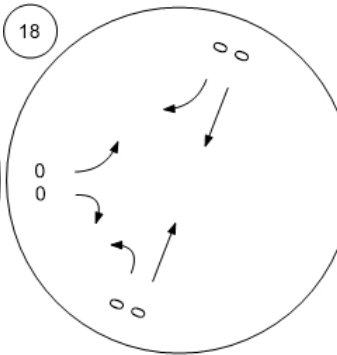
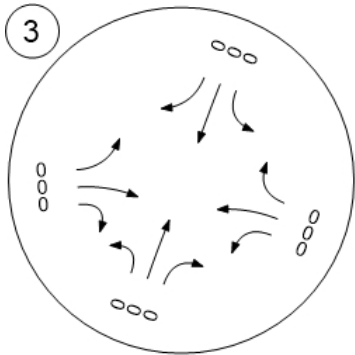


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

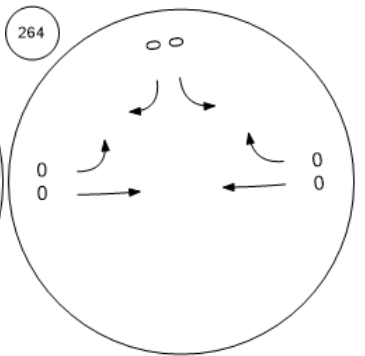
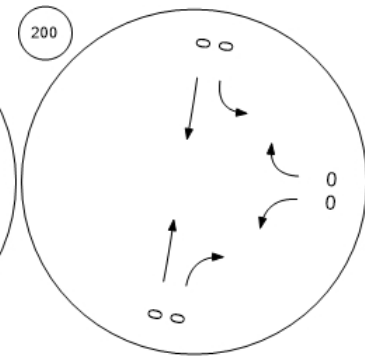
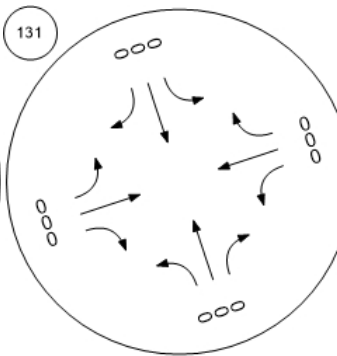
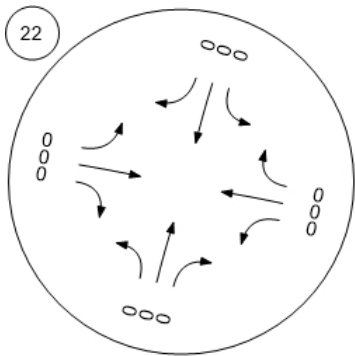
Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive



Traffic Volume - Net New Site Trips

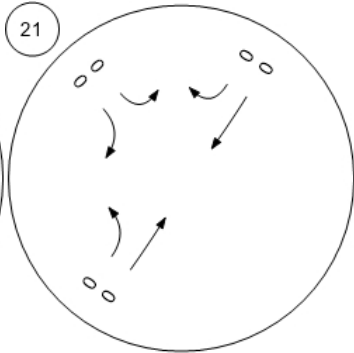
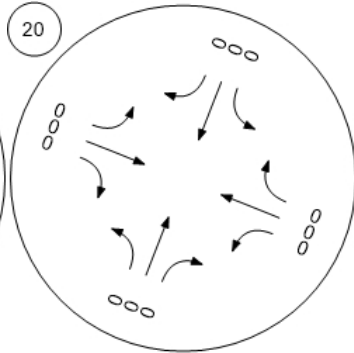
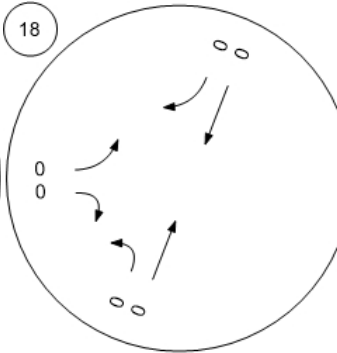
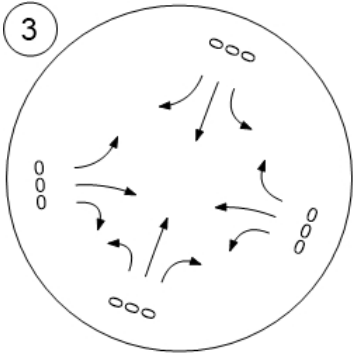


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

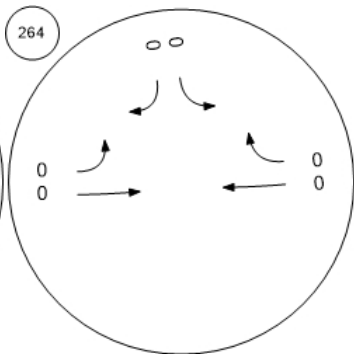
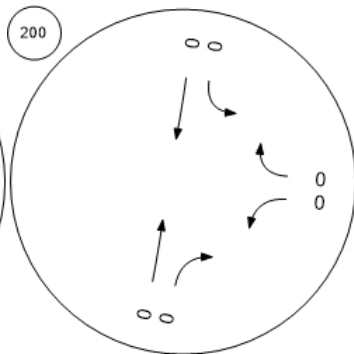
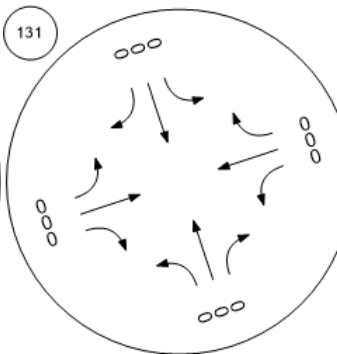
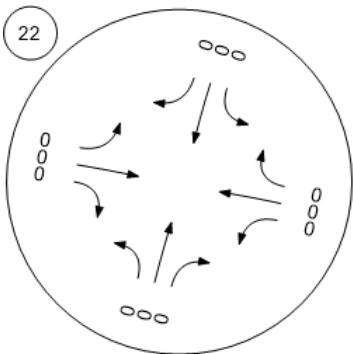
Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive





Traffic Volume - Other Volume

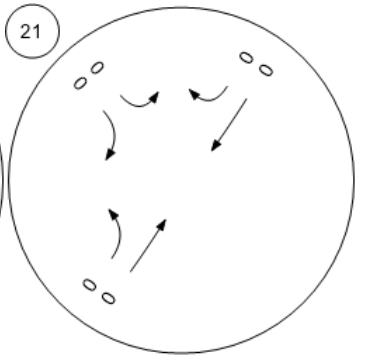
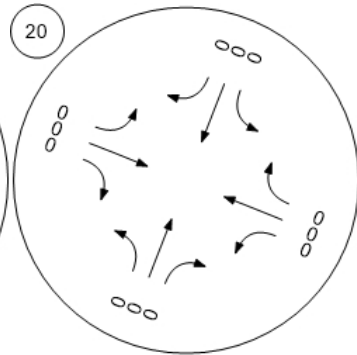
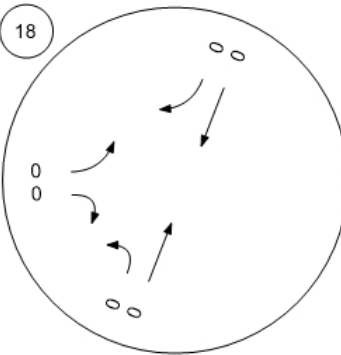
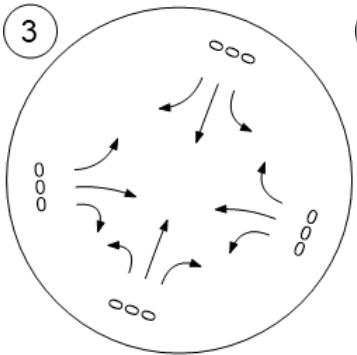


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

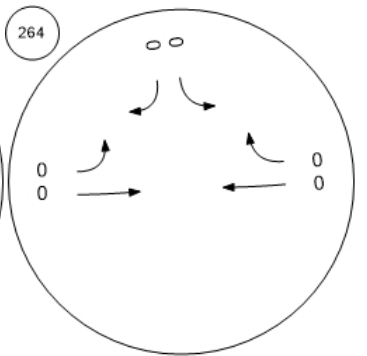
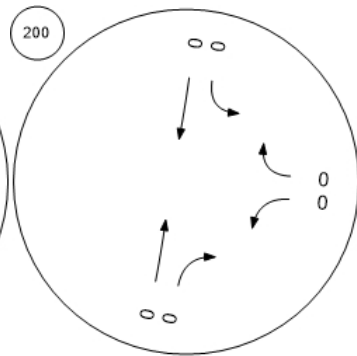
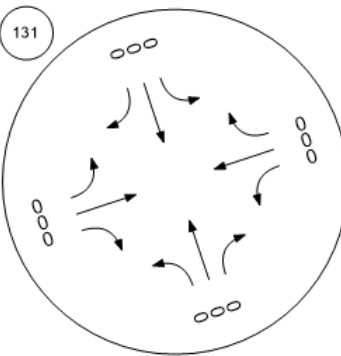
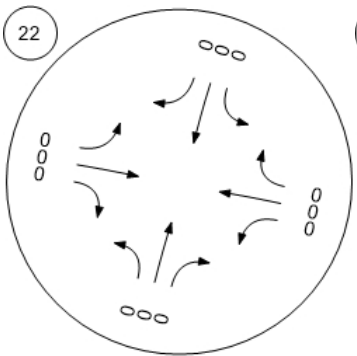
Willow Rd (SR 114)/Newbrid

Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me Chilco Street/Hamilton Avenu

O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive



Traffic Volume - Future Total Volume

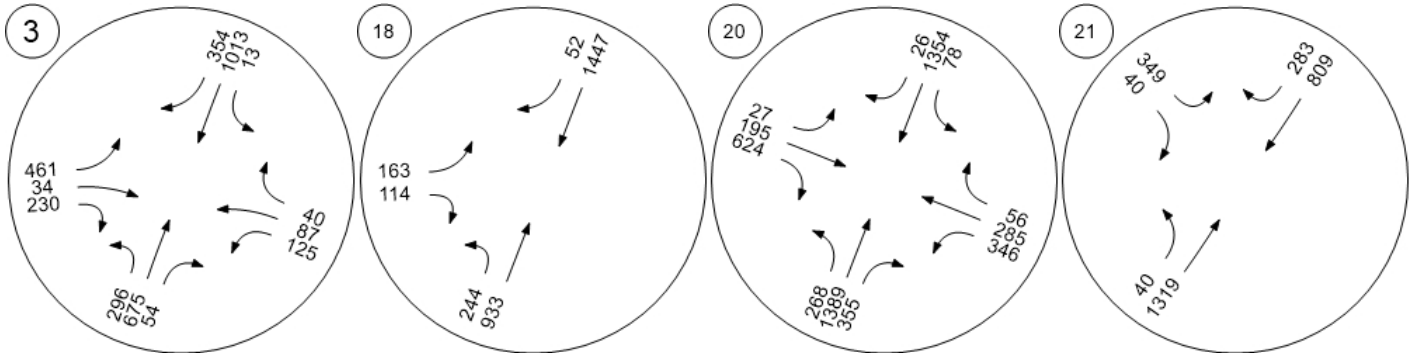


Marsh Rd/Florence St-Bohan

Willow Rd (SR 114)/Ivy Dr

Willow Rd (SR 114)/Newbrid

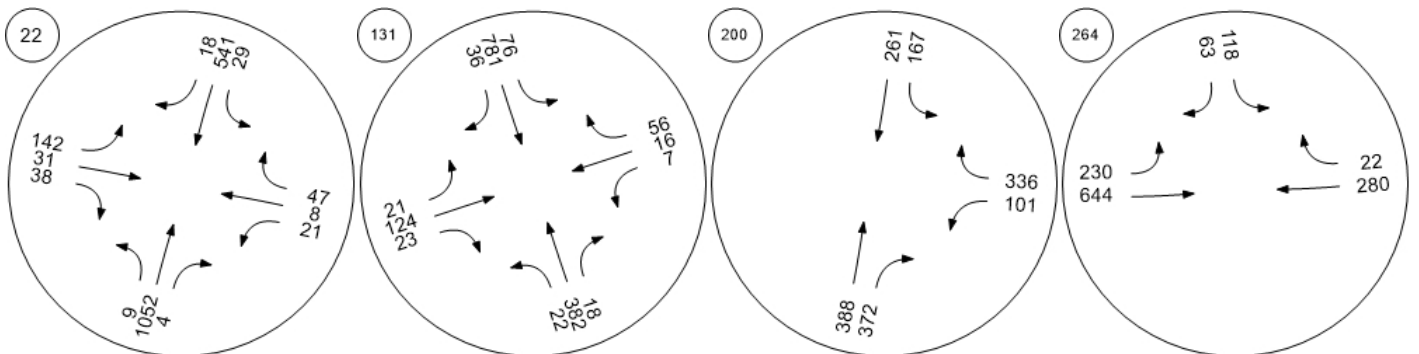
Willow Rd/Bay Rd



Willow Rd/Durham St-VA Me

Chilco Street/Hamilton Avenu

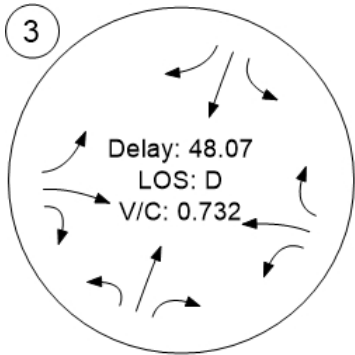
O'Brien Drive/Kavanaugh Dri Adams Drive/O'Brien Drive



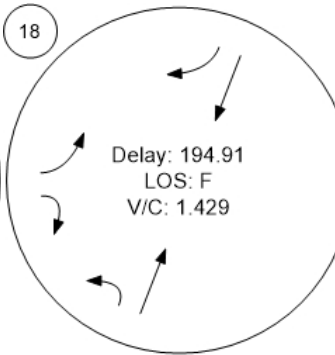
Traffic Conditions



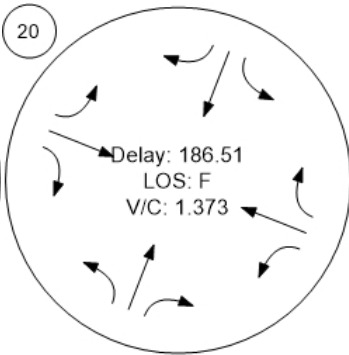
Marsh Rd/Florence St-Bohan



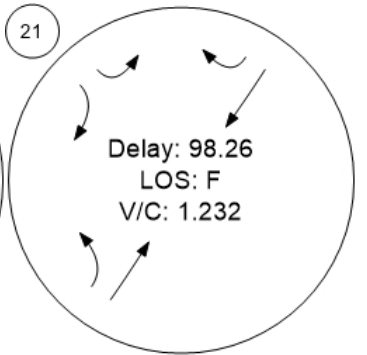
Willow Rd (SR 114)/Ivy Dr



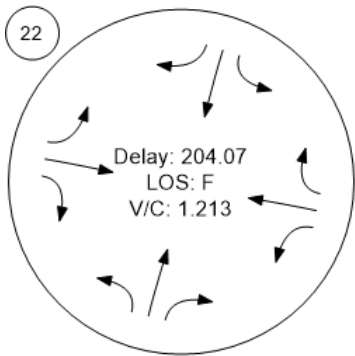
Willow Rd (SR 114)/Newbrid



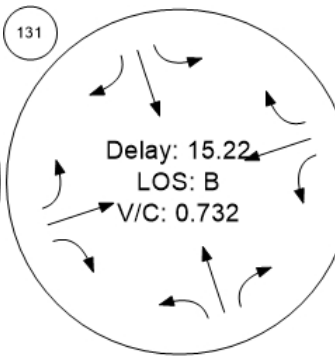
Willow Rd/Bay Rd



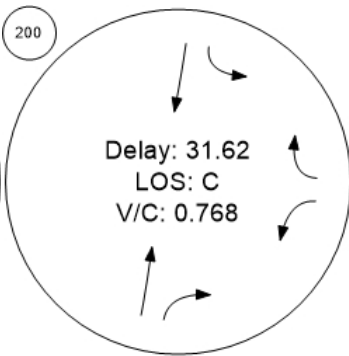
Willow Rd/Durham St-VA Me



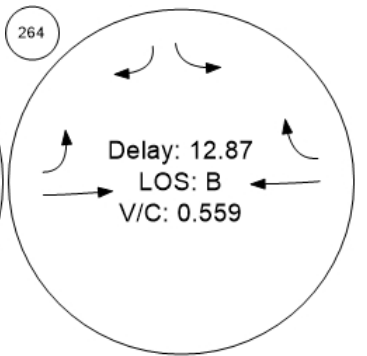
Chilco Street/Hamilton Avenu



O'Brien Drive/Kavanaugh Dri

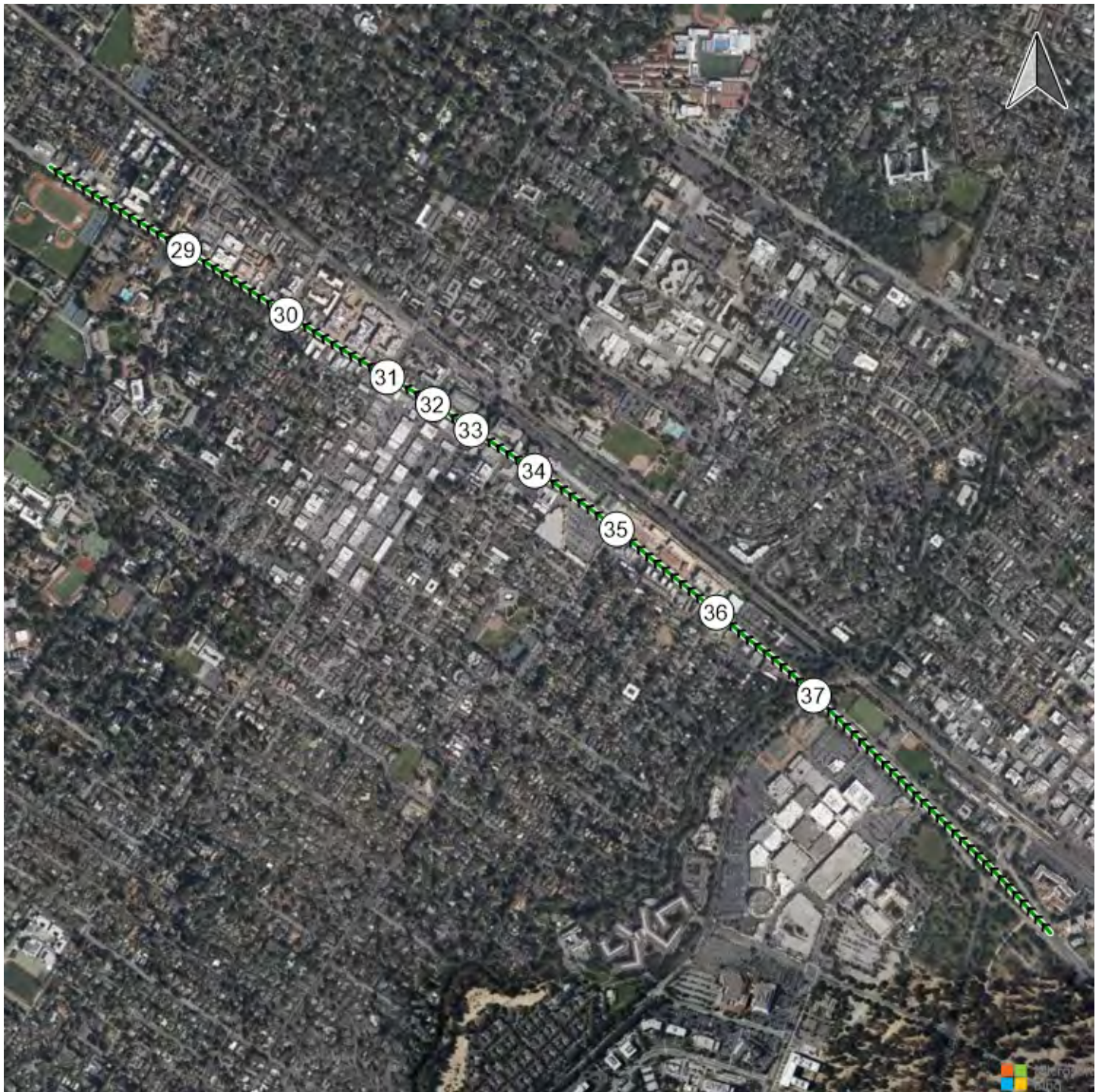


Adams Drive/O'Brien Drive



Time Space Diagram - Flowing Off

Route 1: ECR NB

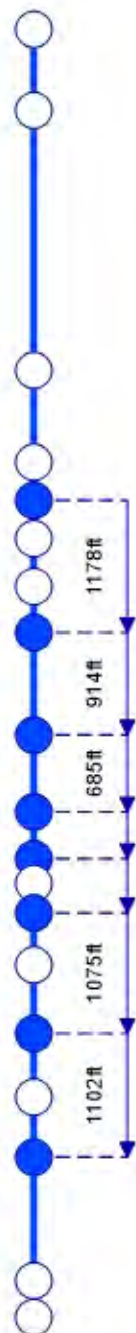


Route 1: ECR NB

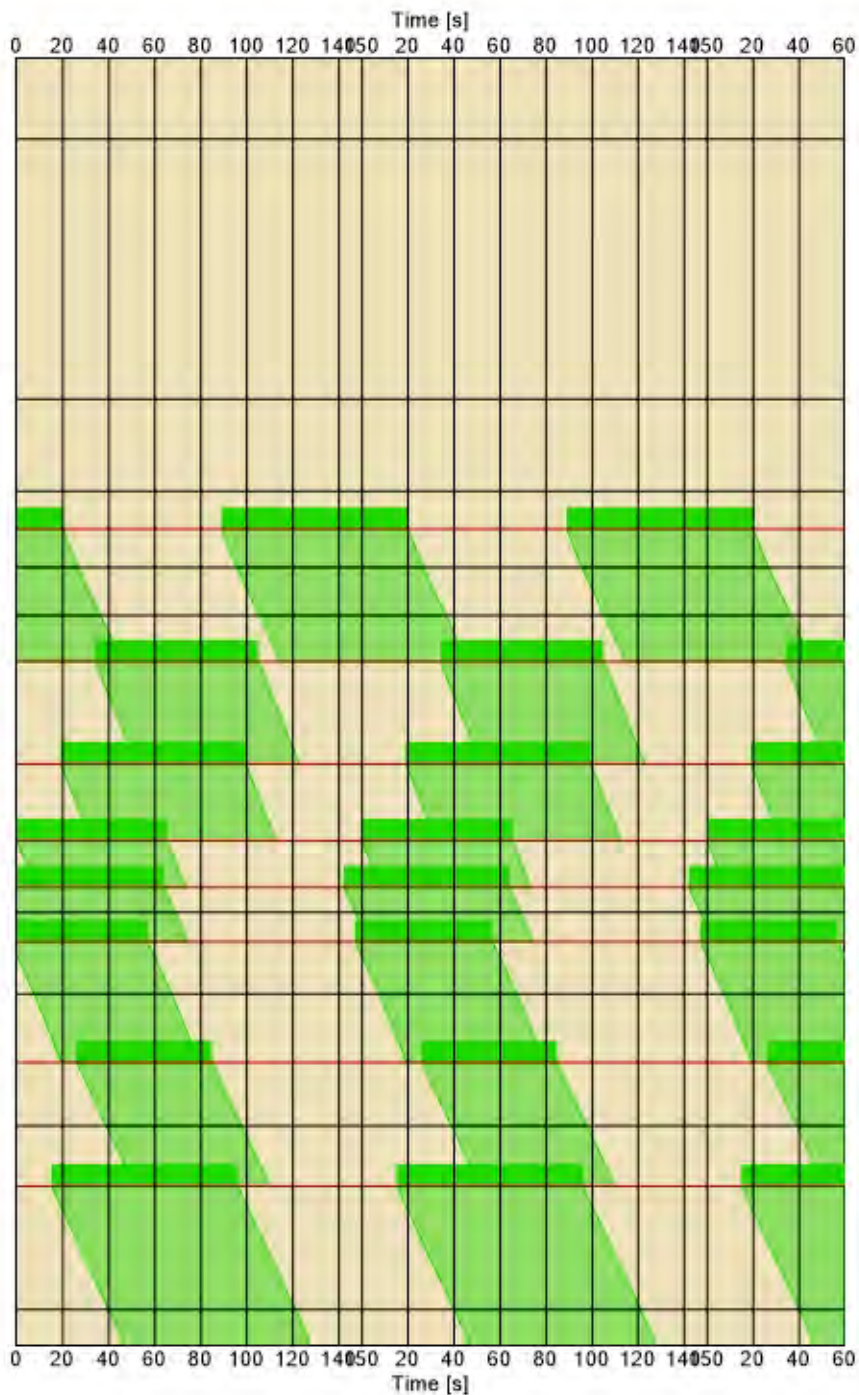
Path

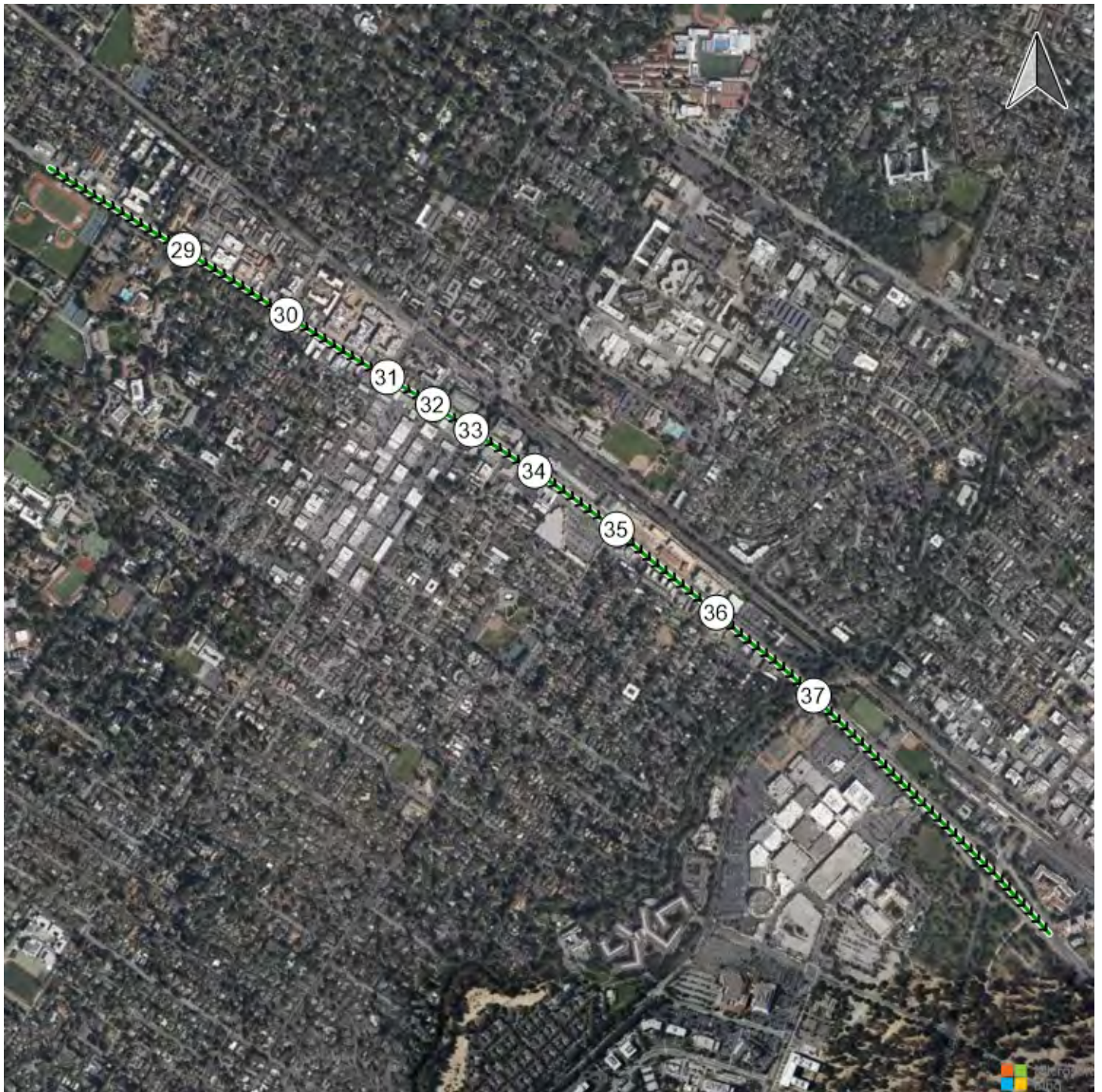
Label  
Nodes

Cycle time /  
Offset /  
Coord. Grp.

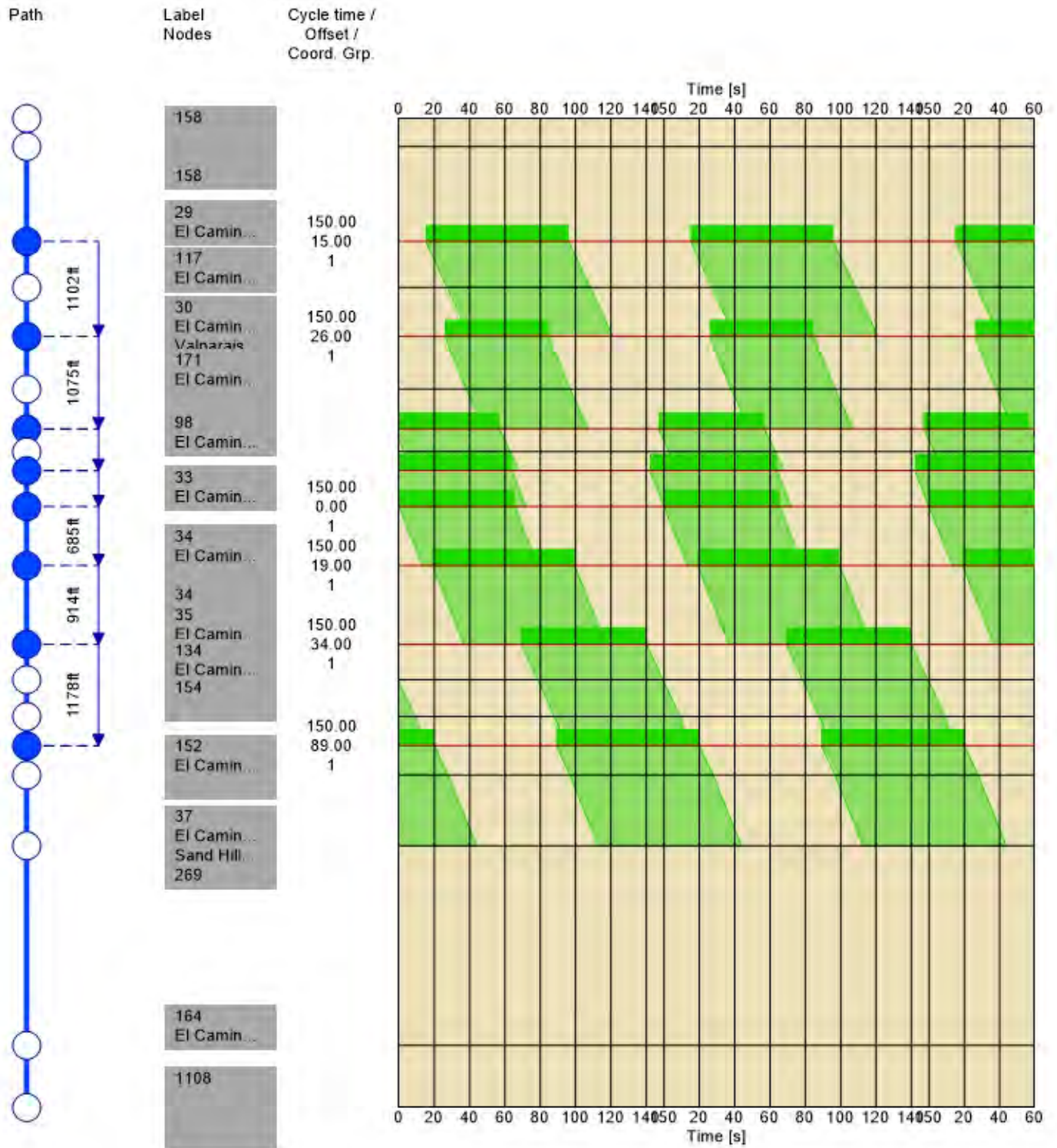


1108
164
43
37
El Camin ...
Sand Hill ...
200
152
36
154
El Camin ...
35
El Camin ...
Middle A ...
34
El Camin ...
33
El Camin ...
Ravensw ...
98
El Camin ...
171
El Camin ...
30
El Camin ...
117
El Camin ...
29
El Camin ...
Encinal ...
29
1554



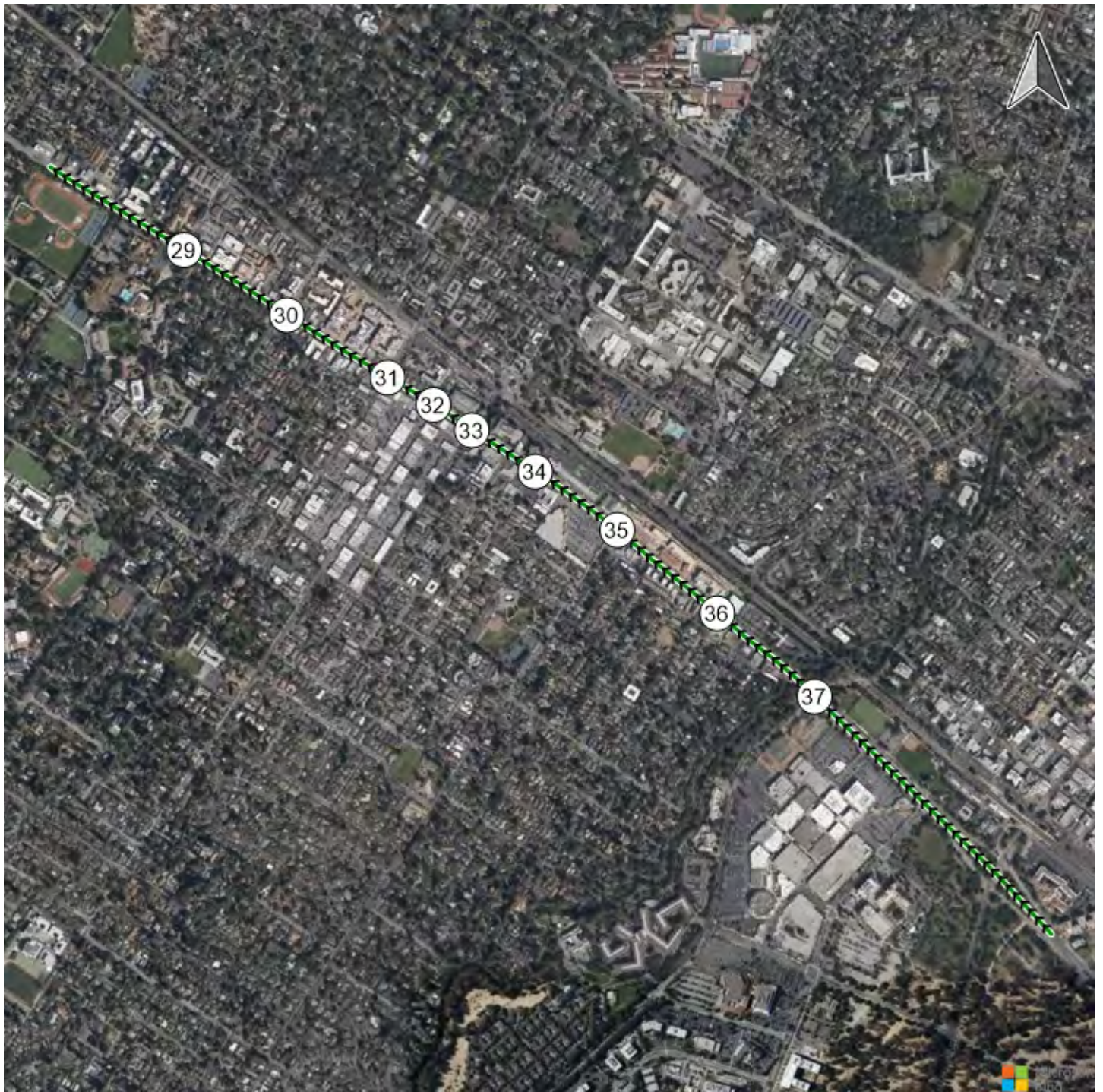


Route 2: ECR SB



Time Space Diagram - Arterial Band

Route 1: ECR NB



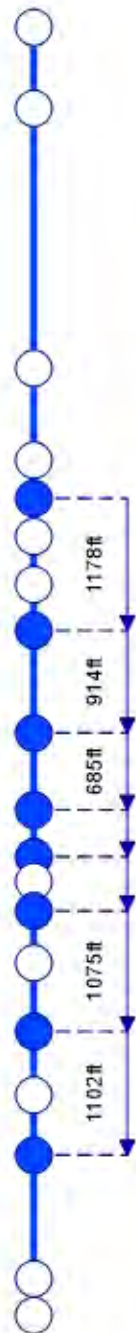


Route 1: ECR NB

Path

Label  
Nodes

Cycle time /  
Offset /  
Coord. Grp



1108

164

43

37  
El Camin...  
Sand Hill...  
200  
152  
36  
154  
El Camin...

35  
El Camin...  
Middle A...

34  
El Camin...

33  
El Camin...  
Ravensw  
98  
El Camin...

171  
El Camin...

30  
El Camin...

117  
El Camin...

29  
El Camin...  
Encinal...  
29

1554

150.00  
89.00  
1

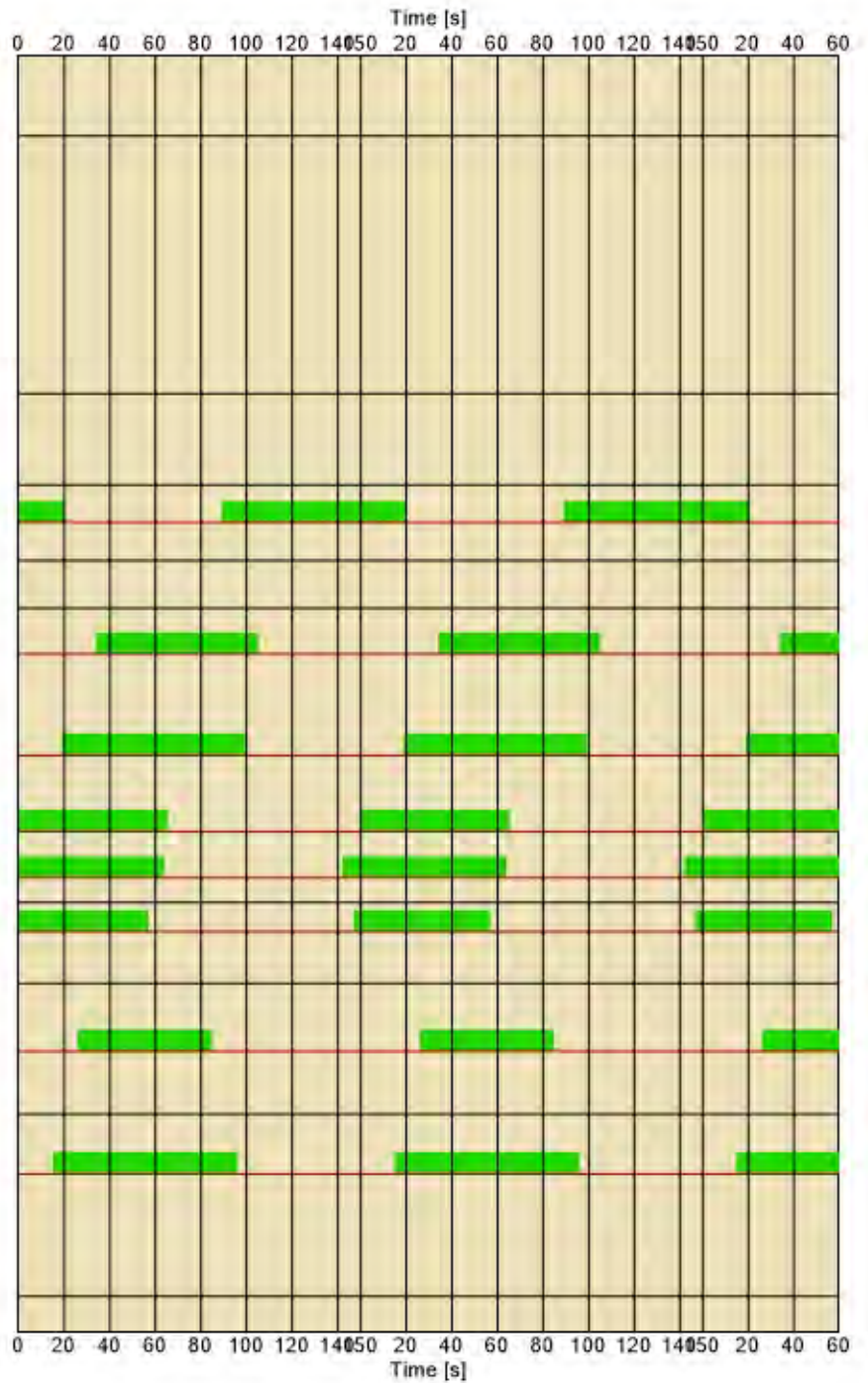
150.00  
34.00  
1

150.00  
19.00  
1

150.00  
147.00  
1

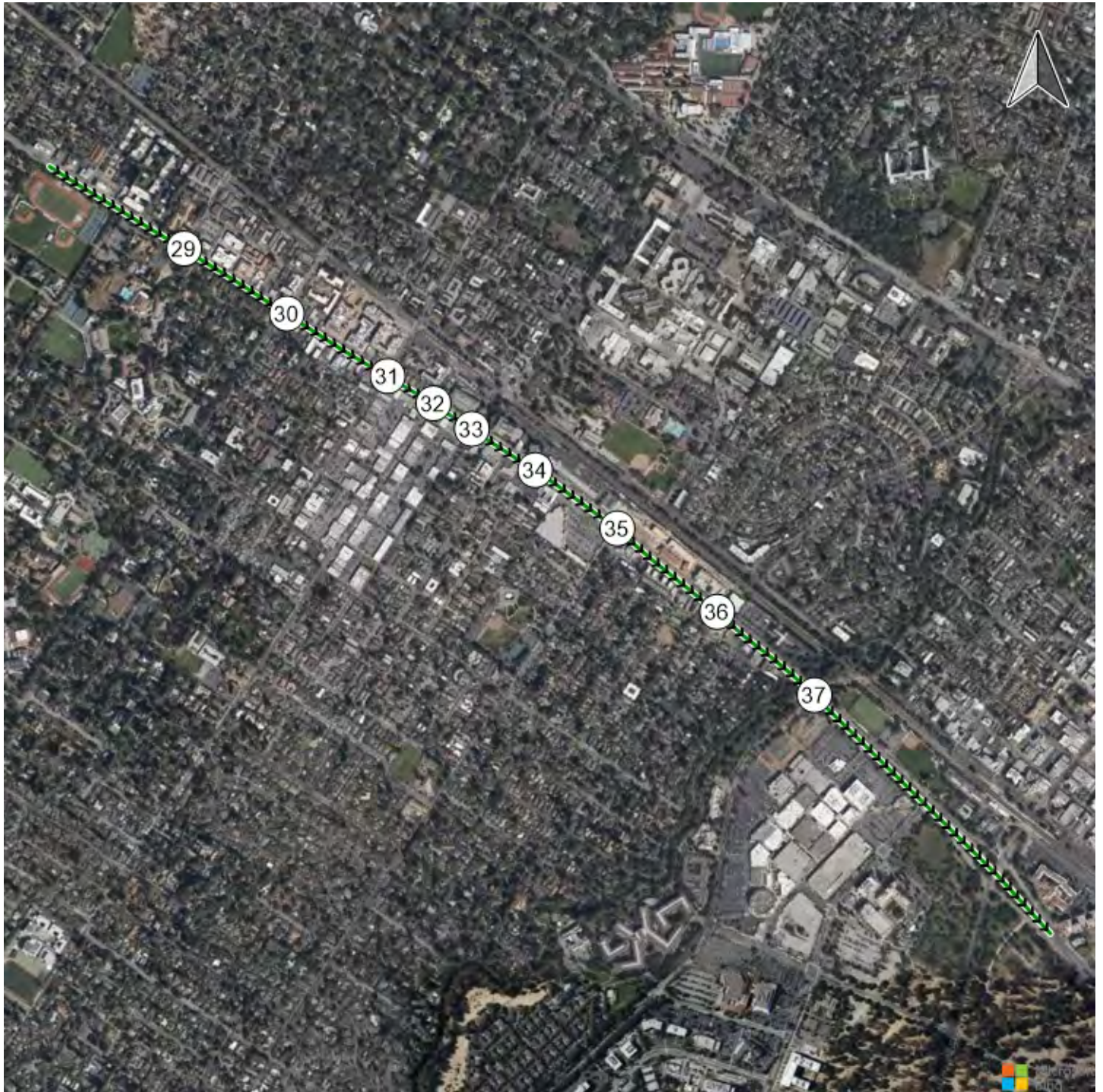
150.00  
26.00  
1

150.00  
15.00  
1

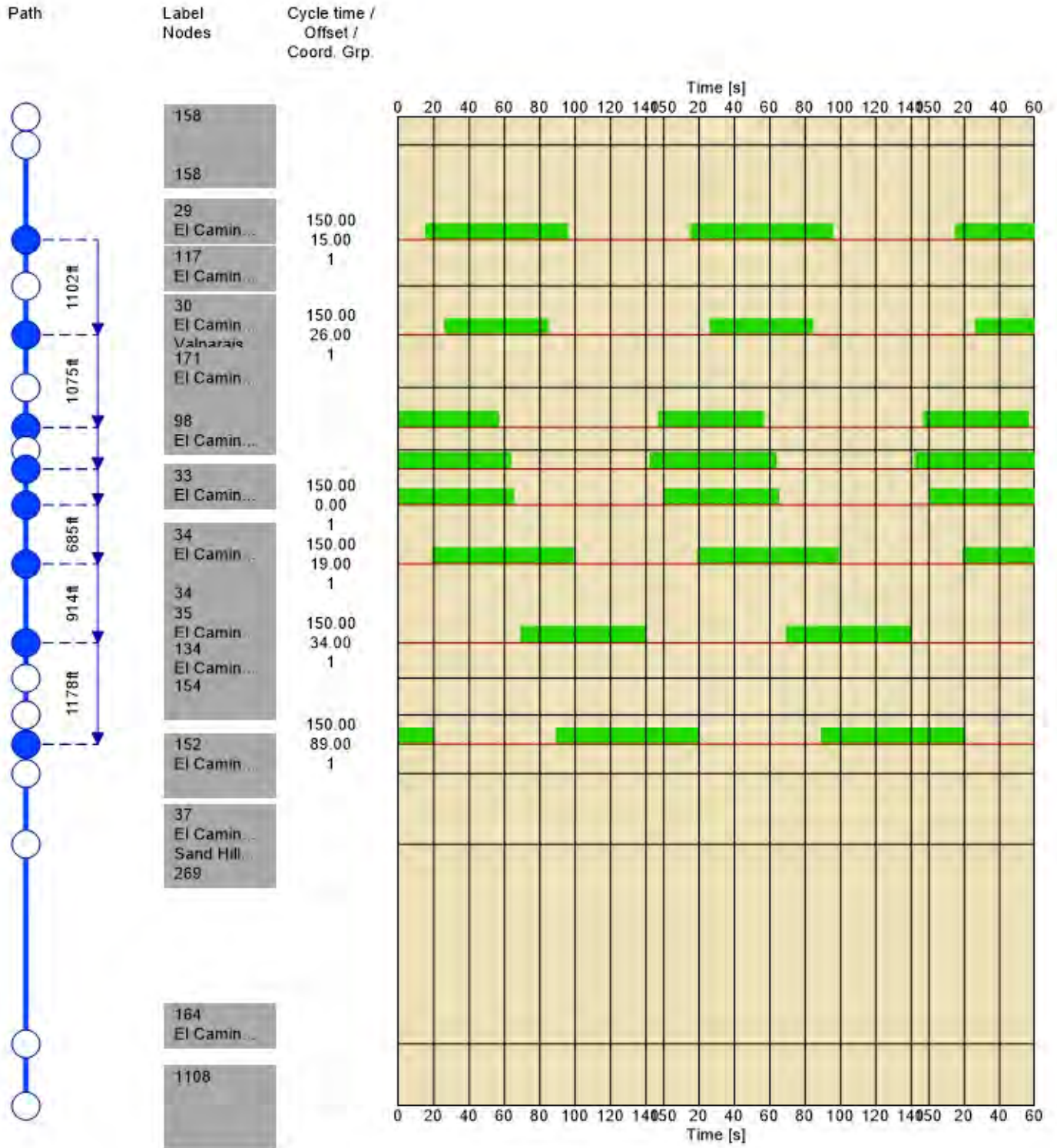


Time Space Diagram - Arterial Band

Route 2: ECR SB

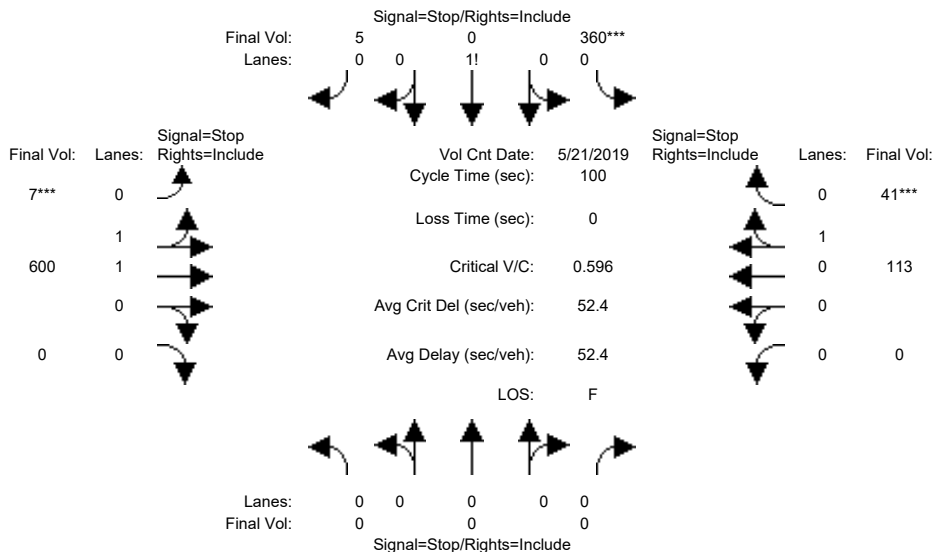


Route 2: ECR SB



Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Existing AM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name: East Bayshore Road Euclid Avenue  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Volume Module: >> Count Date: 21 May 2019 << 7:15-8:15 AM

Base Vol:	0	0	0	360	0	5	7	600	0	0	113	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	360	0	5	7	600	0	0	113	41
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	360	0	5	7	600	0	0	113	41
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	360	0	5	7	600	0	0	113	41
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	360	0	5	7	600	0	0	113	41
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	360	0	5	7	600	0	0	113	41

Saturation Flow Module:

Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.99	0.00	0.01	0.02	1.98	0.00	0.00	0.73	0.27
Final Sat.:	0	0	0	604	0	8	14	1209	0	0	447	162

Capacity Analysis Module:

Vol/Sat:	xxxx	xxxx	xxxx	0.60	xxxx	0.60	0.50	0.50	xxxx	xxxx	0.25	0.25
Crit Moves:				****			****					****
Delay/Veh:	0.0	0.0	0.0	16.3	0.0	16.3	13.9	13.8	0.0	0.0	10.4	10.4
Delay Adj:	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
AdjDel/Veh:	0.0	0.0	0.0	60.3	0.0	60.3	51.3	51.2	0.0	0.0	38.5	38.5
LOS by Move:	*	*	*	F	*	F	F	F	*	*	E	E
ApproachDel:	xxxxxx			16.3			13.8				10.4	
Delay Adj:	xxxxxx			3.70			3.70				3.70	
ApprAdjDel:	xxxxxx			60.3			51.2				38.5	
LOS by Appr:	*			F			F				E	
AllWayAvgQ:	0.0	0.0	0.0	1.3	1.3	1.3	0.9	0.9	0.0	0.3	0.3	0.3

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
 \*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0		360	0	5		7	600	0		0	113	41	
Major Street Volume:					761											
Minor Approach Volume:					365											
Minor Approach Volume Threshold:					379											

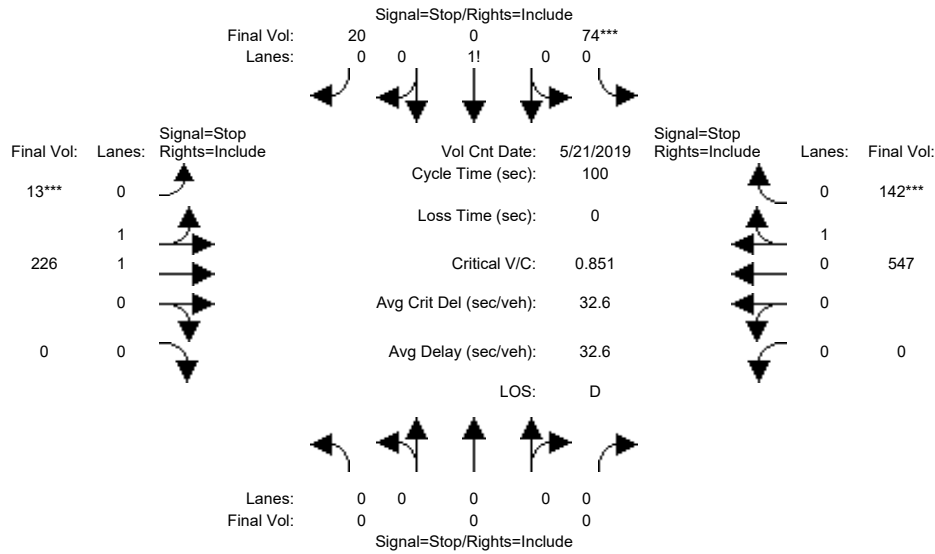
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Existing PM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module: >> Count Date: 21 May 2019 << 4:45-5:45 PM												
Base Vol:	0	0	0	74	0	20	13	226	0	0	547	142
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	74	0	20	13	226	0	0	547	142
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	74	0	20	13	226	0	0	547	142
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	74	0	20	13	226	0	0	547	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	74	0	20	13	226	0	0	547	142
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	74	0	20	13	226	0	0	547	142
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.79	0.00	0.21	0.11	1.89	0.00	0.00	0.79	0.21
Final Sat.:	0	0	0	458	0	124	72	1255	0	0	642	167
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.16	xxxx	0.16	0.18	0.18	xxxx	xxxx	0.85	0.85
Crit Moves:				****			****					****
Delay/Veh:	0.0	0.0	0.0	9.9	0.0	9.9	9.2	9.1	0.0	0.0	26.6	26.6
Delay Adj:	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
AdjDel/Veh:	0.0	0.0	0.0	15.3	0.0	15.3	14.2	14.2	0.0	0.0	41.3	41.3
LOS by Move:	*	*	*	C	*	C	B	B	*	*	E	E
ApproachDel:	xxxxxx			9.9			9.1			26.6		
Delay Adj:	xxxxxx			1.55			1.55			1.55		
ApprAdjDel:	xxxxxx			15.3			14.2			41.3		
LOS by Appr:	*			C			B			E		
AllWayAvgQ:	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.0	4.3	4.3	4.3

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
 \*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0		74	0	20		13	226	0		0	547	142	
Major Street Volume:					928											
Minor Approach Volume:					94											
Minor Approach Volume Threshold:					311											

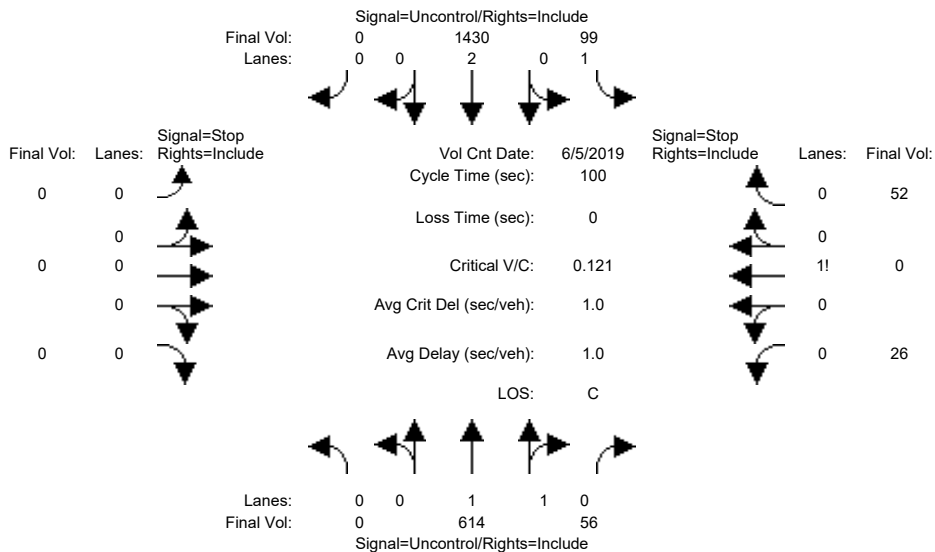
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Existing AM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:	>> Count Date: 5 Jun 2019 <<											
Base Vol:	0	614	56	99	1430	0	0	0	0	26	0	52
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	614	56	99	1430	0	0	0	0	26	0	52
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	614	56	99	1430	0	0	0	0	26	0	52
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	614	56	99	1430	0	0	0	0	26	0	52
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Volume:	0	614	56	99	1430	0	0	0	0	26	0	52

Critical Gap Module:

Critical Gp:	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3

Capacity Module:

Cnflct Vol:	xxxx	xxxx	xxxxx	670	xxxx	xxxxx	xxxx	xxxx	xxxxx	1555	2270	335
Potent Cap.:	xxxx	xxxx	xxxxx	909	xxxx	xxxxx	xxxx	xxxx	xxxxx	104	40	661
Move Cap.:	xxxx	xxxx	xxxxx	909	xxxx	xxxxx	xxxx	xxxx	xxxxx	95	36	661
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	80	105	xxxxx	215	110	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.11	xxxx	xxxx	xxxx	xxxx	xxxx	0.12	0.00	0.08

Level Of Service Module:

2Way95thQ:	xxxx	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	9.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	390	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.7	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	16.5	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	C	*
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	xxxxxx	16.5
ApproachLOS:	*	*	*	*	*	*	*	*	*	*	*	C

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #8 (36) University Avenue and Purdue Avenue  
 \*\*\*\*\*



Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 56	99 1430 0	0 0 0 0	26 0 52
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	16.5

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.4]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=78]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2277]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 56	99 1430 0	0 0 0 0	26 0 52

Major Street Volume: 2199

Minor Approach Volume: 78

Minor Approach Volume Threshold: 13 [less than minimum of 100]

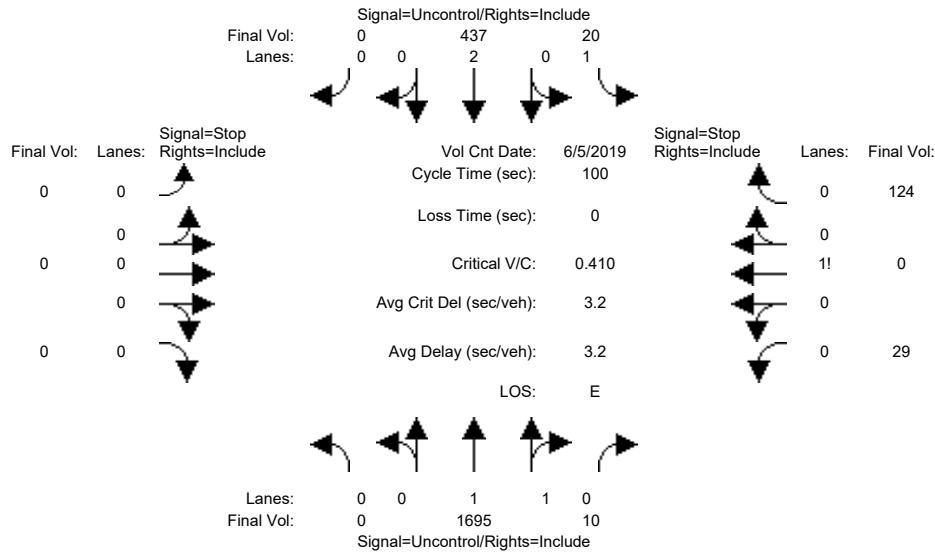
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Existing PM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:	>>	Count	Date:	5 Jun 2019	<<							
Base Vol:	0	1695	10	20	437	0	0	0	0	29	0	124
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1695	10	20	437	0	0	0	0	29	0	124
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1695	10	20	437	0	0	0	0	29	0	124
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1695	10	20	437	0	0	0	0	29	0	124
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	1695	10	20	437	0	0	0	0	29	0	124

Critical Gap Module:

Critical Gp:	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3

Capacity Module:

Cnflct Vol:	xxxx	xxxx	xxxxx	1705	xxxx	xxxxx	xxxx	xxxx	xxxxx	1959	2177	853
Potent Cap.:	xxxx	xxxx	xxxxx	364	xxxx	xxxxx	xxxx	xxxx	xxxxx	56	46	303
Move Cap.:	xxxx	xxxx	xxxxx	364	xxxx	xxxxx	xxxx	xxxx	xxxxx	53	43	303
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	137	103	xxxxx	114	117	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.05	xxxx	xxxx	xxxx	xxxx	xxxx	0.26	0.00	0.41

Level Of Service Module:

2Way95thQ:	xxxx	xxxx	xxxxx	0.2	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	15.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT		LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT		LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	230	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	4.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	47.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	E	*
ApproachDel:	xxxxxx		xxxxxx		xxxxxx		xxxxxx		xxxxxx		47.0	
ApproachLOS:	*		*		*		*		*		E	

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #8 (36) University Avenue and Purdue Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 10	20 437 0	0 0 0 0	29 0 124
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	47.0

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=2.0]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=153]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2315]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 10	20 437 0	0 0 0 0	29 0 124

Major Street Volume: 2162

Minor Approach Volume: 153

Minor Approach Volume Threshold: 19 [less than minimum of 100]

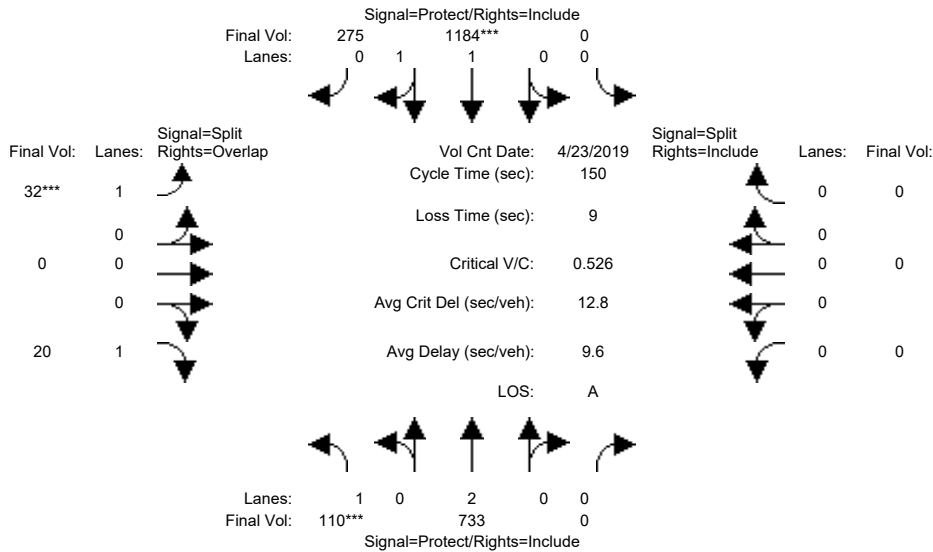
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	23 Apr 2019	<<							
Base Vol:	110	733	0	0	1184	275	32	0	20	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	110	733	0	0	1184	275	32	0	20	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	110	733	0	0	1184	275	32	0	20	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	110	733	0	0	1184	275	32	0	20	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	110	733	0	0	1184	275	32	0	20	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	110	733	0	0	1184	275	32	0	20	0	0	0

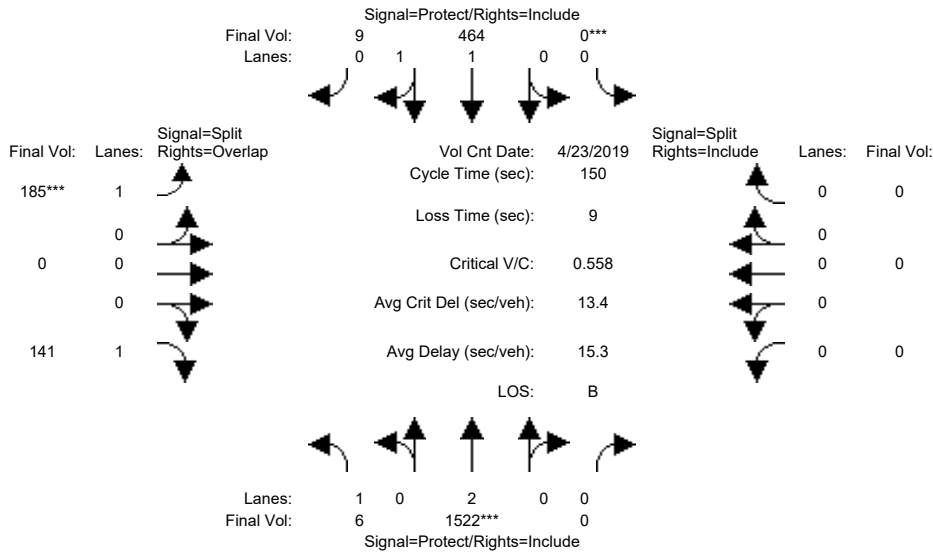
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.92	0.92	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.62	0.38	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2848	661	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.06	0.20	0.00	0.00	0.42	0.42	0.02	0.00	0.01	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	16.7	131	0.0	0.0	114	114.3	10.0	0.0	26.7	0.0	0.0	0.0
Volume/Cap:	0.55	0.23	0.00	0.00	0.55	0.55	0.27	0.00	0.07	0.00	0.00	0.00
Uniform Del:	63.0	1.5	0.0	0.0	7.3	7.3	66.5	0.0	51.3	0.0	0.0	0.0
IncrementDel:	3.1	0.0	0.0	0.0	0.2	0.2	1.2	0.0	0.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	66.1	1.5	0.0	0.0	7.5	7.5	67.7	0.0	51.4	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	66.1	1.5	0.0	0.0	7.5	7.5	67.7	0.0	51.4	0.0	0.0	0.0
LOS by Move:	E	A	A	A	A	A	E	A	D	A	A	A
HCM2kAvgQ:	5	3	0	0	14	14	2	0	1	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	23 Apr 2019	<<											
Base Vol:	6	1522	0	0	464	9	185	0	141	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	6	1522	0	0	464	9	185	0	141	0	0	0				
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	6	1522	0	0	464	9	185	0	141	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	6	1522	0	0	464	9	185	0	141	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	6	1522	0	0	464	9	185	0	141	0	0	0				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Volume:	6	1522	0	0	464	9	185	0	141	0	0	0				

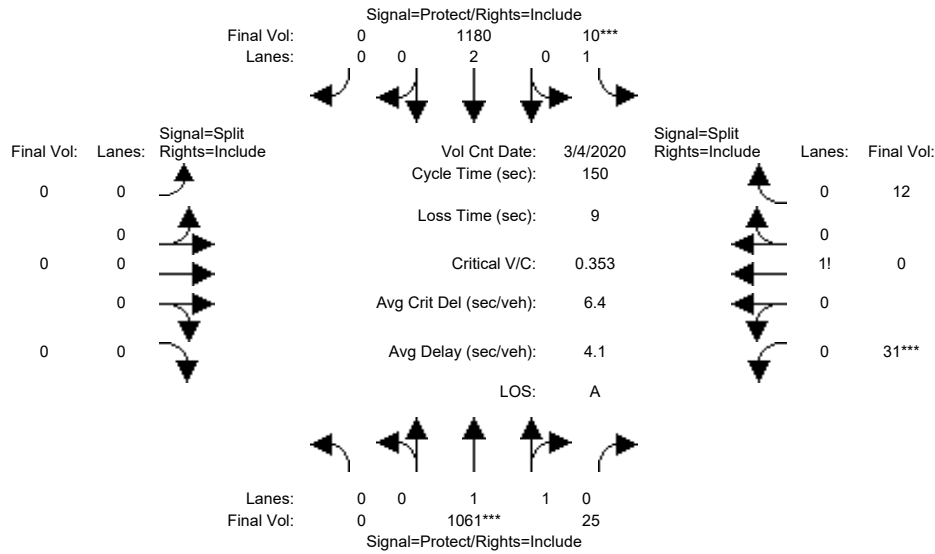
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.95	0.95	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.96	0.04	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3531	68	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.00	0.42	0.00	0.00	0.13	0.13	0.10	0.00	0.09	0.00	0.00	0.00
Crit Moves:	****			****			****					
Green Time:	29.7	113	0.0	0.0	83.7	83.7	27.6	0.0	57.3	0.0	0.0	0.0
Volume/Cap:	0.02	0.56	0.00	0.00	0.24	0.24	0.56	0.00	0.23	0.00	0.00	0.00
Uniform Del:	48.4	7.7	0.0	0.0	16.9	16.9	55.7	0.0	31.4	0.0	0.0	0.0
IncrementDel:	0.0	0.3	0.0	0.0	0.1	0.1	2.1	0.0	0.2	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	48.4	8.0	0.0	0.0	16.9	16.9	57.8	0.0	31.6	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.4	8.0	0.0	0.0	16.9	16.9	57.8	0.0	31.6	0.0	0.0	0.0
LOS by Move:	D	A	A	A	B	B	E	A	C	A	A	A
HCM2kAvgQ:	0	15	0	0	6	6	8	0	4	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	4 Mar 2020	<<							
Base Vol:	0	1061	25	10	1180	0	0	0	0	31	0	12
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1061	25	10	1180	0	0	0	0	31	0	12
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1061	25	10	1180	0	0	0	0	31	0	12
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1061	25	10	1180	0	0	0	0	31	0	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1061	25	10	1180	0	0	0	0	31	0	12
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1061	25	10	1180	0	0	0	0	31	0	12

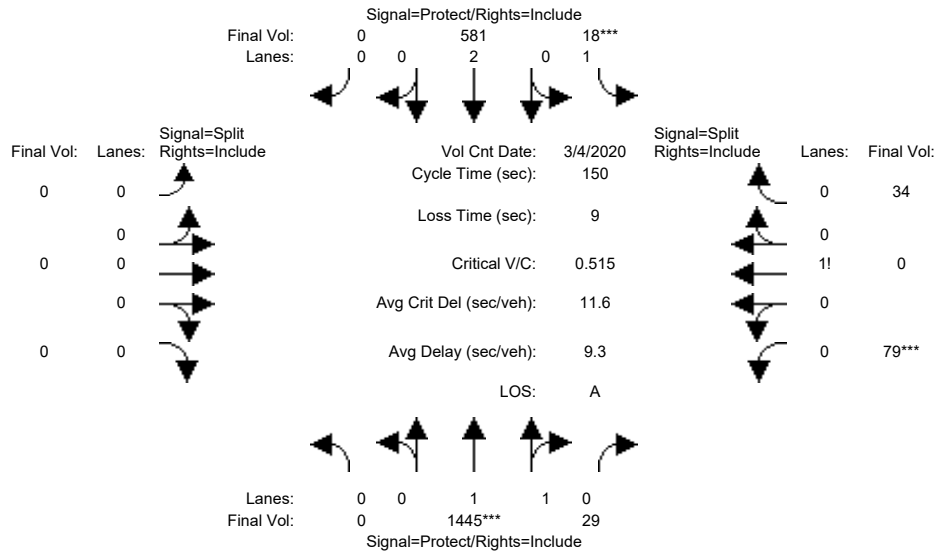
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.93	1.00	0.93
Lanes:	0.00	1.95	0.05	1.00	2.00	0.00	0.00	0.00	0.00	0.72	0.00	0.28
Final Sat.:	0	3516	83	1805	3610	0	0	0	0	1272	0	492

Capacity Analysis Module:												
Vol/Sat:	0.00	0.30	0.30	0.01	0.33	0.00	0.00	0.00	0.00	0.02	0.00	0.02
Crit Moves:	****			****						****		
Green Time:	0.0	124	124.0	7.0	131	0.0	0.0	0.0	0.0	10.0	0.0	10.0
Volume/Cap:	0.00	0.37	0.37	0.12	0.37	0.00	0.00	0.00	0.00	0.37	0.00	0.37
Uniform Del:	0.0	3.2	3.2	68.5	1.8	0.0	0.0	0.0	0.0	66.9	0.0	66.9
IncrementDel:	0.0	0.1	0.1	0.6	0.1	0.0	0.0	0.0	0.0	1.9	0.0	1.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	3.3	3.3	69.2	1.9	0.0	0.0	0.0	0.0	68.9	0.0	68.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	3.3	3.3	69.2	1.9	0.0	0.0	0.0	0.0	68.9	0.0	68.9
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	6	6	1	5	0	0	0	0	2	0	2

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]

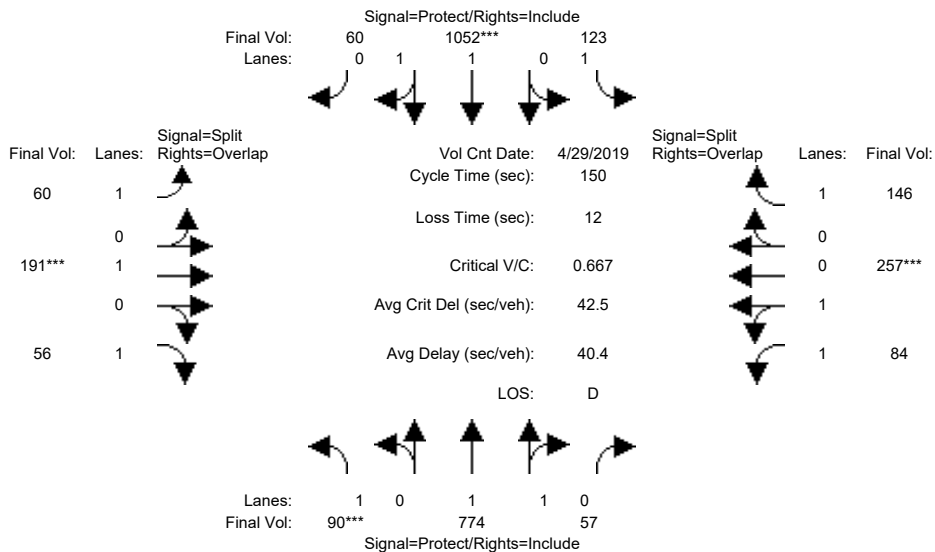


Street Name:	University Avenue						Notre Dame Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 4 Mar 2020 <<												
Base Vol:	0	1445	29	18	581	0	0	0	0	79	0	34
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1445	29	18	581	0	0	0	0	79	0	34
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1445	29	18	581	0	0	0	0	79	0	34
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1445	29	18	581	0	0	0	0	79	0	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1445	29	18	581	0	0	0	0	79	0	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1445	29	18	581	0	0	0	0	79	0	34
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.93	1.00	0.93
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.70	0.00	0.30
Final Sat.:	0	3528	71	1805	3610	0	0	0	0	1231	0	530
Capacity Analysis Module:												
Vol/Sat:	0.00	0.41	0.41	0.01	0.16	0.00	0.00	0.00	0.00	0.06	0.00	0.06
Crit Moves:	****			****						****		
Green Time:	0.0	116	115.8	7.0	123	0.0	0.0	0.0	0.0	18.2	0.0	18.2
Volume/Cap:	0.00	0.53	0.53	0.21	0.20	0.00	0.00	0.00	0.00	0.53	0.00	0.53
Uniform Del:	0.0	6.6	6.6	68.8	2.9	0.0	0.0	0.0	0.0	61.9	0.0	61.9
IncrementDel:	0.0	0.2	0.2	1.3	0.0	0.0	0.0	0.0	0.0	2.5	0.0	2.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	6.8	6.8	70.1	3.0	0.0	0.0	0.0	0.0	64.4	0.0	64.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	6.8	6.8	70.1	3.0	0.0	0.0	0.0	0.0	64.4	0.0	64.4
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	14	14	1	3	0	0	0	0	5	0	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	29 Apr 2019	<<							
Base Vol:	90	774	57	123	1052	60	60	191	56	84	257	146
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	90	774	57	123	1052	60	60	191	56	84	257	146
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	774	57	123	1052	60	60	191	56	84	257	146
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	774	57	123	1052	60	60	191	56	84	257	146
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	774	57	123	1052	60	60	191	56	84	257	146
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	90	774	57	123	1052	60	60	191	56	84	257	146

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	0.91	0.91	0.92	0.92	0.92	0.93	0.98	0.83	0.97	0.97	0.83
Lanes:	1.00	1.86	0.14	1.00	1.89	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1753	3232	238	1753	3290	188	1769	1862	1583	1840	1840	1583

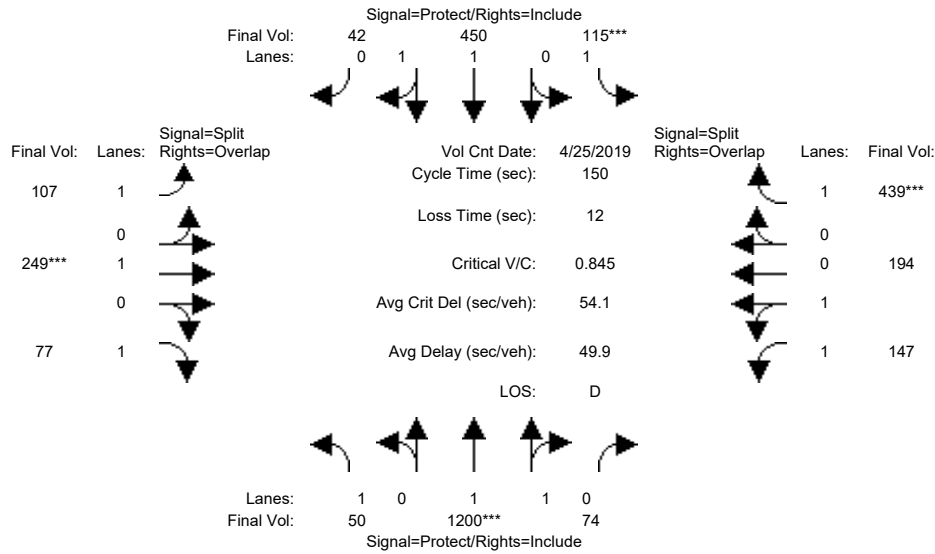
Capacity Analysis Module:												
Vol/Sat:	0.05	0.24	0.24	0.07	0.32	0.32	0.03	0.10	0.04	0.05	0.14	0.09
Crit Moves:	***			****			****			****		
Green Time:	11.6	64.6	64.6	18.9	71.9	71.9	23.1	23.1	34.6	31.4	31.4	50.4
Volume/Cap:	0.67	0.56	0.56	0.56	0.67	0.67	0.22	0.67	0.15	0.22	0.67	0.27
Uniform Del:	67.4	32.0	32.0	61.6	29.9	29.9	55.6	59.8	46.0	49.1	54.5	36.5
IncrcmntDel:	12.0	0.5	0.5	3.1	1.0	1.0	0.4	5.9	0.2	0.1	3.4	0.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	79.4	32.5	32.5	64.7	30.9	30.9	56.0	65.7	46.2	49.2	57.8	36.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	79.4	32.5	32.5	64.7	30.9	30.9	56.0	65.7	46.2	49.2	57.8	36.7
LOS by Move:	E	C	C	E	C	C	E	E	D	D	E	D
HCM2kAvgQ:	5	15	15	6	21	21	2	9	2	3	12	5

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	25 Apr 2019	<<											
Base Vol:	50	1200	74	115	450	42	107	249	77	147	194	439				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	50	1200	74	115	450	42	107	249	77	147	194	439				
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	50	1200	74	115	450	42	107	249	77	147	194	439				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	50	1200	74	115	450	42	107	249	77	147	194	439				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	50	1200	74	115	450	42	107	249	77	147	194	439				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Volume:	50	1200	74	115	450	42	107	249	77	147	194	439				

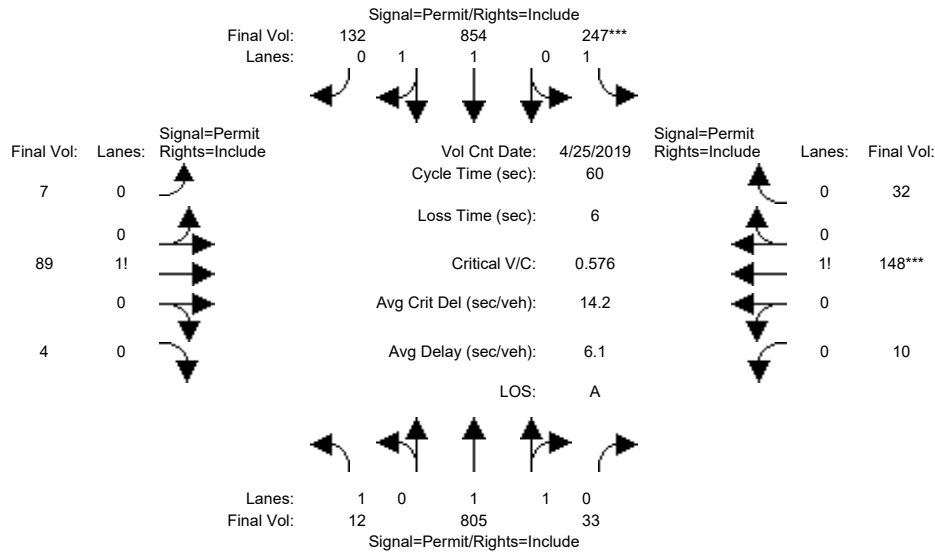
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	0.91	0.91	0.92	0.91	0.91	0.93	0.98	0.83	0.96	0.96	0.83
Lanes:	1.00	1.88	0.12	1.00	1.83	0.17	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1753	3272	202	1753	3164	295	1769	1862	1583	1823	1823	1583

Capacity Analysis Module:												
Vol/Sat:	0.03	0.37	0.37	0.07	0.14	0.14	0.06	0.13	0.05	0.08	0.11	0.28
Crit Moves:	****			****			****			****		
Green Time:	19.0	65.1	65.1	11.6	57.8	57.8	23.7	23.7	42.7	37.6	37.6	49.2
Volume/Cap:	0.23	0.85	0.85	0.85	0.37	0.37	0.38	0.85	0.17	0.32	0.42	0.85
Uniform Del:	58.9	38.0	38.0	68.3	33.1	33.1	56.6	61.4	40.4	45.8	47.2	46.9
IncrementDel:	0.5	4.6	4.6	35.9	0.2	0.2	0.9	19.6	0.2	0.2	0.4	12.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	59.4	42.6	42.6	104.2	33.2	33.2	57.4	81.0	40.5	46.0	47.5	59.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	59.4	42.6	42.6	104.2	33.2	33.2	57.4	81.0	40.5	46.0	47.5	59.0
LOS by Move:	E	D	D	F	C	C	E	F	D	D	D	E
HCM2kAvgQ:	2	29	29	7	8	8	5	14	3	5	8	21

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	25 Apr 2019	<<							
Base Vol:	12	805	33	247	854	132	7	89	4	10	148	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	12	805	33	247	854	132	7	89	4	10	148	32
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	12	805	33	247	854	132	7	89	4	10	148	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	12	805	33	247	854	132	7	89	4	10	148	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	12	805	33	247	854	132	7	89	4	10	148	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	12	805	33	247	854	132	7	89	4	10	148	32

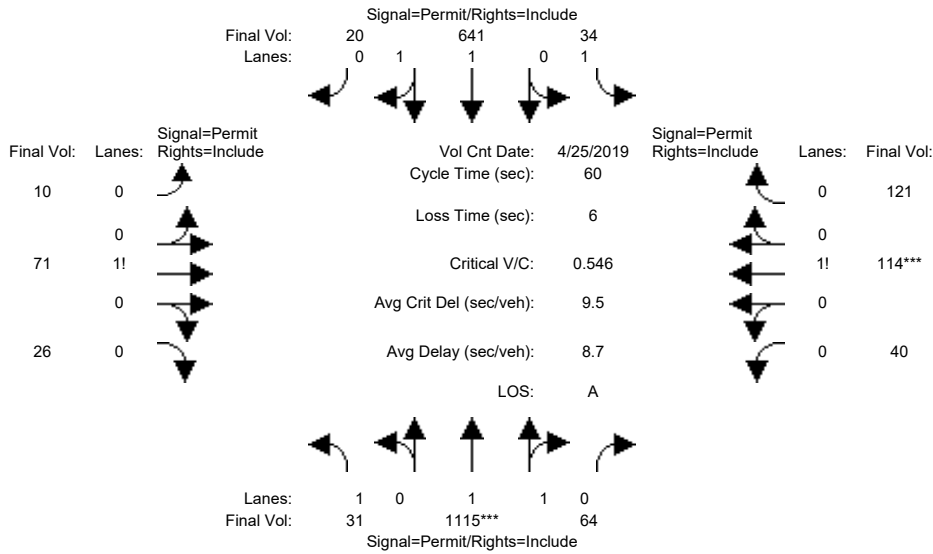
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.27	0.94	0.94	0.31	0.93	0.93	0.98	0.98	0.98	0.96	0.96	0.96
Lanes:	1.00	1.92	0.08	1.00	1.73	0.27	0.07	0.89	0.04	0.05	0.78	0.17
Final Sat.:	505	3447	141	597	3064	474	130	1652	74	96	1421	307

Capacity Analysis Module:												
Vol/Sat:	0.02	0.23	0.23	0.41	0.28	0.28	0.05	0.05	0.05	0.10	0.10	0.10
Crit Moves:	****						****					
Green Time:	43.1	43.1	43.1	43.1	43.1	43.1	10.9	10.9	10.9	10.9	10.9	10.9
Volume/Cap:	0.03	0.32	0.32	0.58	0.39	0.39	0.30	0.30	0.30	0.58	0.58	0.58
Uniform Del:	2.4	3.1	3.1	4.0	3.3	3.3	21.3	21.3	21.3	22.5	22.5	22.5
IncrementDel:	0.0	0.1	0.1	1.9	0.1	0.1	0.5	0.5	0.5	2.5	2.5	2.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	2.5	3.2	3.2	6.0	3.4	3.4	21.8	21.8	21.8	25.0	25.0	25.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	2.5	3.2	3.2	6.0	3.4	3.4	21.8	21.8	21.8	25.0	25.0	25.0
LOS by Move:	A	A	A	A	A	A	C	C	C	C	C	C
HCM2kAvgQ:	0	3	3	3	4	4	2	2	2	4	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	25 Apr 2019	<<											
Base Vol:	31	1115	64	34	641	20	10	71	26	40	114	121				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	31	1115	64	34	641	20	10	71	26	40	114	121				
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	31	1115	64	34	641	20	10	71	26	40	114	121				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	31	1115	64	34	641	20	10	71	26	40	114	121				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	31	1115	64	34	641	20	10	71	26	40	114	121				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Volume:	31	1115	64	34	641	20	10	71	26	40	114	121				

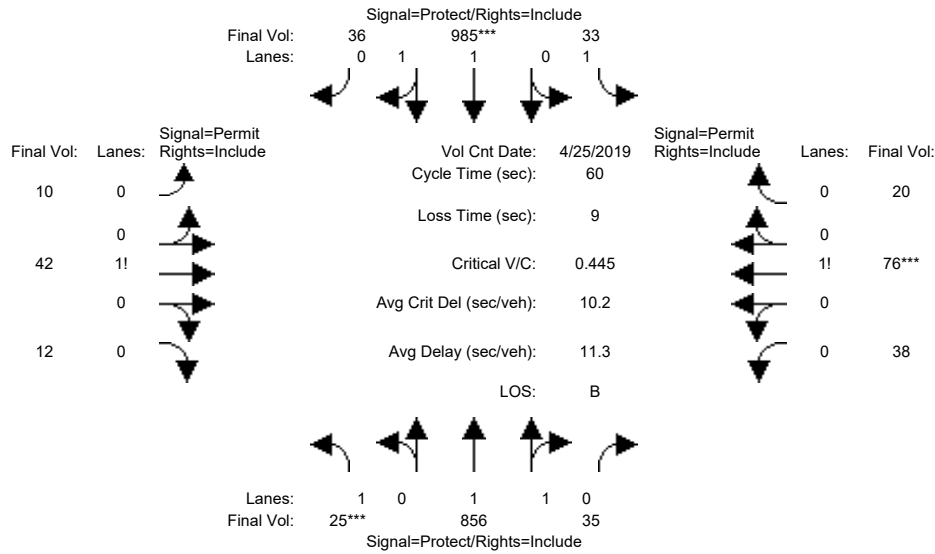
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.36	0.94	0.94	0.18	0.95	0.95	0.94	0.94	0.94	0.89	0.89	0.89
Lanes:	1.00	1.89	0.11	1.00	1.94	0.06	0.09	0.67	0.24	0.15	0.41	0.44
Final Sat.:	692	3387	194	336	3487	109	166	1179	432	247	703	747

Capacity Analysis Module:												
Vol/Sat:	0.04	0.33	0.33	0.10	0.18	0.18	0.06	0.06	0.06	0.16	0.16	0.16
Crit Moves:	****									****		
Green Time:	36.2	36.2	36.2	36.2	36.2	36.2	17.8	17.8	17.8	17.8	17.8	17.8
Volume/Cap:	0.07	0.55	0.55	0.17	0.30	0.30	0.20	0.20	0.20	0.55	0.55	0.55
Uniform Del:	4.9	7.0	7.0	5.3	5.8	5.8	15.8	15.8	15.8	17.7	17.7	17.7
IncrementDel:	0.1	0.3	0.3	0.4	0.1	0.1	0.2	0.2	0.2	1.3	1.3	1.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	5.0	7.3	7.3	5.7	5.9	5.9	16.0	16.0	16.0	19.0	19.0	19.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	5.0	7.3	7.3	5.7	5.9	5.9	16.0	16.0	16.0	19.0	19.0	19.0
LOS by Move:	A	A	A	A	A	A	B	B	B	B	B	B
HCM2kAvgQ:	0	7	7	0	3	3	2	2	2	5	5	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	25 Apr 2019	<<	7:15-8:15 AM						
Base Vol:	25	856	35	33	985	36	10	42	12	38	76	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	25	856	35	33	985	36	10	42	12	38	76	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	25	856	35	33	985	36	10	42	12	38	76	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	25	856	35	33	985	36	10	42	12	38	76	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	25	856	35	33	985	36	10	42	12	38	76	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	25	856	35	33	985	36	10	42	12	38	76	20

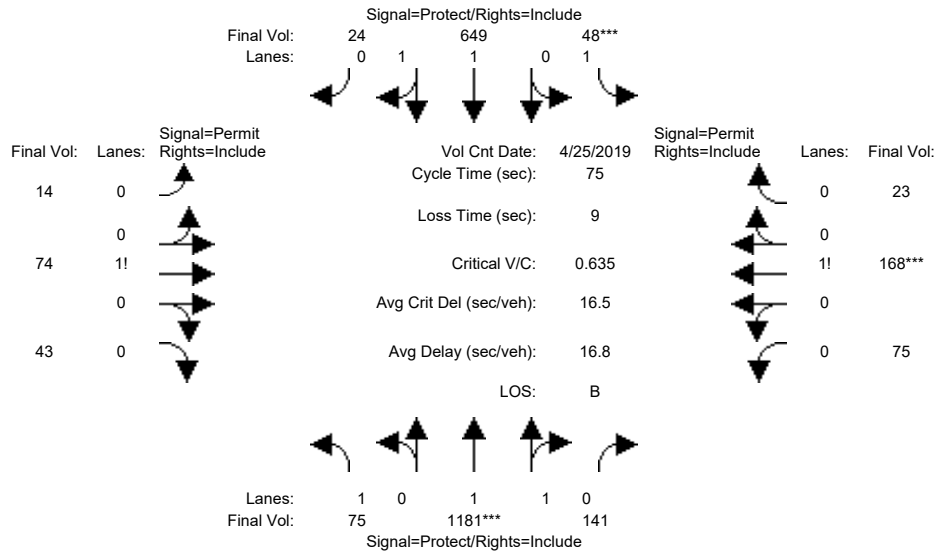
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.94	0.94	0.95	0.95	0.95	0.93	0.93	0.93	0.88	0.88	0.88
Lanes:	1.00	1.92	0.08	1.00	1.93	0.07	0.15	0.66	0.19	0.28	0.57	0.15
Final Sat.:	1805	3447	141	1805	3465	127	276	1159	331	474	948	250

Capacity Analysis Module:												
Vol/Sat:	0.01	0.25	0.25	0.02	0.28	0.28	0.04	0.04	0.04	0.08	0.08	0.08
Crit Moves:	***			***						***		
Green Time:	7.0	27.9	27.9	13.1	34.0	34.0	10.0	10.0	10.0	10.0	10.0	10.0
Volume/Cap:	0.12	0.53	0.53	0.08	0.50	0.50	0.22	0.22	0.22	0.48	0.48	0.48
Uniform Del:	23.7	11.4	11.4	18.7	7.9	7.9	21.6	21.6	21.6	22.6	22.6	22.6
IncrementDel:	0.3	0.3	0.3	0.1	0.2	0.2	0.4	0.4	0.4	1.3	1.3	1.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	24.0	11.8	11.8	18.8	8.1	8.1	22.0	22.0	22.0	24.0	24.0	24.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.0	11.8	11.8	18.8	8.1	8.1	22.0	22.0	22.0	24.0	24.0	24.0
LOS by Move:	C	B	B	B	A	A	C	C	C	C	C	C
HCM2kAvgQ:	1	7	7	1	6	6	1	1	1	3	3	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	25 Apr 2019	<<	4:30-5:30 PM						
Base Vol:	75	1181	141	48	649	24	14	74	43	75	168	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1181	141	48	649	24	14	74	43	75	168	23
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	1181	141	48	649	24	14	74	43	75	168	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1181	141	48	649	24	14	74	43	75	168	23
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1181	141	48	649	24	14	74	43	75	168	23
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	75	1181	141	48	649	24	14	74	43	75	168	23

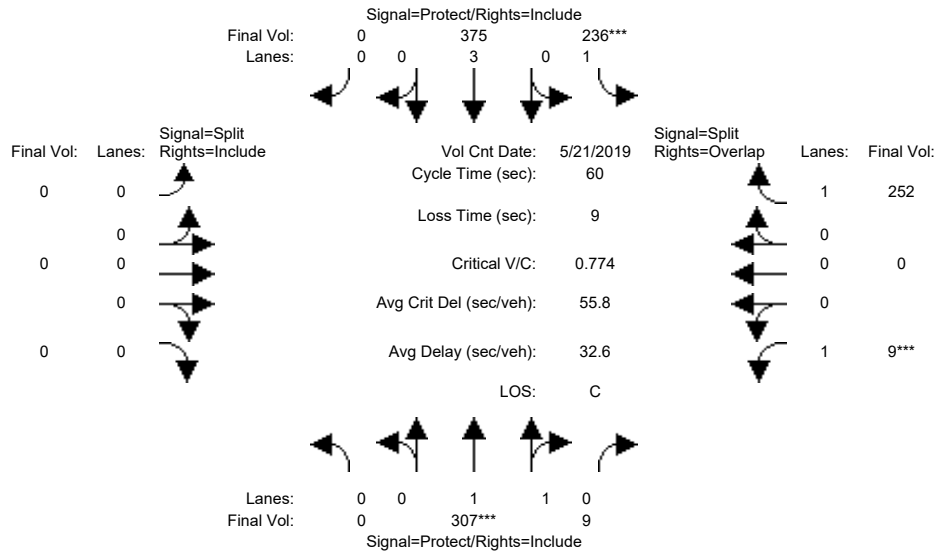
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	0.95	0.95	0.92	0.92	0.92	0.87	0.87	0.87
Lanes:	1.00	1.79	0.21	1.00	1.93	0.07	0.11	0.56	0.33	0.28	0.63	0.09
Final Sat.:	1805	3173	379	1805	3464	128	187	990	575	468	1049	144

Capacity Analysis Module:												
Vol/Sat:	0.04	0.37	0.37	0.03	0.19	0.19	0.07	0.07	0.07	0.16	0.16	0.16
Crit Moves:	****			****						****		
Green Time:	16.0	41.3	41.3	7.0	32.2	32.2	17.7	17.7	17.7	17.7	17.7	17.7
Volume/Cap:	0.19	0.68	0.68	0.28	0.44	0.44	0.32	0.32	0.32	0.68	0.68	0.68
Uniform Del:	24.2	12.1	12.1	31.7	15.0	15.0	23.6	23.6	23.6	26.0	26.0	26.0
IncrementDel:	0.2	1.0	1.0	0.9	0.2	0.2	0.4	0.4	0.4	4.7	4.7	4.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	24.4	13.1	13.1	32.6	15.2	15.2	24.1	24.1	24.1	30.7	30.7	30.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.4	13.1	13.1	32.6	15.2	15.2	24.1	24.1	24.1	30.7	30.7	30.7
LOS by Move:	C	B	B	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	2	12	12	1	6	6	3	3	3	7	7	7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	21 May 2019	<<						
Base Vol:	0	307	9	236	375	0	0	0	9	0	252
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	307	9	236	375	0	0	0	9	0	252
Added Vol:	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	307	9	236	375	0	0	0	9	0	252
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	307	9	236	375	0	0	0	9	0	252
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	307	9	236	375	0	0	0	9	0	252
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	307	9	236	375	0	0	0	9	0	252

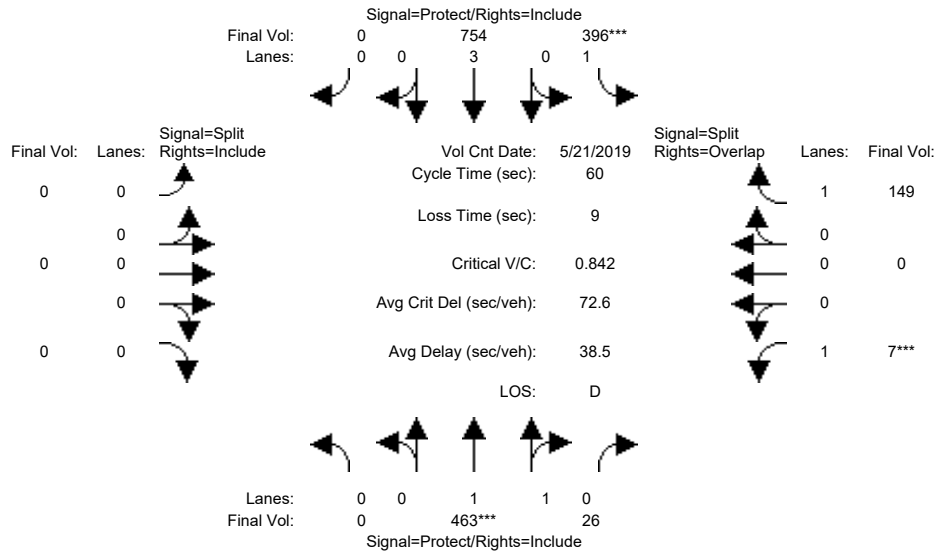
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.34	0.32	0.32	0.32	0.31	0.34	0.34	0.34	0.34	0.32	0.34	0.29
Lanes:	0.00	1.94	0.06	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1188	35	614	1764	0	0	0	0	614	0	549

Capacity Analysis Module:												
Vol/Sat:	0.00	0.26	0.26	0.38	0.21	0.00	0.00	0.00	0.00	0.01	0.00	0.46
Crit Moves:		****		****						****		
Green Time:	0.0	16.5	16.5	24.5	41.0	0.0	0.0	0.0	0.0	10.0	0.0	34.5
Volume/Cap:	0.00	0.94	0.94	0.94	0.31	0.00	0.00	0.00	0.00	0.09	0.00	0.80
Uniform Del:	0.0	21.3	21.3	17.0	3.8	0.0	0.0	0.0	0.0	21.1	0.0	10.0
IncrementDel:	0.0	34.0	34.0	40.9	0.1	0.0	0.0	0.0	0.0	0.4	0.0	13.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	55.3	55.3	57.9	4.0	0.0	0.0	0.0	0.0	21.5	0.0	23.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	55.3	55.3	57.9	4.0	0.0	0.0	0.0	0.0	21.5	0.0	23.3
LOS by Move:	A	E	E	E	A	A	A	A	A	C	A	C
HCM2kAvgQ:	0	7	7	8	1	0	0	0	0	0	0	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	21 May 2019	<<							
Base Vol:	0	463	26	396	754	0	0	0	0	7	0	149
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	463	26	396	754	0	0	0	0	7	0	149
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	463	26	396	754	0	0	0	0	7	0	149
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	463	26	396	754	0	0	0	0	7	0	149
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	463	26	396	754	0	0	0	0	7	0	149
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	463	26	396	754	0	0	0	0	7	0	149

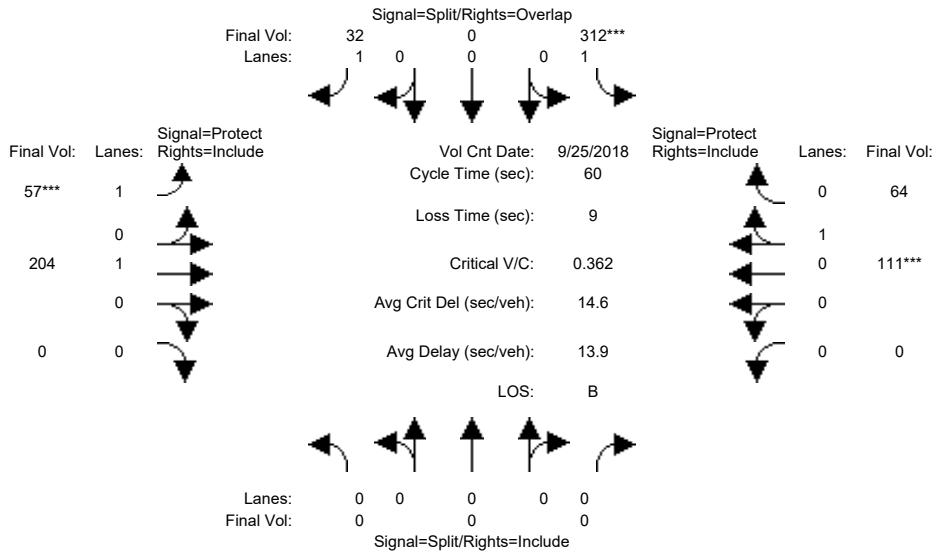
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.50	0.47	0.47	0.48	0.46	0.50	0.50	0.50	0.50	0.48	0.50	0.43
Lanes:	0.00	1.89	0.11	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1706	96	908	2609	0	0	0	0	908	0	812

Capacity Analysis Module:												
Vol/Sat:	0.00	0.27	0.27	0.44	0.29	0.00	0.00	0.00	0.00	0.01	0.00	0.18
Crit Moves:	****			****						****		
Green Time:	0.0	15.7	15.7	25.3	41.0	0.0	0.0	0.0	0.0	10.0	0.0	35.3
Volume/Cap:	0.00	1.04	1.04	1.04	0.42	0.00	0.00	0.00	0.00	0.05	0.00	0.31
Uniform Del:	0.0	22.1	22.1	17.4	4.2	0.0	0.0	0.0	0.0	21.0	0.0	6.2
IncrementDel:	0.0	50.9	50.9	55.5	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.4
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	73.0	73.0	72.9	4.4	0.0	0.0	0.0	0.0	21.1	0.0	6.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	73.0	73.0	72.9	4.4	0.0	0.0	0.0	0.0	21.1	0.0	6.6
LOS by Move:	A	E	E	E	A	A	A	A	A	C	A	A
HCM2kAvgQ:	0	11	11	15	3	0	0	0	0	0	0	2

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	25 Sep 2018	<<											
Base Vol:	0	0	0	312	0	32	57	204	0	0	111	64				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	0	0	0	312	0	32	57	204	0	0	111	64				
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	0	0	0	312	0	32	57	204	0	0	111	64				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	0	0	0	312	0	32	57	204	0	0	111	64				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	0	0	0	312	0	32	57	204	0	0	111	64				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Volume:	0	0	0	312	0	32	57	204	0	0	111	64				

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.93	0.93
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.63	0.37
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	1123	648

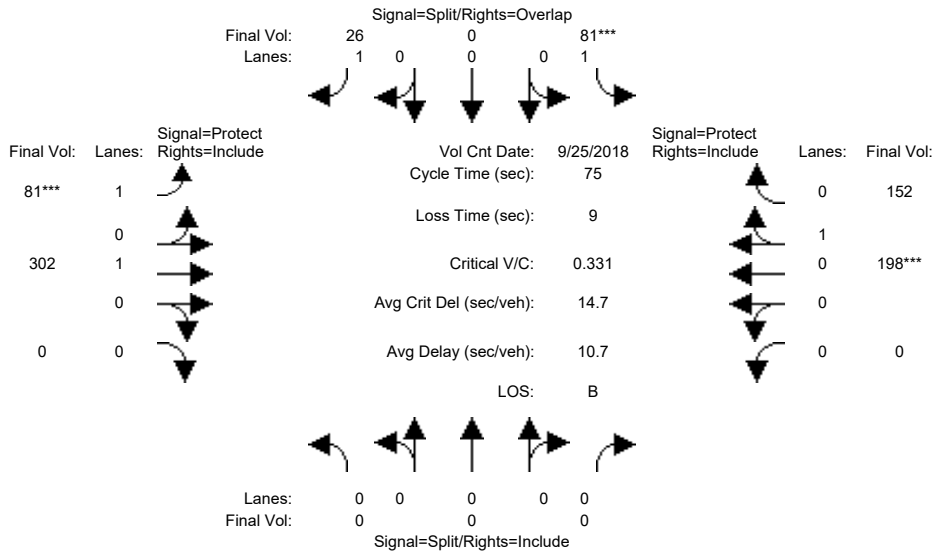
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.18	0.00	0.02	0.03	0.11	0.00	0.00	0.10	0.10
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	28.2	0.0	35.2	7.0	22.8	0.0	0.0	15.8	15.8
Volume/Cap:	0.00	0.00	0.00	0.38	0.00	0.03	0.28	0.29	0.00	0.00	0.38	0.38
Uniform Del:	0.0	0.0	0.0	10.2	0.0	5.2	24.2	13.0	0.0	0.0	18.1	18.1
IncrementDel:	0.0	0.0	0.0	0.3	0.0	0.0	0.7	0.2	0.0	0.0	0.5	0.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	10.5	0.0	5.2	24.9	13.2	0.0	0.0	18.6	18.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	10.5	0.0	5.2	24.9	13.2	0.0	0.0	18.6	18.6
LOS by Move:	A	A	A	B	A	A	C	B	A	A	B	B
HCM2kAvgQ:	0	0	0	4	0	0	1	3	0	0	3	3

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	25 Sep 2018	<<											
Base Vol:	0	0	0	81	0	26	81	302	0	0	198	152				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	0	0	0	81	0	26	81	302	0	0	198	152				
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	0	0	0	81	0	26	81	302	0	0	198	152				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	0	0	0	81	0	26	81	302	0	0	198	152				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	0	0	0	81	0	26	81	302	0	0	198	152				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Volume:	0	0	0	81	0	26	81	302	0	0	198	152				

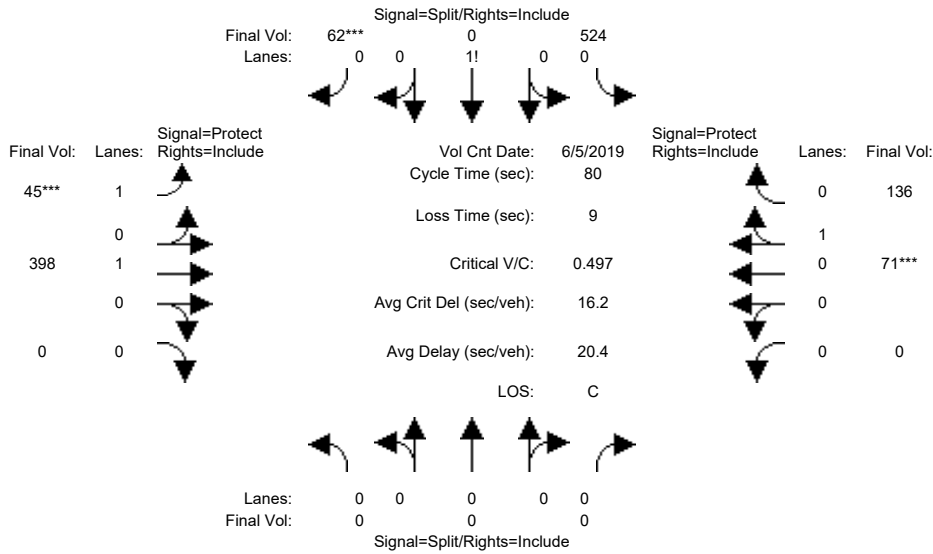
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.57	0.43
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	991	761

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.05	0.00	0.02	0.05	0.16	0.00	0.00	0.20	0.20
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	10.4	0.0	20.7	10.4	55.6	0.0	0.0	45.3	45.3
Volume/Cap:	0.00	0.00	0.00	0.33	0.00	0.06	0.33	0.22	0.00	0.00	0.33	0.33
Uniform Del:	0.0	0.0	0.0	29.2	0.0	20.0	29.2	3.0	0.0	0.0	7.4	7.4
IncrementDel:	0.0	0.0	0.0	0.8	0.0	0.1	0.8	0.1	0.0	0.0	0.2	0.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	30.0	0.0	20.0	30.0	3.1	0.0	0.0	7.6	7.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	30.0	0.0	20.0	30.0	3.1	0.0	0.0	7.6	7.6
LOS by Move:	A	A	A	C	A	C	C	A	A	A	A	A
HCM2kAvgQ:	0	0	0	2	0	0	2	2	0	0	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	5 Jun 2019	<<												
Base Vol:	0	0	0	524	0	62	45	398	0	0	71	136					
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Initial Bse:	0	0	0	524	0	62	45	398	0	0	71	136					
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0					
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0					
Initial Fut:	0	0	0	524	0	62	45	398	0	0	71	136					
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Volume:	0	0	0	524	0	62	45	398	0	0	71	136					
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0					
Reduced Vol:	0	0	0	524	0	62	45	398	0	0	71	136					
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Final Volume:	0	0	0	524	0	62	45	398	0	0	71	136					

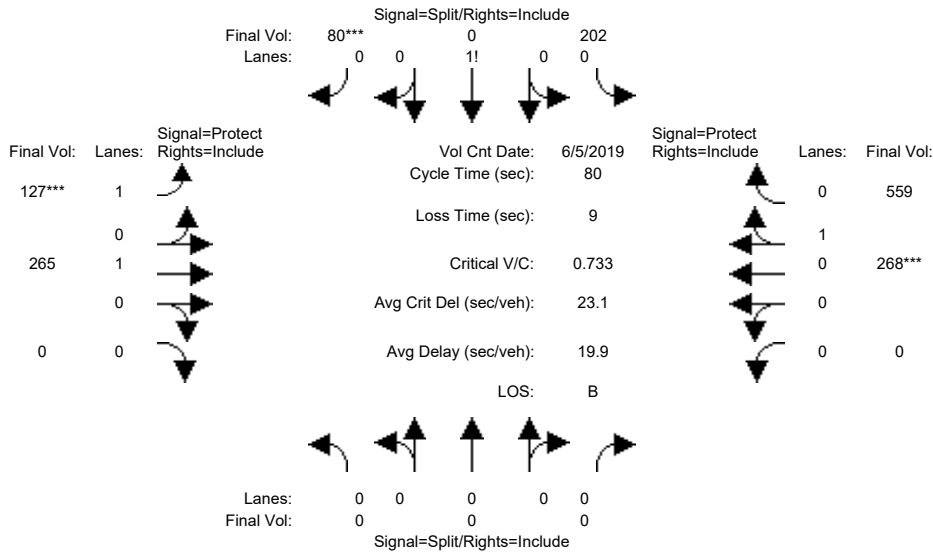
Saturation Flow Module:														
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Lanes:	0.00	0.00	0.00	0.89	0.00	0.11	1.00	1.00	0.00	0.00	0.34	0.66		
Final Sat.:	0	0	0	1699	0	201	1900	1900	0	0	652	1248		

Capacity Analysis Module:														
Vol/Sat:	0.00	0.00	0.00	0.31	0.00	0.31	0.02	0.21	0.00	0.00	0.11	0.11		
Crit Moves:				****			****			****				
Green Time:	0.0	0.0	0.0	47.3	0.0	47.3	7.0	23.7	0.0	0.0	16.7	16.7		
Volume/Cap:	0.00	0.00	0.00	0.52	0.00	0.52	0.27	0.71	0.00	0.00	0.52	0.52		
Uniform Del:	0.0	0.0	0.0	9.7	0.0	9.7	34.1	25.1	0.0	0.0	28.1	28.1		
IncrementDel:	0.0	0.0	0.0	0.4	0.0	0.4	0.9	4.1	0.0	0.0	1.3	1.3		
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00		
Delay/Veh:	0.0	0.0	0.0	10.1	0.0	10.1	35.0	29.2	0.0	0.0	29.4	29.4		
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
AdjDel/Veh:	0.0	0.0	0.0	10.1	0.0	10.1	35.0	29.2	0.0	0.0	29.4	29.4		
LOS by Move:	A	A	A	B	A	B	C	C	A	A	C	C		
HCM2kAvgQ:	0	0	0	9	0	9	1	10	0	0	5	5		

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	5 Jun 2019	<<							
Base Vol:	0	0	0	202	0	80	127	265	0	0	268	559
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	202	0	80	127	265	0	0	268	559
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	202	0	80	127	265	0	0	268	559
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	202	0	80	127	265	0	0	268	559
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	202	0	80	127	265	0	0	268	559
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	202	0	80	127	265	0	0	268	559

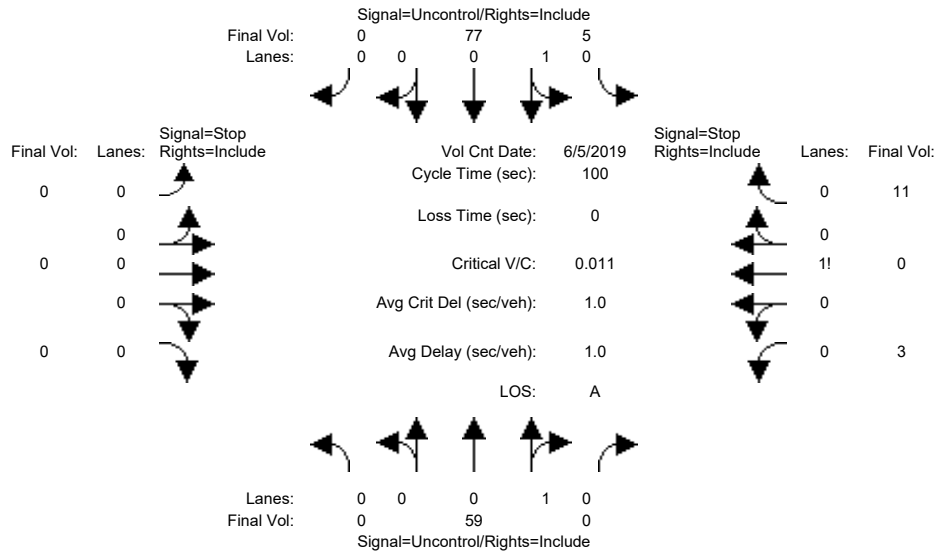
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.72	0.00	0.28	1.00	1.00	0.00	0.00	0.32	0.68
Final Sat.:	0	0	0	1361	0	539	1900	1900	0	0	616	1284

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.15	0.00	0.15	0.07	0.14	0.00	0.00	0.44	0.44
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	16.2	0.0	16.2	7.3	54.8	0.0	0.0	47.5	47.5
Volume/Cap:	0.00	0.00	0.00	0.73	0.00	0.73	0.73	0.20	0.00	0.00	0.73	0.73
Uniform Del:	0.0	0.0	0.0	29.9	0.0	29.9	35.4	4.6	0.0	0.0	11.7	11.7
IncrementDel:	0.0	0.0	0.0	7.1	0.0	7.1	14.9	0.1	0.0	0.0	2.5	2.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	37.0	0.0	37.0	50.3	4.7	0.0	0.0	14.2	14.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	37.0	0.0	37.0	50.3	4.7	0.0	0.0	14.2	14.2
LOS by Move:	A	A	A	D	A	D	D	A	A	A	B	B
HCM2kAvgQ:	0	0	0	8	0	8	5	2	0	0	16	16

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with columns for Volume Module, Count, Date (5 Jun 2019), and various traffic metrics like Base Vol, Growth Adj, Initial Bse, etc.

Table for Critical Gap Module showing Critical Gap, FollowUpTim, and other timing parameters.

Table for Capacity Module showing Cnflct Vol, Potent Cap., Move Cap., and Volume/Cap.

Table for Level Of Service Module showing 2Way95thQ, Control Del, LOS by Move, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	8.8

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=14]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=155]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11

Major Street Volume: 141  
 Minor Approach Volume: 14  
 Minor Approach Volume Threshold: 742

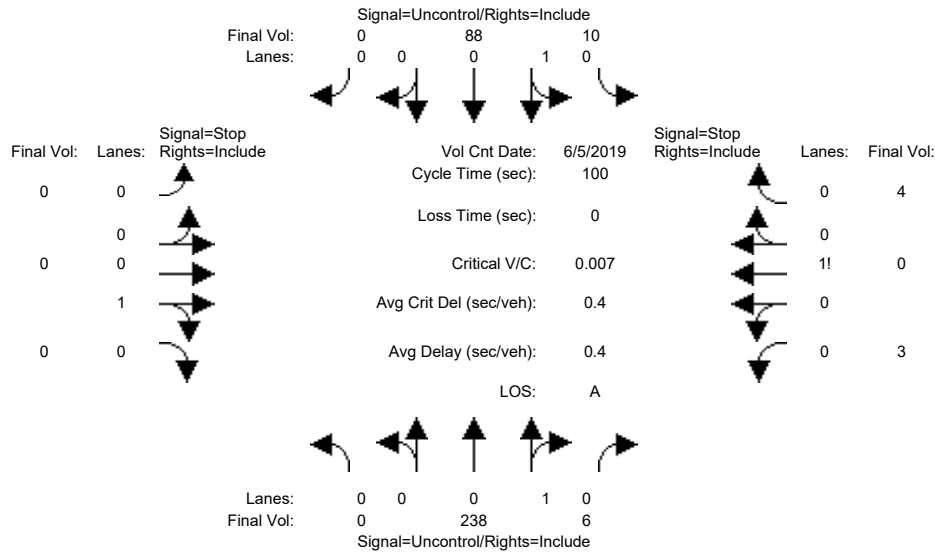
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with columns for Volume Module, Count, Date (5 Jun 2019), and various traffic metrics like Base Vol, Growth Adj, Initial Bse, Added Vol, etc.

Table for Critical Gap Module showing Critical Gap and FollowUpTim values for different movements.

Table for Capacity Module showing Cnflct Vol, Potent Cap., Move Cap., and Volume/Cap. ratios.

Table for Level Of Service Module showing 2Way95thQ, Control Del, LOS by Move, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	10.0

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=7]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=349]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4

Major Street Volume: 342  
 Minor Approach Volume: 7  
 Minor Approach Volume Threshold: 506

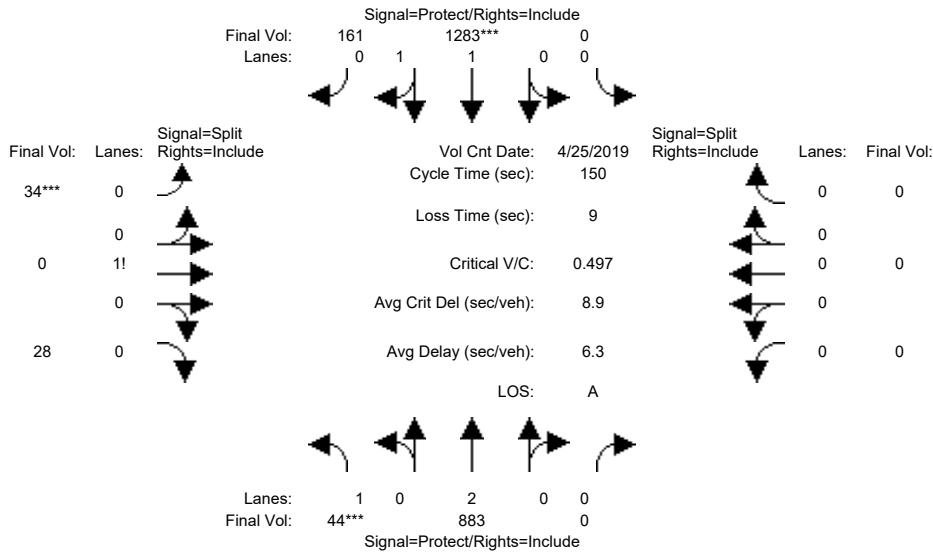
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	25 Apr 2019	<<											
Base Vol:	44	883	0	0	1283	161	34	0	28	0	0	0				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	44	883	0	0	1283	161	34	0	28	0	0	0				
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	44	883	0	0	1283	161	34	0	28	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	44	883	0	0	1283	161	34	0	28	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	44	883	0	0	1283	161	34	0	28	0	0	0				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Final Volume:	44	883	0	0	1283	161	34	0	28	0	0	0				

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.91	1.00	0.91	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.78	0.22	0.55	0.00	0.45	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3153	396	952	0	784	0	0	0

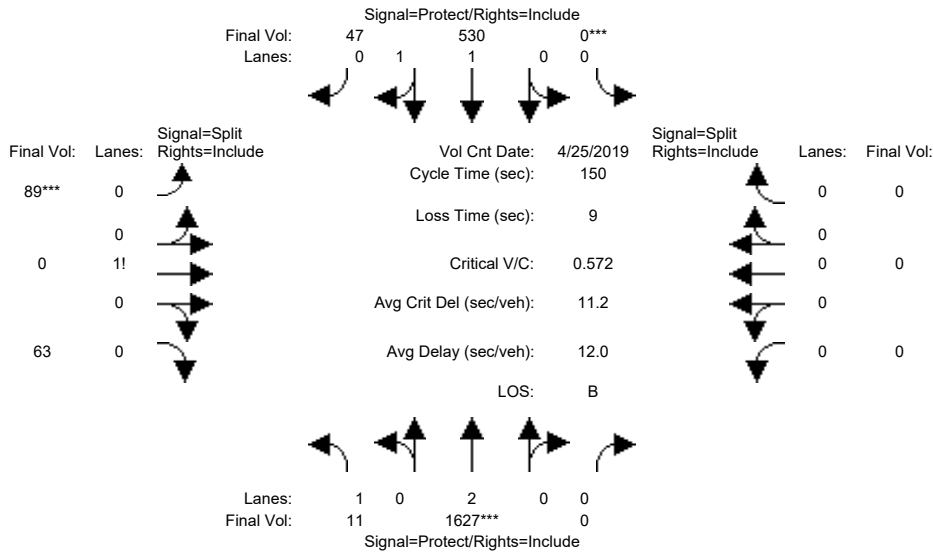
Capacity Analysis Module:												
Vol/Sat:	0.02	0.24	0.00	0.00	0.41	0.41	0.04	0.00	0.04	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	7.4	130	0.0	0.0	123	122.9	10.8	0.0	10.8	0.0	0.0	0.0
Volume/Cap:	0.50	0.28	0.00	0.00	0.50	0.50	0.50	0.00	0.50	0.00	0.00	0.00
Uniform Del:	69.5	1.7	0.0	0.0	4.1	4.1	67.0	0.0	67.0	0.0	0.0	0.0
IncrementDel:	4.3	0.0	0.0	0.0	0.1	0.1	3.1	0.0	3.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	73.8	1.8	0.0	0.0	4.3	4.3	70.1	0.0	70.1	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	73.8	1.8	0.0	0.0	4.3	4.3	70.1	0.0	70.1	0.0	0.0	0.0
LOS by Move:	E	A	A	A	A	A	E	A	E	A	A	A
HCM2kAvgQ:	3	4	0	0	11	11	3	0	3	0	0	0

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	>>	Count	Date:	25 Apr 2019	<<							
Base Vol:	11	1627	0	0	530	47	89	0	63	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	11	1627	0	0	530	47	89	0	63	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	11	1627	0	0	530	47	89	0	63	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	11	1627	0	0	530	47	89	0	63	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	11	1627	0	0	530	47	89	0	63	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	11	1627	0	0	530	47	89	0	63	0	0	0

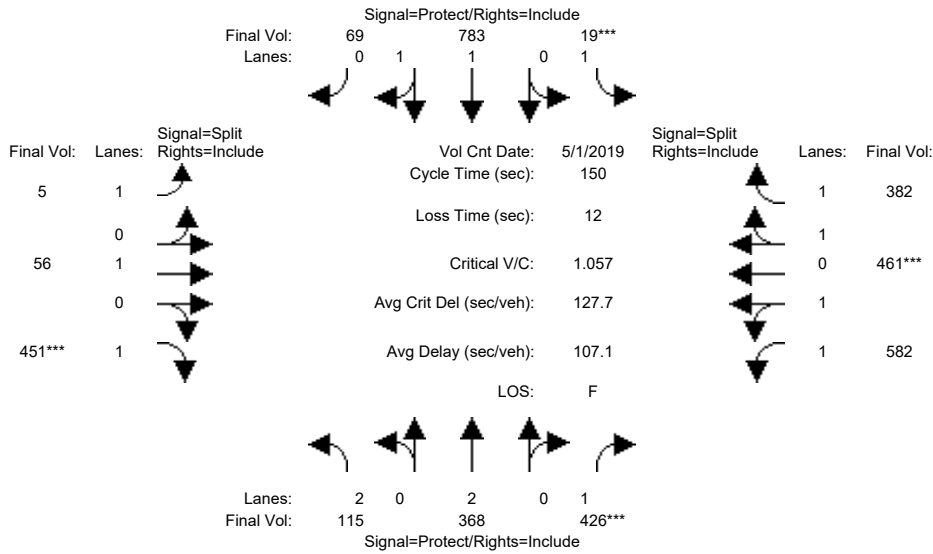
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.94	0.94	0.92	1.00	0.92	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.84	0.16	0.59	0.00	0.41	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3276	291	1021	0	723	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.01	0.45	0.00	0.00	0.16	0.16	0.09	0.00	0.09	0.00	0.00	0.00
Crit Moves:	****			****			****					
Green Time:	26.5	118	0.0	0.0	91.7	91.7	22.9	0.0	22.9	0.0	0.0	0.0
Volume/Cap:	0.03	0.57	0.00	0.00	0.26	0.26	0.57	0.00	0.57	0.00	0.00	0.00
Uniform Del:	51.2	6.2	0.0	0.0	13.5	13.5	59.0	0.0	59.0	0.0	0.0	0.0
IncrementDel:	0.0	0.3	0.0	0.0	0.1	0.1	3.0	0.0	3.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	51.2	6.4	0.0	0.0	13.6	13.6	62.0	0.0	62.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.2	6.4	0.0	0.0	13.6	13.6	62.0	0.0	62.0	0.0	0.0	0.0
LOS by Move:	D	A	A	A	B	B	E	A	E	A	A	A
HCM2kAvgQ:	0	15	0	0	6	6	7	0	7	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #45: (43) University/Donohoe

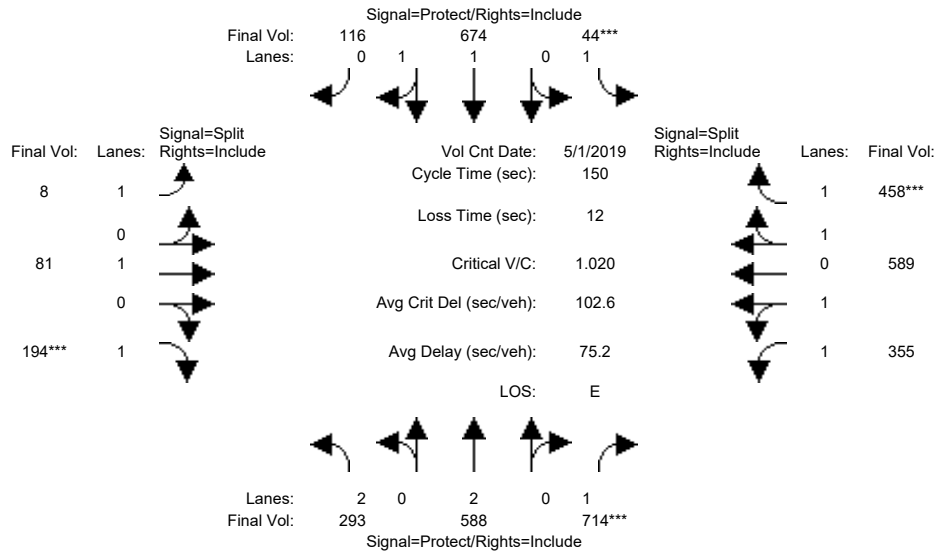


Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6
Volume Module: >> Count Date: 1 May 2019 <<												
Base Vol:	115	368	426	19	783	69	5	56	451	582	461	382
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	115	368	426	19	783	69	5	56	451	582	461	382
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	115	368	426	19	783	69	5	56	451	582	461	382
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	115	368	426	19	783	69	5	56	451	582	461	382
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	115	368	426	19	783	69	5	56	451	582	461	382
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	115	368	426	19	783	69	5	56	451	582	461	382
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.75	0.67	0.75	0.74	0.74	0.75	0.79	0.67	0.70	0.70	0.70
Lanes:	2.00	2.00	1.00	1.00	1.84	0.16	1.00	1.00	1.00	1.64	1.29	1.07
Final Sat.:	2749	2834	1268	1417	2573	227	1417	1492	1268	2178	1725	1429
Capacity Analysis Module:												
Vol/Sat:	0.04	0.13	0.34	0.01	0.30	0.30	0.00	0.04	0.36	0.27	0.27	0.27
Crit Moves:			****	****					****			****
Green Time:	10.0	44.8	44.8	10.0	44.8	44.8	47.5	47.5	47.5	35.7	35.7	35.7
Volume/Cap:	0.63	0.43	1.12	0.20	1.02	1.02	0.01	0.12	1.12	1.12	1.12	1.12
Uniform Del:	68.2	42.4	52.6	66.2	52.6	52.6	35.2	36.4	51.3	57.2	57.2	57.2
IncrementDel:	6.7	0.4	84.2	1.1	35.6	35.6	0.0	0.1	83.0	66.5	66.5	66.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	74.9	42.7	136.8	67.3	88.2	88.2	35.2	36.5	134.3	123.7	124	123.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	74.9	42.7	136.8	67.3	88.2	88.2	35.2	36.5	134.3	123.7	124	123.7
LOS by Move:	E	D	F	E	F	F	D	D	F	F	F	F
HCM2kAvgQ:	4	7	29	1	27	27	0	2	30	26	26	26

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	11	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:	>>	Count	Date:	1 May 2019	<<							
Base Vol:	293	588	714	44	674	116	8	81	194	355	589	458
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	293	588	714	44	674	116	8	81	194	355	589	458
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	293	588	714	44	674	116	8	81	194	355	589	458
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	293	588	714	44	674	116	8	81	194	355	589	458
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	293	588	714	44	674	116	8	81	194	355	589	458
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	293	588	714	44	674	116	8	81	194	355	589	458

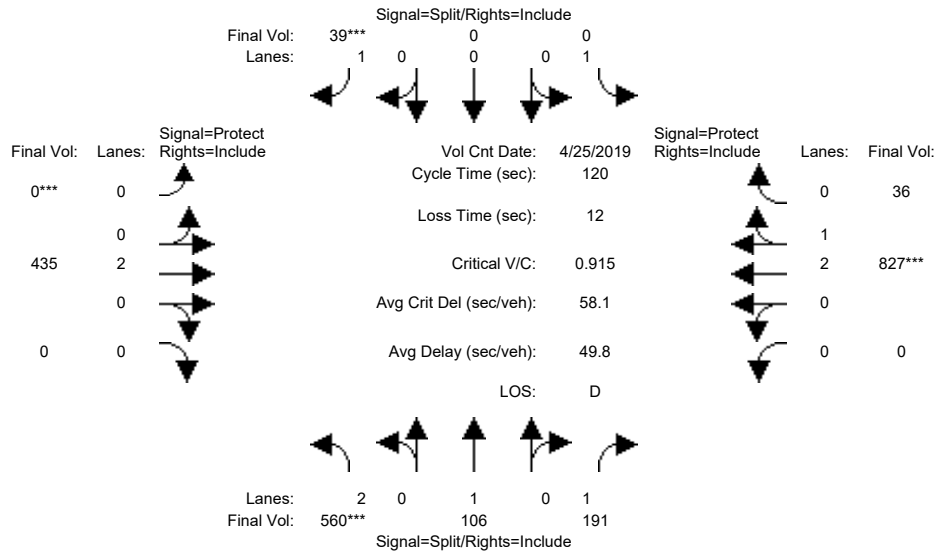
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.78	0.80	0.72	0.80	0.79	0.79	0.80	0.85	0.72	0.75	0.75	0.75
Lanes:	2.00	2.00	1.00	1.00	1.71	0.29	1.00	1.00	1.00	1.01	1.68	1.31
Final Sat.:	2959	3050	1365	1525	2545	438	1525	1606	1365	1451	2408	1873

Capacity Analysis Module:												
Vol/Sat:	0.10	0.19	0.52	0.03	0.26	0.26	0.01	0.05	0.14	0.24	0.24	0.24
Crit Moves:			****	****					****			****
Green Time:	22.8	73.6	73.6	10.0	60.8	60.8	20.0	20.0	20.0	34.4	34.4	34.4
Volume/Cap:	0.65	0.39	1.07	0.43	0.65	0.65	0.04	0.38	1.07	1.07	1.07	1.07
Uniform Del:	59.9	24.1	38.2	67.3	36.0	36.0	56.6	59.3	65.0	57.8	57.8	57.8
IncrcmntDel:	3.4	0.2	53.8	2.9	1.3	1.3	0.1	1.1	85.4	44.6	44.6	44.6
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	63.3	24.3	92.0	70.2	37.3	37.3	56.7	60.5	150.4	102.4	102	102.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	63.3	24.3	92.0	70.2	37.3	37.3	56.7	60.5	150.4	102.4	102	102.4
LOS by Move:	E	C	F	E	D	D	E	E	F	F	F	F
HCM2kAvgQ:	8	9	42	2	16	16	0	4	14	24	24	24

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	8	8	8	12	12	12	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module: >> Count Date: 25 Apr 2019 <<

Base Vol:	560	106	191	0	0	39	0	435	0	0	827	36
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	560	106	191	0	0	39	0	435	0	0	827	36
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	560	106	191	0	0	39	0	435	0	0	827	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	560	106	191	0	0	39	0	435	0	0	827	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	560	106	191	0	0	39	0	435	0	0	827	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	560	106	191	0	0	39	0	435	0	0	827	36

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.39	0.43	0.36	0.43	0.43	0.36	0.43	0.41	0.43	0.43	0.39	0.39
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.87	0.13
Final Sat.:	1495	811	690	811	0	690	0	1541	0	0	2110	92

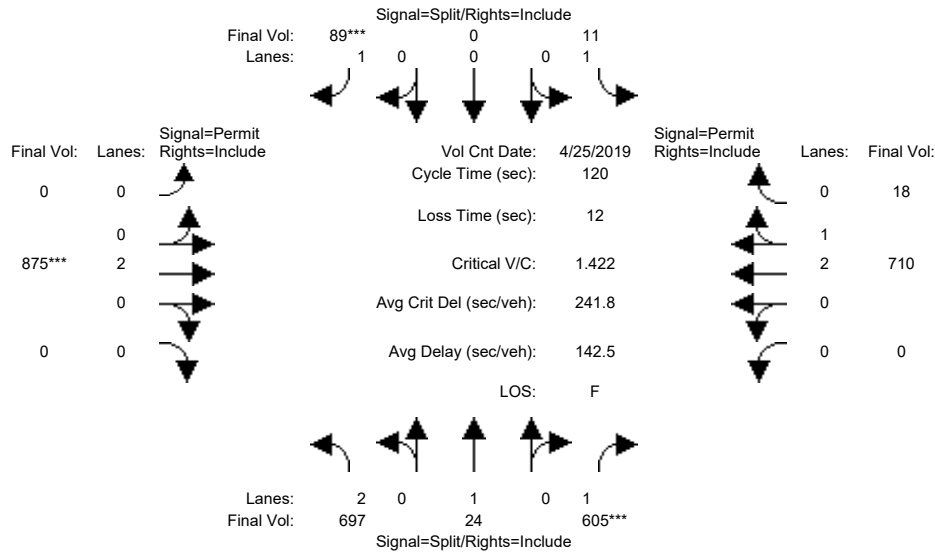
Capacity Analysis Module:

Vol/Sat:	0.37	0.13	0.28	0.00	0.00	0.06	0.00	0.28	0.00	0.00	0.39	0.39
Crit Moves:	****					****	****				****	
Green Time:	46.9	46.9	46.9	0.0	0.0	12.0	0.0	49.1	0.0	0.0	49.1	49.1
Volume/Cap:	0.96	0.33	0.71	0.00	0.00	0.57	0.00	0.69	0.00	0.00	0.96	0.96
Uniform Del:	35.6	25.6	30.8	0.0	0.0	51.5	0.0	29.2	0.0	0.0	34.5	34.5
IncrcmntDel:	27.0	0.6	8.4	0.0	0.0	10.5	0.0	3.2	0.0	0.0	20.5	20.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	62.6	26.2	39.2	0.0	0.0	62.0	0.0	32.4	0.0	0.0	54.9	54.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	62.6	26.2	39.2	0.0	0.0	62.0	0.0	32.4	0.0	0.0	54.9	54.9
LOS by Move:	E	C	D	A	A	E	A	C	A	A	D	D
HCM2kAvgQ:	15	3	7	0	0	2	0	8	0	0	16	16

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	8	8	8	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	3.6	3.6	3.6	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:	>> Count Date: 25 Apr 2019 <<											
Base Vol:	697	24	605	11	0	89	0	875	0	0	710	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	697	24	605	11	0	89	0	875	0	0	710	18
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	697	24	605	11	0	89	0	875	0	0	710	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	697	24	605	11	0	89	0	875	0	0	710	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	697	24	605	11	0	89	0	875	0	0	710	18
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	697	24	605	11	0	89	0	875	0	0	710	18

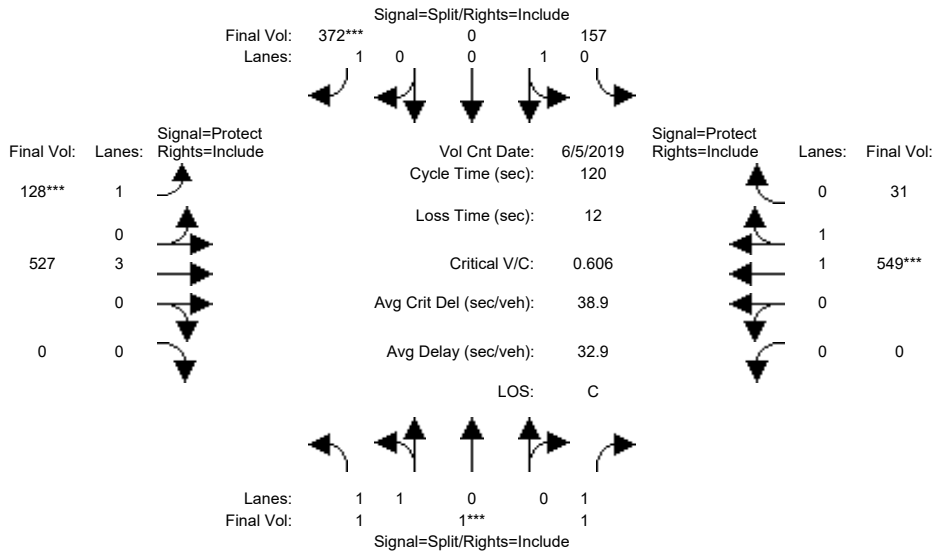
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.48	0.53	0.45	0.50	0.53	0.45	0.53	0.50	0.53	0.53	0.48	0.48
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.93	0.07
Final Sat.:	1838	998	848	948	0	848	0	1895	0	0	2645	67

Capacity Analysis Module:												
Vol/Sat:	0.38	0.02	0.71	0.01	0.00	0.10	0.00	0.46	0.00	0.00	0.27	0.27
Crit Moves:			****			****		****				
Green Time:	60.2	60.2	60.2	8.9	0.0	8.9	0.0	38.9	0.0	0.0	38.9	38.9
Volume/Cap:	0.76	0.05	1.42	0.16	0.00	1.42	0.00	1.42	0.00	0.00	0.83	0.83
Uniform Del:	24.0	15.3	29.9	52.1	0.0	55.6	0.0	40.5	0.0	0.0	37.4	37.4
IncrcmntDel:	3.6	0.0	203.4	1.1	0.0	260.7	0.0	199	0.0	0.0	6.5	6.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	27.6	15.3	233.3	53.1	0.0	316.3	0.0	240	0.0	0.0	43.9	43.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	27.6	15.3	233.3	53.1	0.0	316.3	0.0	240	0.0	0.0	43.9	43.9
LOS by Move:	C	B	F	D	A	F	A	F	A	A	D	D
HCM2kAvgQ:	12	0	46	1	0	8	0	35	0	0	11	11

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	10	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:	>>	Count	Date:	5 Jun 2019	<<							
Base Vol:	1	1	1	157	0	372	128	527	0	0	549	31
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	1	157	0	372	128	527	0	0	549	31
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	1	1	157	0	372	128	527	0	0	549	31
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	1	1	157	0	372	128	527	0	0	549	31
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	1	1	157	0	372	128	527	0	0	549	31
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	1	1	157	0	372	128	527	0	0	549	31

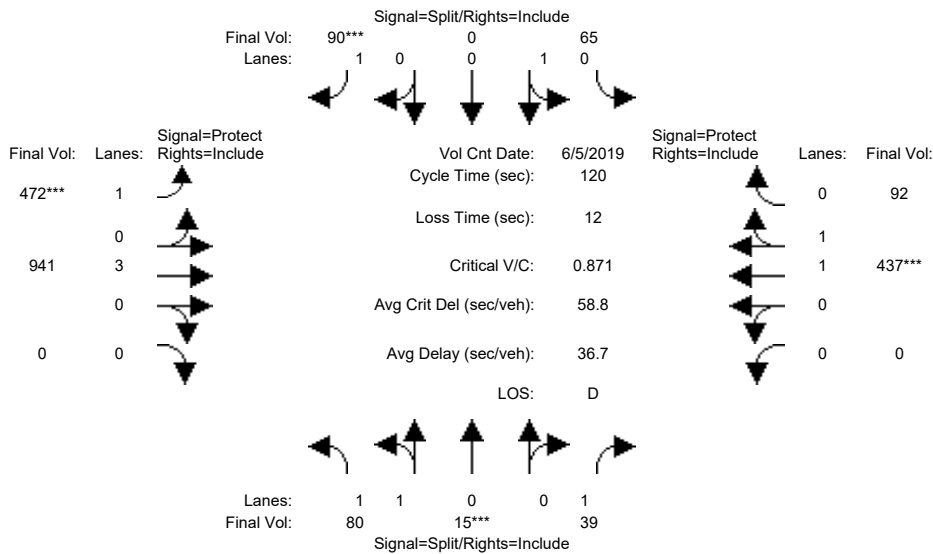
Saturation Flow Module:	North Bound			South Bound			East Bound			West Bound		
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	0.83	0.72	0.81	0.85	0.72	0.81	0.77	0.85	0.85	0.80	0.80
Lanes:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.89	0.11
Final Sat.:	1576	1576	1373	1537	0	1373	1534	4409	0	0	2881	163

Capacity Analysis Module:	North Bound			South Bound			East Bound			West Bound		
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.27	0.08	0.12	0.00	0.00	0.19	0.19
Crit Moves:	****			****			****			****		
Green Time:	9.0	9.0	9.0	49.2	0.0	49.2	15.2	49.8	0.0	0.0	34.6	34.6
Volume/Cap:	0.01	0.01	0.01	0.25	0.00	0.66	0.66	0.29	0.00	0.00	0.66	0.66
Uniform Del:	51.4	51.4	51.4	23.2	0.0	28.6	50.0	23.3	0.0	0.0	37.5	37.5
IncrcmntDel:	0.0	0.0	0.0	0.2	0.0	2.9	8.2	0.1	0.0	0.0	1.9	1.9
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	51.4	51.4	51.4	23.5	0.0	31.5	58.2	23.4	0.0	0.0	39.4	39.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.4	51.4	51.4	23.5	0.0	31.5	58.2	23.4	0.0	0.0	39.4	39.4
LOS by Move:	D	D	D	C	A	C	E	C	A	A	D	D
HCM2kAvgQ:	0	0	0	4	0	12	6	5	0	0	11	11

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #47: (45) Cooley/Donohoe

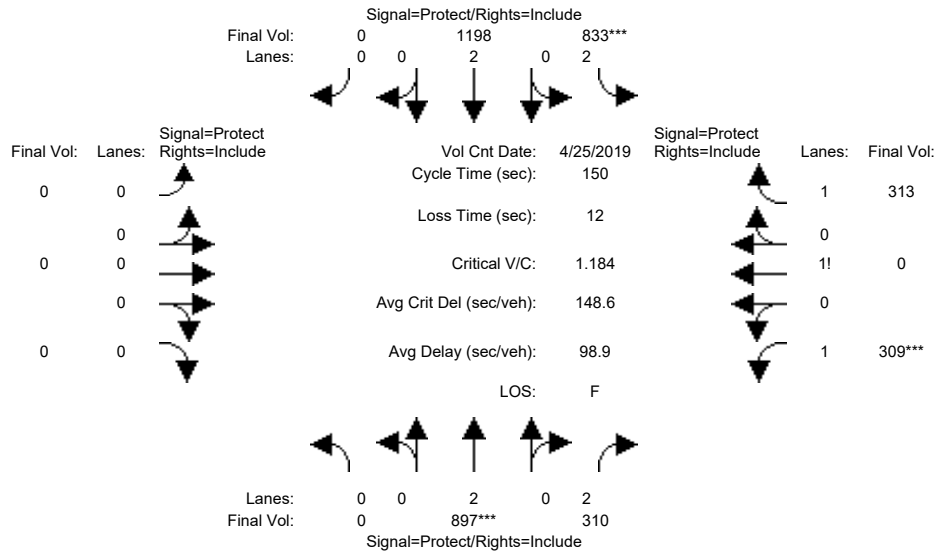


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	7	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0
Volume Module: >> Count Date: 5 Jun 2019 <<												
Base Vol:	80	15	39	65	0	90	472	941	0	0	437	92
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	80	15	39	65	0	90	472	941	0	0	437	92
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	15	39	65	0	90	472	941	0	0	437	92
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	80	15	39	65	0	90	472	941	0	0	437	92
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	80	15	39	65	0	90	472	941	0	0	437	92
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	80	15	39	65	0	90	472	941	0	0	437	92
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.60	0.60	0.54	0.60	0.63	0.54	0.60	0.57	0.63	0.63	0.58	0.58
Lanes:	1.68	0.32	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.65	0.35
Final Sat.:	1935	363	1017	1140	0	1017	1137	3268	0	0	1830	385
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.06	0.00	0.09	0.42	0.29	0.00	0.00	0.24	0.24
Crit Moves:	****			****			****			****		
Green Time:	9.0	9.0	9.0	11.8	0.0	11.8	55.4	87.2	0.0	0.0	31.8	31.8
Volume/Cap:	0.55	0.55	0.51	0.58	0.00	0.90	0.90	0.40	0.00	0.00	0.90	0.90
Uniform Del:	53.6	53.6	53.4	51.7	0.0	53.5	29.8	6.3	0.0	0.0	42.5	42.5
IncrcmntDel:	3.8	3.8	5.7	7.4	0.0	58.9	18.4	0.1	0.0	0.0	16.8	16.8
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	57.3	57.3	59.1	59.2	0.0	112.4	48.1	6.4	0.0	0.0	59.4	59.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	57.3	59.1	59.2	0.0	112.4	48.1	6.4	0.0	0.0	59.4	59.4
LOS by Move:	E	E	E	E	A	F	D	A	A	A	E	E
HCM2kAvgQ:	3	3	2	3	0	6	20	5	0	0	13	13

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #48: (46) University/US 101 SB Ramps



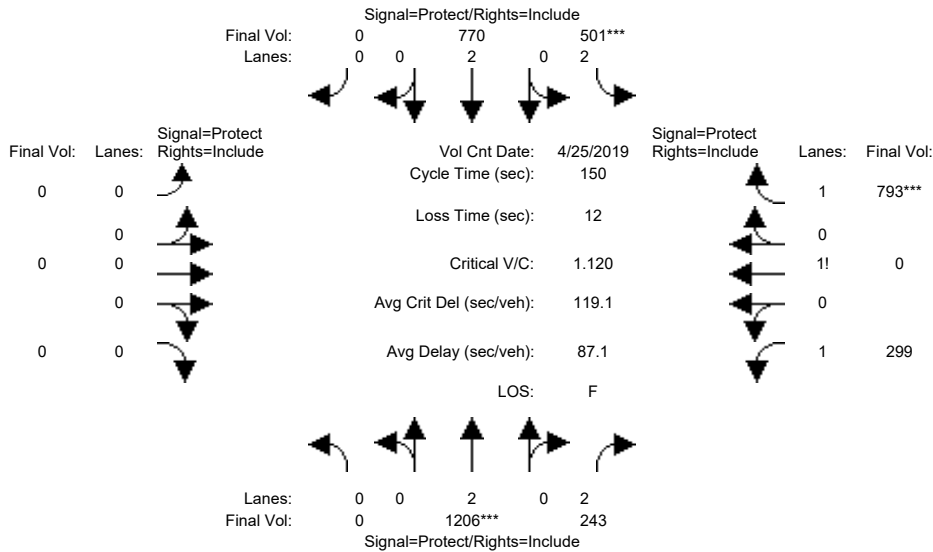
Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 25 Apr 2019 <<												
Base Vol:	0	897	310	833	1198	0	0	0	0	309	0	313
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	897	310	833	1198	0	0	0	0	309	0	313
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	897	310	833	1198	0	0	0	0	309	0	313
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	897	310	833	1198	0	0	0	0	309	0	313
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	897	310	833	1198	0	0	0	0	309	0	313
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	897	310	833	1198	0	0	0	0	309	0	313
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.56	0.53	0.42	0.51	0.53	0.56	0.56	0.56	0.56	0.50	0.56	0.50
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.50	0.00	1.50
Final Sat.:	0	2011	1583	1950	2011	0	0	0	0	1430	0	1436
Capacity Analysis Module:												
Vol/Sat:	0.00	0.45	0.20	0.43	0.60	0.00	0.00	0.00	0.00	0.22	0.00	0.22
Crit Moves:	****			****			****			****		
Green Time:	0.0	56.5	56.5	54.1	111	0.0	0.0	0.0	0.0	27.4	0.0	27.4
Volume/Cap:	0.00	1.18	0.52	1.18	0.81	0.00	0.00	0.00	0.00	1.18	0.00	1.19
Uniform Del:	0.0	46.7	36.2	47.9	12.8	0.0	0.0	0.0	0.0	61.3	0.0	61.3
IncrementDel:	0.0	96.0	0.8	96.9	3.4	0.0	0.0	0.0	0.0	100.9	0.0	105.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	143	37.0	144.8	16.2	0.0	0.0	0.0	0.0	162.2	0.0	166.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	143	37.0	144.8	16.2	0.0	0.0	0.0	0.0	162.2	0.0	166.4
LOS by Move:	A	F	D	F	B	A	A	A	A	F	A	F
HCM2kAvgQ:	0	33	7	30	21	0	0	0	0	16	0	16

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #48: (46) University/US 101 SB Ramps

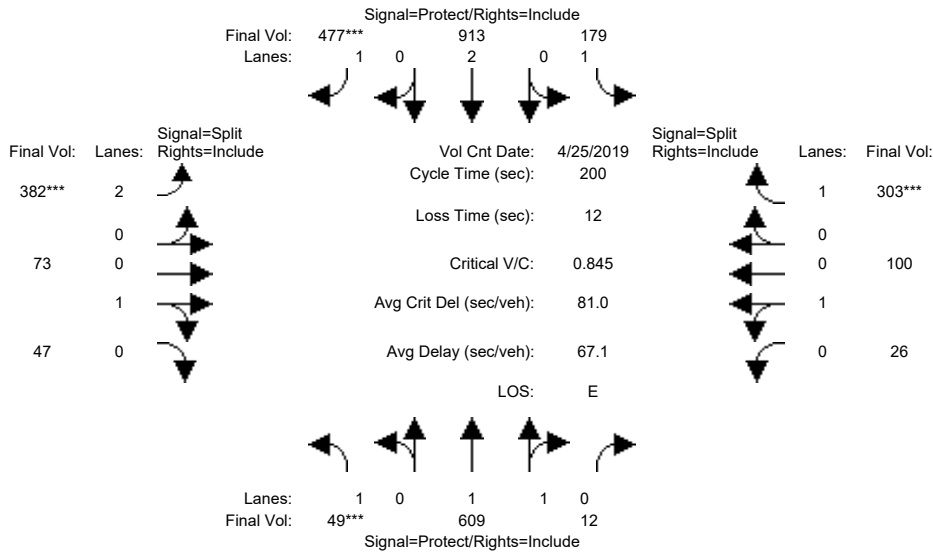


Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module: >> Count Date: 25 Apr 2019 <<												
Base Vol:	0	1206	243	501	770	0	0	0	0	299	0	793
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1206	243	501	770	0	0	0	0	299	0	793
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1206	243	501	770	0	0	0	0	299	0	793
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1206	243	501	770	0	0	0	0	299	0	793
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1206	243	501	770	0	0	0	0	299	0	793
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1206	243	501	770	0	0	0	0	299	0	793
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.69	0.55	0.67	0.69	0.73	0.73	0.73	0.73	0.64	0.73	0.64
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.27	0.00	1.73
Final Sat.:	0	2635	2075	2556	2635	0	0	0	0	1552	0	2103
Capacity Analysis Module:												
Vol/Sat:	0.00	0.46	0.12	0.20	0.29	0.00	0.00	0.00	0.00	0.19	0.00	0.38
Crit Moves:	****			****						****		
Green Time:	0.0	61.3	61.3	26.2	87.5	0.0	0.0	0.0	0.0	50.5	0.0	50.5
Volume/Cap:	0.00	1.12	0.29	1.12	0.50	0.00	0.00	0.00	0.00	0.57	0.00	1.12
Uniform Del:	0.0	44.4	29.7	61.9	18.4	0.0	0.0	0.0	0.0	40.9	0.0	49.8
IncrementDel:	0.0	66.7	0.2	79.6	0.3	0.0	0.0	0.0	0.0	0.4	0.0	67.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	111	29.9	141.5	18.6	0.0	0.0	0.0	0.0	41.3	0.0	117.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	111	29.9	141.5	18.6	0.0	0.0	0.0	0.0	41.3	0.0	117.6
LOS by Move:	A	F	C	F	B	A	A	A	A	D	A	F
HCM2kAvgQ:	0	41	4	18	11	0	0	0	0	9	0	30

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	10	10	10
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:	>> Count Date: 25 Apr 2019 <<											
Base Vol:	49	609	12	179	913	477	382	73	47	26	100	303
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	609	12	179	913	477	382	73	47	26	100	303
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	49	609	12	179	913	477	382	73	47	26	100	303
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	49	609	12	179	913	477	382	73	47	26	100	303
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	49	609	12	179	913	477	382	73	47	26	100	303
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	49	609	12	179	913	477	382	73	47	26	100	303

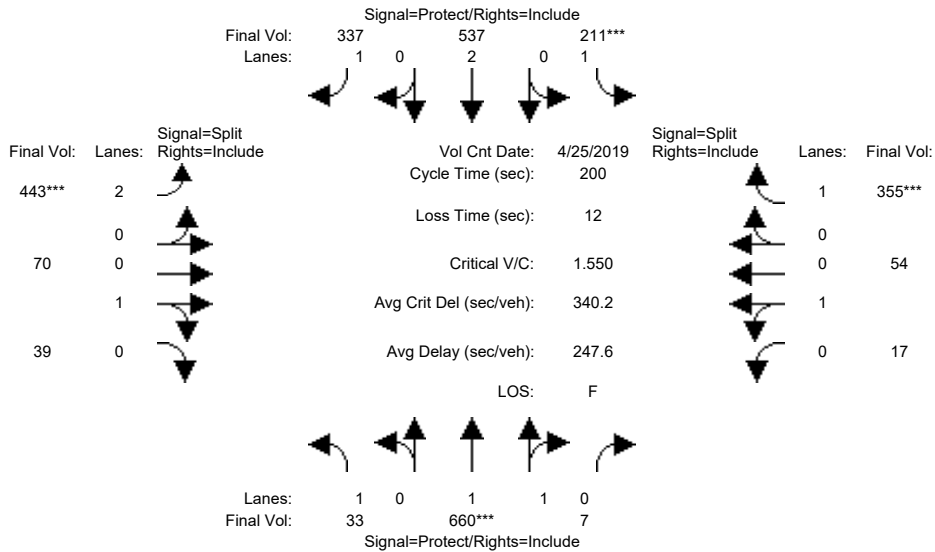
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.74	0.74	0.74	0.66	0.72	0.73	0.73	0.77	0.77	0.66
Lanes:	1.00	1.96	0.04	1.00	2.00	1.00	2.00	0.61	0.39	0.21	0.79	1.00
Final Sat.:	1408	2753	54	1408	2816	1260	2731	848	546	303	1164	1260

Capacity Analysis Module:												
Vol/Sat:	0.03	0.22	0.22	0.13	0.32	0.38	0.14	0.09	0.09	0.09	0.09	0.24
Crit Moves:	****					****	****					****
Green Time:	8.2	62.2	62.2	35.7	89.7	89.7	33.1	33.1	33.1	57.0	57.0	57.0
Volume/Cap:	0.84	0.71	0.71	0.71	0.72	0.84	0.84	0.52	0.52	0.30	0.30	0.84
Uniform Del:	95.2	61.0	61.0	77.3	45.0	49.0	80.9	76.2	76.2	56.0	56.0	67.3
IncrcmntDel:	65.4	2.8	2.8	9.2	2.1	11.2	13.6	2.1	2.1	0.4	0.4	16.6
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	160.7	63.7	63.7	86.4	47.1	60.2	94.5	78.3	78.3	56.4	56.4	83.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	160.7	63.7	63.7	86.4	47.1	60.2	94.5	78.3	78.3	56.4	56.4	83.9
LOS by Move:	F	E	E	F	D	E	F	E	E	E	E	F
HCM2kAvgQ:	5	18	18	11	24	28	14	7	7	6	6	19

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	11	11	11
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:	>>	Count	Date:	25 Apr 2019	<<											
Base Vol:	33	660	7	211	537	337	443	70	39	17	54	355				
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
Initial Bse:	33	660	7	211	537	337	443	70	39	17	54	355				
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	33	660	7	211	537	337	443	70	39	17	54	355				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
PHF Volume:	33	660	7	211	537	337	443	70	39	17	54	355				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	33	660	7	211	537	337	443	70	39	17	54	355				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00				
FinalVolume:	33	660	7	211	537	337	443	70	39	17	54	355				

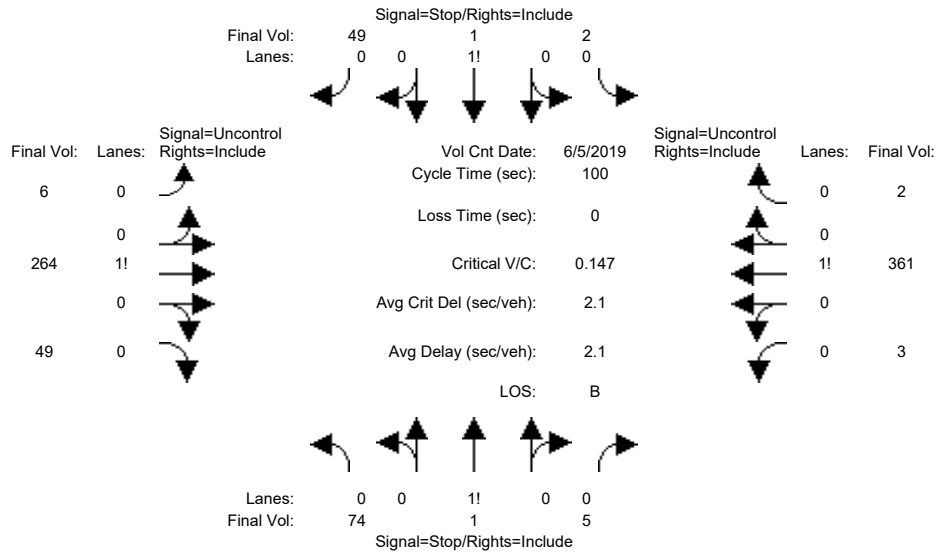
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.42	0.42	0.42	0.42	0.42	0.38	0.41	0.42	0.42	0.44	0.44	0.38
Lanes:	1.00	1.98	0.02	1.00	2.00	1.00	2.00	0.64	0.36	0.24	0.76	1.00
Final Sat.:	803	1588	17	803	1606	719	1558	514	286	200	635	719

Capacity Analysis Module:												
Vol/Sat:	0.04	0.42	0.42	0.26	0.33	0.47	0.28	0.14	0.14	0.08	0.08	0.49
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	7.1	53.6	53.6	33.9	80.5	80.5	36.7	36.7	36.7	63.8	63.8	63.8
Volume/Cap:	1.17	1.55	1.55	1.55	0.83	1.17	1.55	0.74	0.74	0.27	0.27	1.55
Uniform Del:	96.5	73.2	73.2	83.0	53.6	59.8	81.7	77.2	77.2	50.7	50.7	68.1
IncrementDel:	223.4	259	258.6	280.2	8.9	105.3	263.9	18.3	18.3	0.5	0.5	267.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	319.9	332	331.7	363.2	62.5	165.0	345.6	95.5	95.5	51.3	51.3	335.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	319.9	332	331.7	363.2	62.5	165.0	345.6	95.5	95.5	51.3	51.3	335.9
LOS by Move:	F	F	F	F	E	F	F	F	F	D	D	F
HCM2kAvgQ:	4	38	38	23	17	29	25	8	8	3	3	38

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name: Saratoga Avenue Newbridge Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with columns for Volume Module, Count, Date (5 Jun 2019), and various volume metrics (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume) for each approach and movement.

Table for Critical Gap Module showing Critical Gap (7.1, 6.5, 6.2) and FollowUpTim (3.5, 4.0, 3.3) for each approach.

Table for Capacity Module showing Cnflct Vol, Potent Cap., Move Cap., Total Cap., and Volume/Cap for each approach.

Table for Level Of Service Module showing 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS for each approach.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

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Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	74 1 5	2 1 49	6 264 49	3 361 2
ApproachDel:	13.3	10.8	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.3]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=80]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=817]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=52]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=817]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #52 (52) Saratoga Avenue and Newbridge Street

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	74 1 5	2 1 49	6 264 49	3 361 2

Major Street Volume: 685

Minor Approach Volume: 80

Minor Approach Volume Threshold: 320

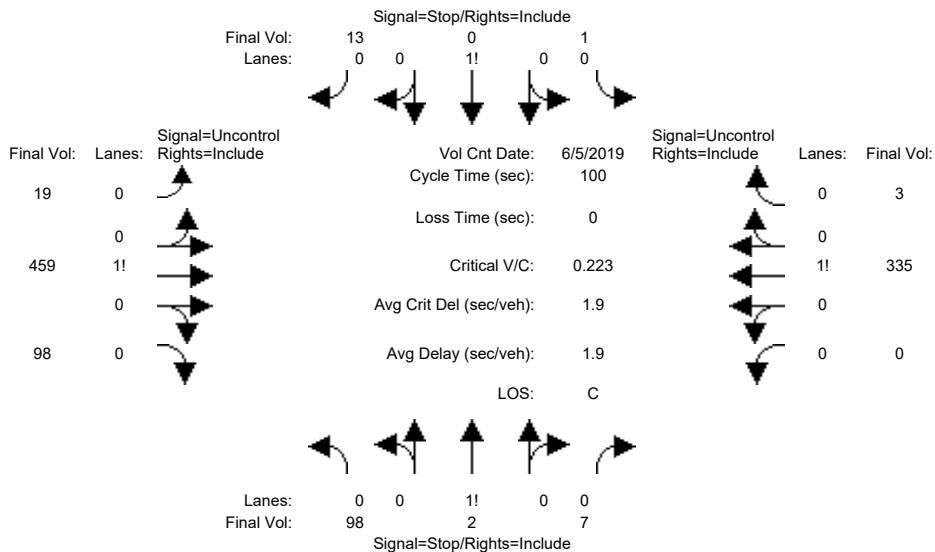
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
 2000 HCM Unsignalized (Future Volume Alternative)  
 Existing PM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name:	Saratoga Avenue						Newbridge Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R

Volume Module:	>>	Count	Date:	5 Jun 2019	<<												
Base Vol:	98	2	7	1	0	13	19	459	98	0	335	3					
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
Initial Bse:	98	2	7	1	0	13	19	459	98	0	335	3					
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0					
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0					
Initial Fut:	98	2	7	1	0	13	19	459	98	0	335	3					
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
PHF Volume:	98	2	7	1	0	13	19	459	98	0	335	3					
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0					
FinalVolume:	98	2	7	1	0	13	19	459	98	0	335	3					

Critical Gap Module:															
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxxx			
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx			

Capacity Module:															
Cnflct Vol:	889	884	508	887	932	337	338	xxxx	xxxxxx	xxxx	xxxx	xxxxxx			
Potent Cap.:	266	286	569	267	269	710	1232	xxxx	xxxxxx	xxxx	xxxx	xxxxxx			
Move Cap.:	258	282	569	259	265	710	1232	xxxx	xxxxxx	xxxx	xxxx	xxxxxx			
Total Cap:	439	440	xxxxx	439	425	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx			
Volume/Cap:	0.22	0.00	0.01	0.00	0.00	0.02	0.02	xxxx	xxxx	xxxx	xxxx	xxxx			

Level Of Service Module:															
2Way95thQ:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	0.0	xxxx	xxxxxx	xxxx	xxxx	xxxxxx			
Control Del:	xxxxx	xxxx	xxxxxx	xxxxx	xxxx	xxxxxx	8.0	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx			
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*			
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT			
Shared Cap.:	xxxx	446	xxxxxx	xxxx	680	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx			
SharedQueue:	xxxxxx	0.9	xxxxxx	xxxxxx	0.1	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx			
Shrd ConDel:	xxxxxx	15.6	xxxxxx	xxxxxx	10.4	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx			
Shared LOS:	*	C	*	*	B	*	*	*	*	*	*	*			
ApproachDel:		15.6			10.4		xxxxxxx			xxxxxxx					
ApproachLOS:		C			B			*			*				

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #52 (52) Saratoga Avenue and Newbridge Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	98 2 7	1 0 13	19 459 98	0 335 3
ApproachDel:	15.6	10.4	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.5]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=107]  
 SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=4][total volume=1035]  
 SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=14]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=4][total volume=1035]  
 SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #52 (52) Saratoga Avenue and Newbridge Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	98 2 7	1 0 13	19 459 98	0 335 3

Major Street Volume: 914  
 Minor Approach Volume: 107  
 Minor Approach Volume Threshold: 243

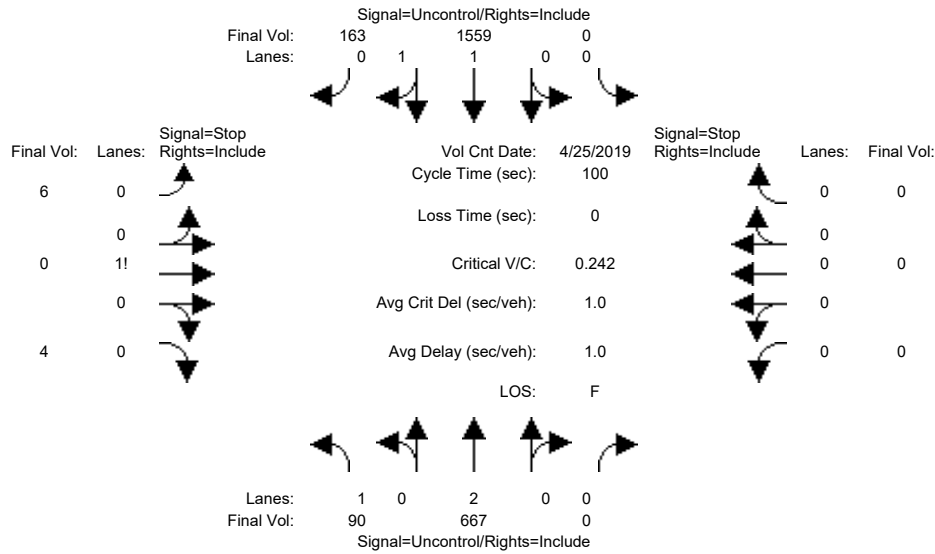
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing AM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with columns for Volume Module, Count, Date (25 Apr 2019), and various traffic volume metrics (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Final Volume) for each approach and movement.

Table for Critical Gap Module showing Critical Gap (4.1, 6.8, 6.5, 6.9) and FollowUpTim (2.2, 3.5, 4.0, 3.3) for different movements.

Table for Capacity Module showing Cnflct Vol (1722, 2154, 2488, 861), Potent Cap. (372, 42, 30, 303), Move Cap. (372, 34, 23, 303), and Volume/Cap. (0.24, 0.18, 0.00, 0.01).

Table for Level Of Service Module showing 2Way95thQ (0.9), Control Del (17.7), LOS by Move (C, \*), Movement (LT-LTR-RT), Shared Cap. (53), SharedQueue (0.6), Shrd ConDel (88.1), Shared LOS (\*, F, \*), ApproachDel (88.1), and ApproachLOS (\*, F, \*).

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #300 (37) University Ave & Adams Dr
\*\*\*\*\*
Future Volume Alternative: Peak Hour Warrant NOT Met



Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 667 0	0 1559 163	6 0 4	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	88.1	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.2]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=10]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=2489]  
 SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 667 0	0 1559 163	6 0 4	0 0 0 0

Major Street Volume: 2479  
 Minor Approach Volume: 10  
 Minor Approach Volume Threshold: -28 [less than minimum of 100]

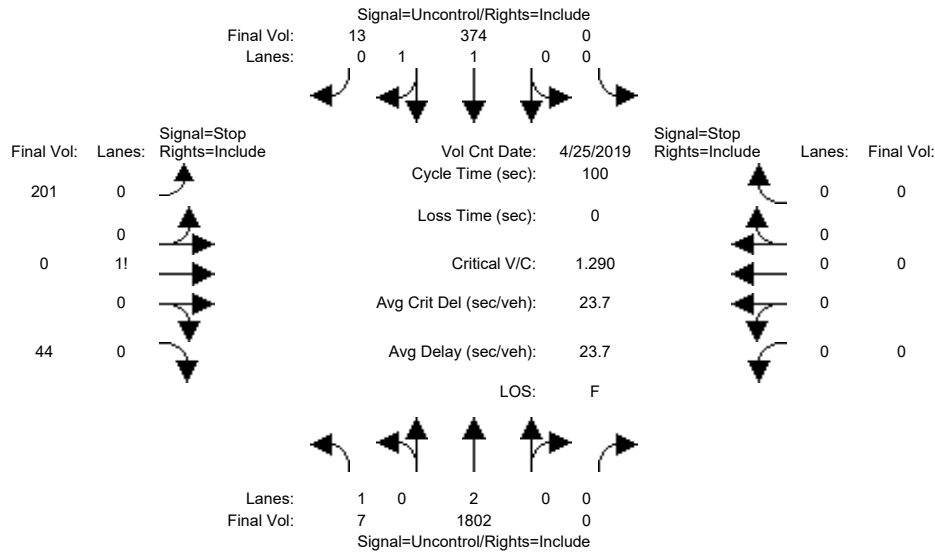
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Existing PM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with columns for Volume Module, Count, Date (25 Apr 2019), and various traffic volume metrics (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume) for each approach and movement.

Table for Critical Gap Module showing Critical Gap (4.1, 6.8, 6.5, 6.9) and FollowUpTime (2.2, 3.5, 4.0, 3.3) for different movements.

Table for Capacity Module showing Conflict Vol (387, 1296, 2197, 194), Potent Cap. (1183, 157, 46, 822), Move Cap. (1183, 156, 45, 822), and Volume/Cap. (0.01, 1.29, 0.00, 0.05).

Table for Level Of Service Module showing 2Way95thQ (0.0), Control Del (8.1), LOS by Move (A), Shared Cap. (182), SharedQueue (14.3), Shrd ConDel (236), Shared LOS (\*, F, \*), ApproachDel (235.8), and ApproachLOS (\*, F, \*).

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #300 (37) University Ave & Adams Dr
\*\*\*\*\*
Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 13	201 0 44	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	235.8	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=16.0]  
SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=245]  
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=2441]  
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #300 (37) University Ave & Adams Dr  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 13	201 0 44	0 0 0 0

Major Street Volume: 2196  
Minor Approach Volume: 245  
Minor Approach Volume Threshold: 14 [less than minimum of 100]

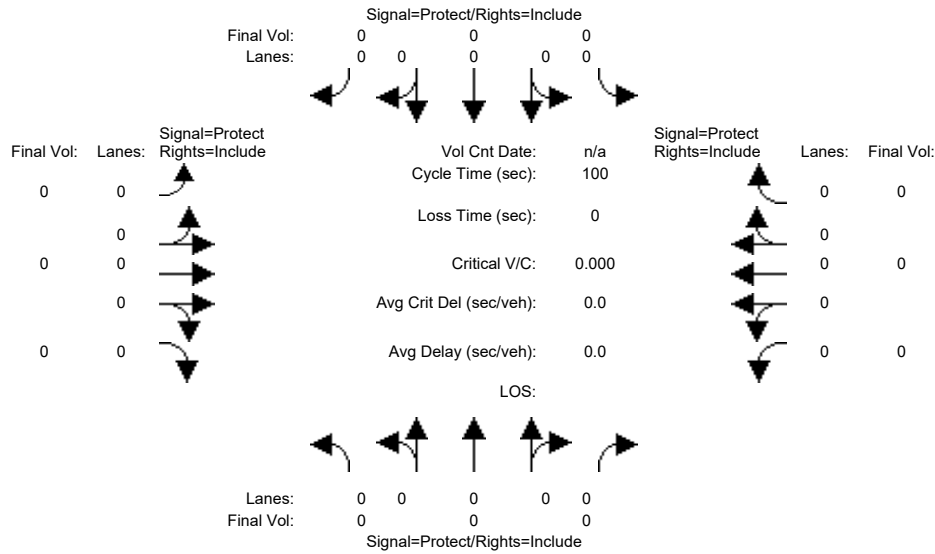
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing AM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0

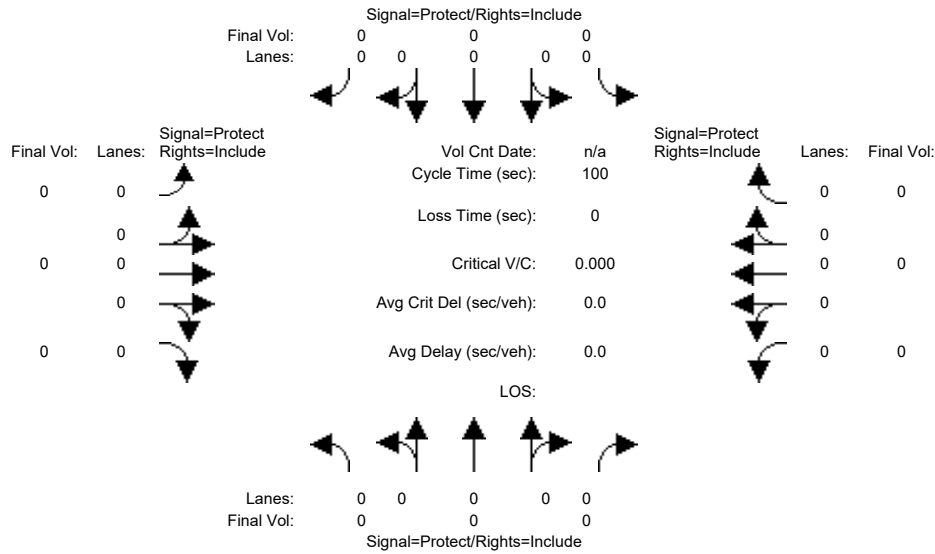
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												
Green Time:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Volume/Cap:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IncrcmntDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
HCM2kAvgQ:	0	0	0	0	0	0	0	0	0	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Existing PM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0

Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0

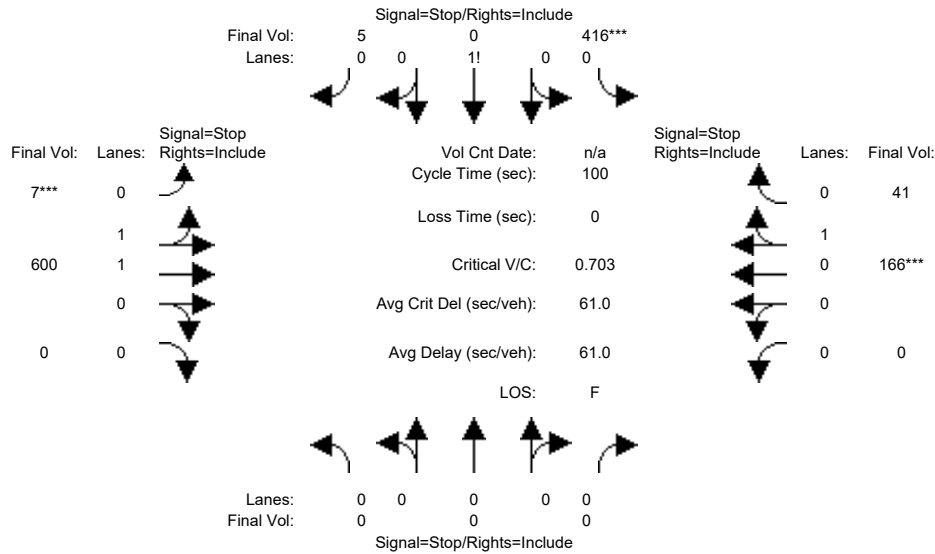
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												
Green Time:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Volume/Cap:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IncrementDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
HCM2kAvgQ:	0	0	0	0	0	0	0	0	0	0	0	0

Note: Queue reported is the number of cars per lane.



Level of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Background AM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	416	0	5	7	600	0	0	166	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	416	0	5	7	600	0	0	166	41
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	416	0	5	7	600	0	0	166	41
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	416	0	5	7	600	0	0	166	41
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	416	0	5	7	600	0	0	166	41
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	416	0	5	7	600	0	0	166	41
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.99	0.00	0.01	0.02	1.98	0.00	0.00	0.80	0.20
Final Sat.:	0	0	0	591	0	7	13	1150	0	0	466	115
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.70	xxxx	0.70	0.52	0.52	xxxx	xxxx	0.36	0.36
Crit Moves:				****			****				****	
Delay/Veh:	0.0	0.0	0.0	20.8	0.0	20.8	15.0	15.0	0.0	0.0	11.9	11.9
Delay Adj:	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
AdjDel/Veh:	0.0	0.0	0.0	77.1	0.0	77.1	55.7	55.6	0.0	0.0	44.2	44.2
LOS by Move:	*	*	*	F	*	F	F	F	*	*	E	E
ApproachDel:	xxxxxxx			20.8			15.0			11.9		
Delay Adj:	xxxxxx			3.70			3.70			3.70		
ApprAdjDel:	xxxxxxx			77.1			55.6			44.2		
LOS by Appr:	*			F			F			E		
AllWayAvgQ:	0.0	0.0	0.0	2.0	2.0	2.0	1.0	1.0	0.0	0.5	0.5	0.5

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
 \*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0		416	0	5		7	600	0		0	166	41	
Major Street Volume:					814											
Minor Approach Volume:					421											
Minor Approach Volume Threshold:					356											

SIGNAL WARRANT DISCLAIMER

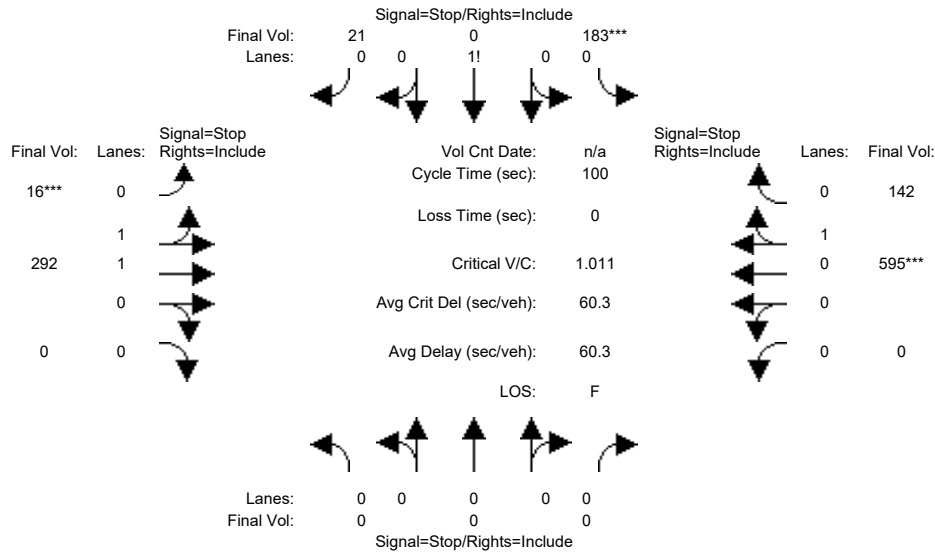
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Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Background PM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	183	0	21	16	292	0	0	595	142
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	183	0	21	16	292	0	0	595	142
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	183	0	21	16	292	0	0	595	142
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	183	0	21	16	292	0	0	595	142
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	183	0	21	16	292	0	0	595	142
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	183	0	21	16	292	0	0	595	142
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.90	0.00	0.10	0.10	1.90	0.00	0.00	0.81	0.19
Final Sat.:	0	0	0	506	0	58	62	1143	0	0	588	140
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.36	xxxx	0.36	0.26	0.26	xxxx	xxxx	1.01	1.01
Crit Moves:				****			****			****		
Delay/Veh:	0.0	0.0	0.0	12.7	0.0	12.7	10.6	10.6	0.0	0.0	58.0	58.0
Delay Adj:	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
AdjDel/Veh:	0.0	0.0	0.0	19.7	0.0	19.7	16.4	16.4	0.0	0.0	89.8	89.8
LOS by Move:	*	*	*	C	*	C	C	C	*	*	F	F
ApproachDel:	xxxxxx				12.7			10.6			58.0	
Delay Adj:	xxxxxx				1.55			1.55			1.55	
ApprAdjDel:	xxxxxx				19.7			16.4			89.8	
LOS by Appr:	*				C			C			F	
AllWayAvgQ:	0.0	0.0	0.0	0.5	0.5	0.5	0.3	0.3	0.0	10.1	10.1	10.1

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #5 (53) East Bayshore Road and Euclid Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0	0	183	0	21		16	292	0		0	595	142	
Major Street Volume:					1045											
Minor Approach Volume:					204											
Minor Approach Volume Threshold:					270											

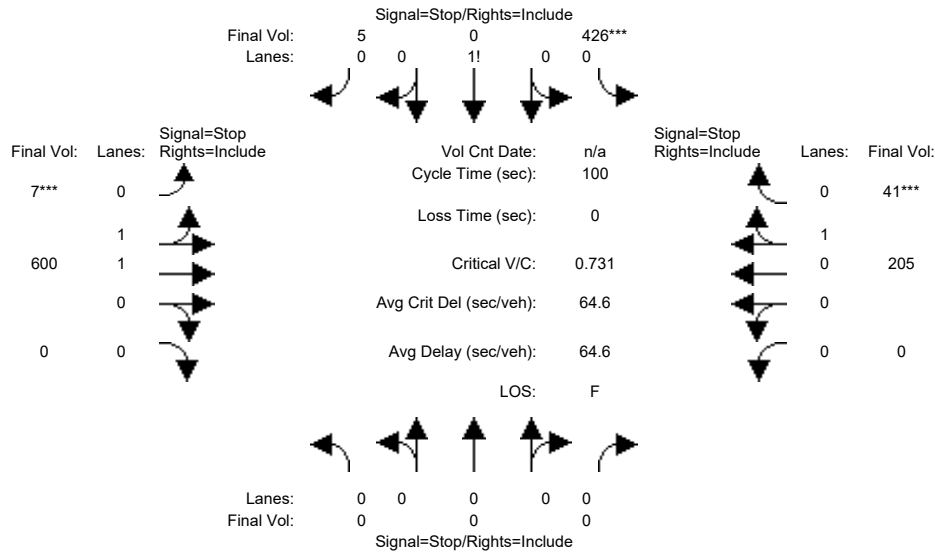
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Background+Project AM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Movement:												
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0

Volume Module:												
Base Vol:	0	0	0	426	0	5	7	600	0	0	205	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	426	0	5	7	600	0	0	205	41
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	426	0	5	7	600	0	0	205	41
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	426	0	5	7	600	0	0	205	41
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	426	0	5	7	600	0	0	205	41
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	426	0	5	7	600	0	0	205	41

Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.99	0.00	0.01	0.02	1.98	0.00	0.00	0.83	0.17
Final Sat.:	0	0	0	583	0	7	13	1125	0	0	479	96

Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.73	xxxx	0.73	0.53	0.53	xxxx	xxxx	0.43	0.43
Crit Moves:				****			****					****
Delay/Veh:	0.0	0.0	0.0	22.6	0.0	22.6	15.5	15.5	0.0	0.0	13.1	13.1
Delay Adj:	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
AdjDel/Veh:	0.0	0.0	0.0	83.8	0.0	83.8	57.5	57.4	0.0	0.0	48.6	48.6
LOS by Move:	*	*	*	F	*	F	F	F	*	*	E	E
ApproachDel:	xxxxxx			22.6			15.5			13.1		
Delay Adj:	xxxxxx			3.70			3.70			3.70		
ApprAdjDel:	xxxxxx			83.8			57.4			48.6		
LOS by Appr:	*			F			F			E		
AllWayAvgQ:	0.0	0.0	0.0	2.2	2.2	2.2	1.0	1.0	0.0	0.7	0.7	0.7

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
 \*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0		426	0	5		7	600	0		0	205	41	
Major Street Volume:					853											
Minor Approach Volume:					431											
Minor Approach Volume Threshold:					340											

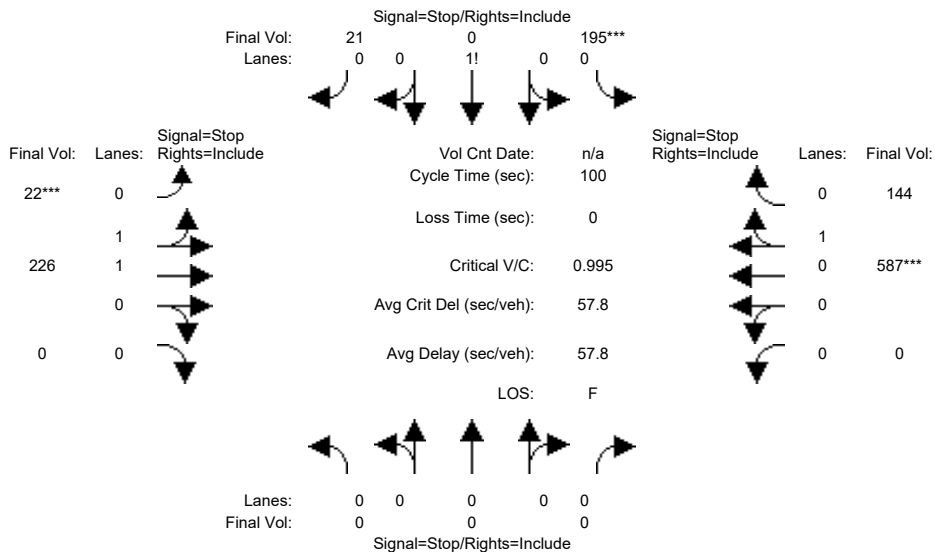
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Background+Project PM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Movement:												
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0

Volume Module:												
Base Vol:	0	0	0	195	0	21	22	226	0	0	587	144
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	195	0	21	22	226	0	0	587	144
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	195	0	21	22	226	0	0	587	144
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	195	0	21	22	226	0	0	587	144
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	195	0	21	22	226	0	0	587	144
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	195	0	21	22	226	0	0	587	144

Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.90	0.00	0.10	0.18	1.82	0.00	0.00	0.80	0.20
Final Sat.:	0	0	0	516	0	56	105	1086	0	0	590	145

Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.38	xxxx	0.38	0.21	0.21	xxxx	xxxx	1.00	1.00
Crit Moves:				****			****			****		
Delay/Veh:	0.0	0.0	0.0	12.8	0.0	12.8	10.2	10.2	0.0	0.0	53.7	53.7
Delay Adj:	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
AdjDel/Veh:	0.0	0.0	0.0	19.9	0.0	19.9	15.9	15.8	0.0	0.0	83.3	83.3
LOS by Move:	*	*	*	C	*	C	C	C	*	*	F	F
ApproachDel:	xxxxxx				12.8			10.2			53.7	
Delay Adj:	xxxxxx				1.55			1.55			1.55	
ApprAdjDel:	xxxxxx				19.9			15.8			83.3	
LOS by Appr:	*				C			C			F	
AllWayAvgQ:	0.0	0.0	0.0	0.6	0.6	0.6	0.3	0.2	0.0	9.3	9.3	9.3

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0		195	0	21		22	226	0		0	587	144	
Major Street Volume:					979											
Minor Approach Volume:					216											
Minor Approach Volume Threshold:					292											

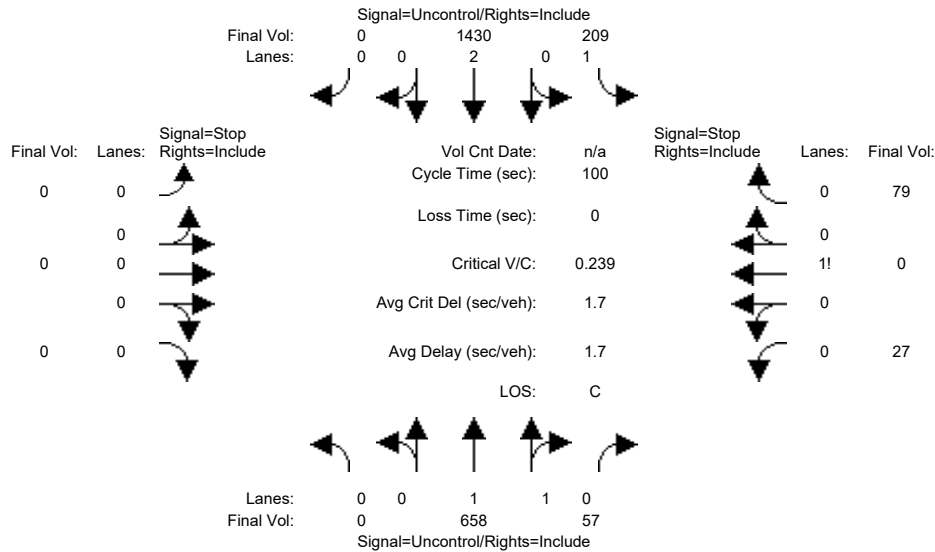
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background AM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing volume modules for different approaches and movements. Rows include Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and FinalVolume.

Table for Critical Gap Module showing Critical Gp and FollowUpTim for various movements.

Table for Capacity Module showing Cnflct Vol, Potent Cap., Move Cap., Total Cap., and Volume/Cap for different movements.

Table for Level Of Service Module showing 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #8 (36) University Avenue and Purdue Avenue
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 658 57	209 1430 0	0 0 0 0	27 0 79
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	19.7

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.6]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=106]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2460]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 658 57	209 1430 0	0 0 0 0	27 0 79

Major Street Volume: 2354

Minor Approach Volume: 106

Minor Approach Volume Threshold: -10 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

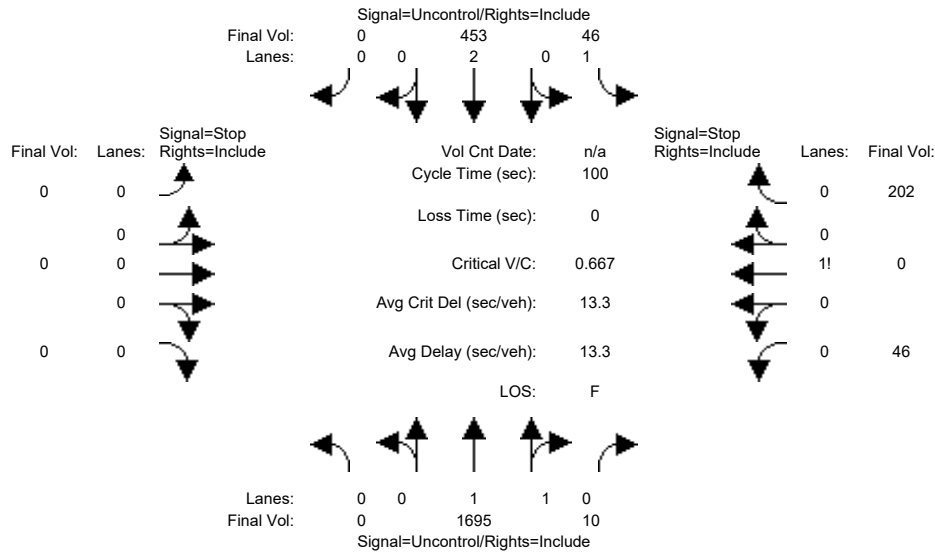
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Level Of Service Computation Report  
 2000 HCM Unsignalized (Future Volume Alternative)  
 Background PM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:												
	University Avenue North Bound			University Avenue South Bound			Purdue Avenue East Bound			Purdue Avenue West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Base Vol:	0	1695	10	46	453	0	0	0	0	46	0	202
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1695	10	46	453	0	0	0	0	46	0	202
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1695	10	46	453	0	0	0	0	46	0	202
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1695	10	46	453	0	0	0	0	46	0	202
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	1695	10	46	453	0	0	0	0	46	0	202

Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3

Capacity Module:												
Cnflct Vol:	xxxx	xxxx	xxxxx	1705	xxxx	xxxxx	xxxx	xxxx	xxxxx	2019	2245	853
Potent Cap.:	xxxx	xxxx	xxxxx	364	xxxx	xxxxx	xxxx	xxxx	xxxxx	51	41	303
Move Cap.:	xxxx	xxxx	xxxxx	364	xxxx	xxxxx	xxxx	xxxx	xxxxx	46	36	303
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	54	83	xxxxx	111	112	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.13	xxxx	xxxx	xxxx	xxxx	xxxx	0.41	0.00	0.67

Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	16.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	C	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	229	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	10.9	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	128	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	F	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			128.5		
ApproachLOS:	*			*			*			F		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #8 (36) University Avenue and Purdue Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 10	46 453 0	0 0 0 0	46 0 202
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	128.5

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=8.9]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=248]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2452]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 10	46 453 0	0 0 0 0	46 0 202

Major Street Volume: 2204

Minor Approach Volume: 248

Minor Approach Volume Threshold: 13 [less than minimum of 100]

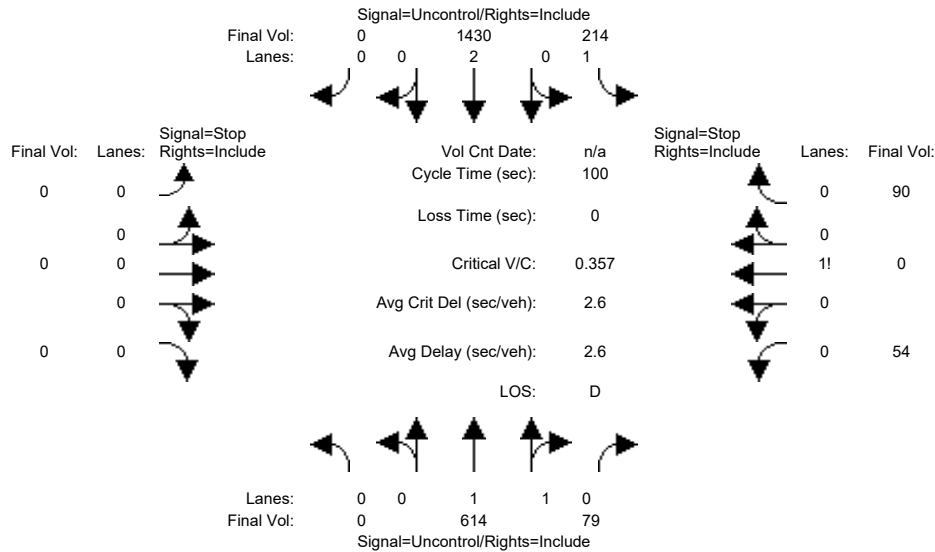
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Level Of Service Computation Report  
 2000 HCM Unsignalized (Future Volume Alternative)  
 Background+Project AM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:												
Base Vol:	0	614	79	214	1430	0	0	0	0	54	0	90
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	614	79	214	1430	0	0	0	0	54	0	90
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	614	79	214	1430	0	0	0	0	54	0	90
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	614	79	214	1430	0	0	0	0	54	0	90
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	614	79	214	1430	0	0	0	0	54	0	90

Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3

Capacity Module:												
Cnflct Vol:	xxxx	xxxx	xxxxx	693	xxxx	xxxxx	xxxx	xxxx	xxxxx	1797	2512	347
Potent Cap.:	xxxx	xxxx	xxxxx	891	xxxx	xxxxx	xxxx	xxxx	xxxxx	72	28	650
Move Cap.:	xxxx	xxxx	xxxxx	891	xxxx	xxxxx	xxxx	xxxx	xxxxx	58	21	650
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	49	67	xxxxx	151	75	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.24	xxxx	xxxx	xxxx	xxxx	xxxx	0.36	0.00	0.14

Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.9	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	10.3	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	B	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	290	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	2.6	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	29.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	*	*	*	D	*
ApproachDel:	xxxxxx		xxxxxx		xxxxxx		xxxxxx		xxxxxx		29.0	
ApproachLOS:	*		*		*		*		*		D	

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #8 (36) University Avenue and Purdue Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 79	214 1430 0	0 0 0 0	54 0 90
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	29.0

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=1.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=144]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2481]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 79	214 1430 0	0 0 0 0	54 0 90

Major Street Volume: 2337

Minor Approach Volume: 144

Minor Approach Volume Threshold: -8 [less than minimum of 100]

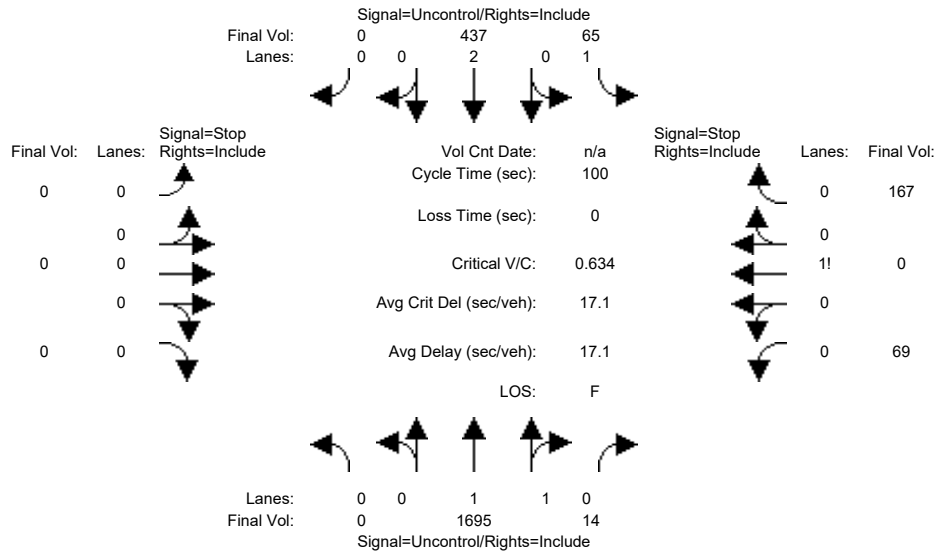
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background+Project PM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume).

Table for Critical Gap Module with 12 columns and 2 rows (Critical Gp, FollowUpTim).

Table for Capacity Module with 12 columns and 5 rows (Cnflct Vol, Potent Cap., Move Cap., Total Cap, Volume/Cap).

Table for Level Of Service Module with 12 columns and 10 rows (2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS).

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #8 (36) University Avenue and Purdue Avenue
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 14	65 437 0	0 0 0 0	69 0 167
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	172.4

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=11.3]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=236]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2447]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 14	65 437 0	0 0 0 0	69 0 167

Major Street Volume: 2211

Minor Approach Volume: 236

Minor Approach Volume Threshold: 11 [less than minimum of 100]

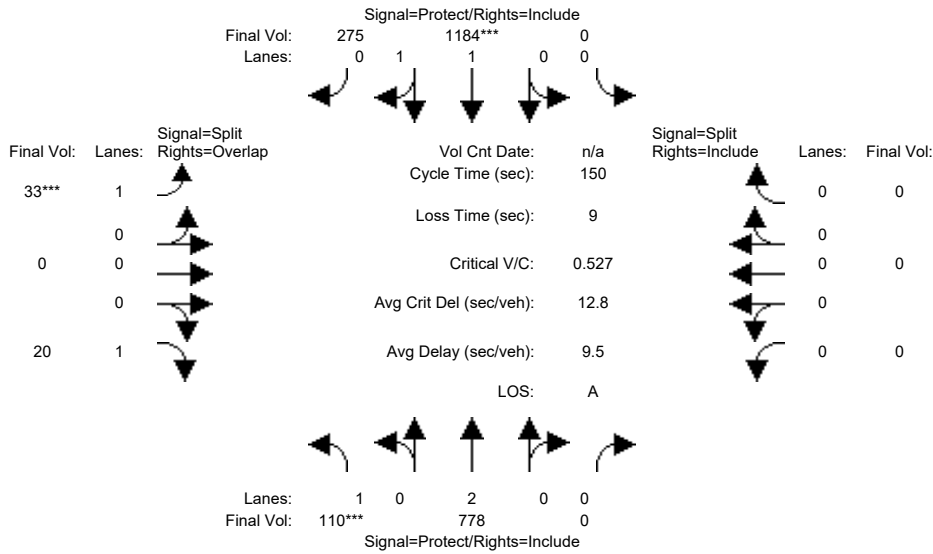
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	110	778	0	0	1184	275	33	0	20	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	110	778	0	0	1184	275	33	0	20	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	110	778	0	0	1184	275	33	0	20	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	110	778	0	0	1184	275	33	0	20	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	110	778	0	0	1184	275	33	0	20	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	110	778	0	0	1184	275	33	0	20	0	0	0

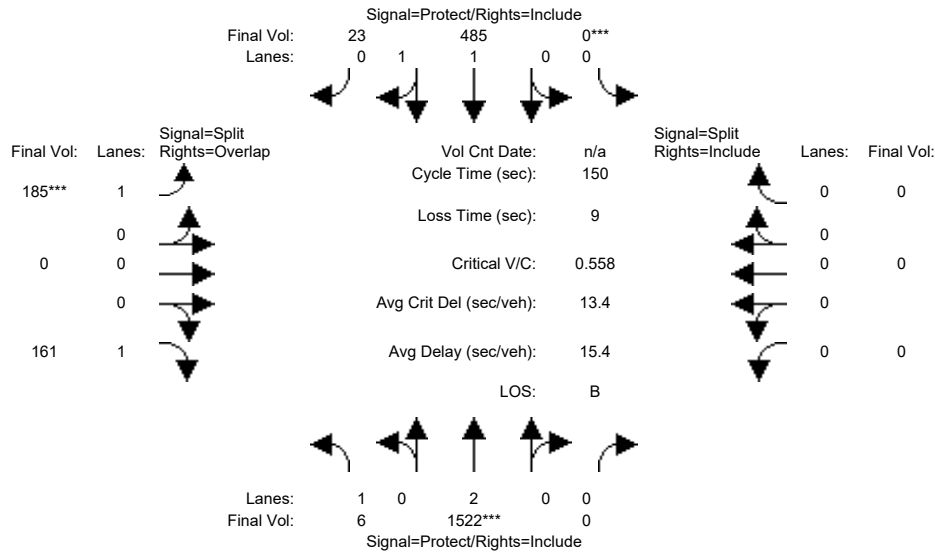
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.92	0.92	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.62	0.38	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2848	661	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.06	0.22	0.00	0.00	0.42	0.42	0.02	0.00	0.01	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	16.7	131	0.0	0.0	114	114.3	10.0	0.0	26.7	0.0	0.0	0.0
Volume/Cap:	0.55	0.25	0.00	0.00	0.55	0.55	0.27	0.00	0.07	0.00	0.00	0.00
Uniform Del:	63.0	1.5	0.0	0.0	7.3	7.3	66.6	0.0	51.3	0.0	0.0	0.0
IncrementDel:	3.1	0.0	0.0	0.0	0.2	0.2	1.2	0.0	0.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	66.1	1.6	0.0	0.0	7.5	7.5	67.8	0.0	51.4	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	66.1	1.6	0.0	0.0	7.5	7.5	67.8	0.0	51.4	0.0	0.0	0.0
LOS by Move:	E	A	A	A	A	A	E	A	D	A	A	A
HCM2kAvgQ:	5	3	0	0	14	14	2	0	1	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #9: (38) University Avenue and O'Brien Drive



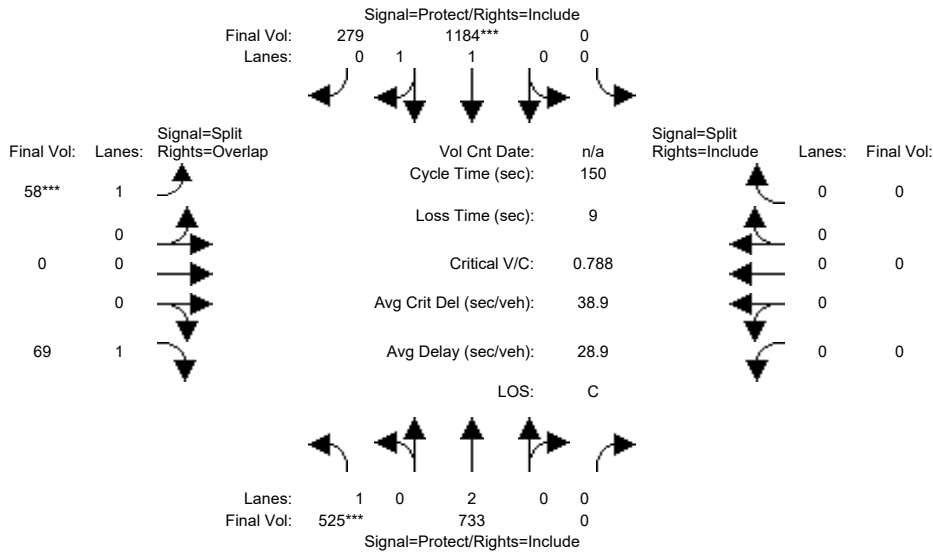
Street Name:	University Avenue						O'Brien Drive					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	6	1522	0	0	485	23	185	0	161	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	1522	0	0	485	23	185	0	161	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	1522	0	0	485	23	185	0	161	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	6	1522	0	0	485	23	185	0	161	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	1522	0	0	485	23	185	0	161	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	6	1522	0	0	485	23	185	0	161	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.94	0.94	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.91	0.09	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3422	162	1805	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.42	0.00	0.00	0.14	0.14	0.10	0.00	0.10	0.00	0.00	0.00
Crit Moves:	****			****			****					
Green Time:	28.1	113	0.0	0.0	85.3	85.3	27.6	0.0	55.7	0.0	0.0	0.0
Volume/Cap:	0.02	0.56	0.00	0.00	0.25	0.25	0.56	0.00	0.27	0.00	0.00	0.00
Uniform Del:	49.7	7.7	0.0	0.0	16.2	16.2	55.7	0.0	32.9	0.0	0.0	0.0
IncrementDel:	0.0	0.3	0.0	0.0	0.1	0.1	2.1	0.0	0.2	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	49.7	8.0	0.0	0.0	16.3	16.3	57.8	0.0	33.2	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.7	8.0	0.0	0.0	16.3	16.3	57.8	0.0	33.2	0.0	0.0	0.0
LOS by Move:	D	A	A	A	B	B	E	A	C	A	A	A
HCM2kAvgQ:	0	15	0	0	6	6	8	0	5	0	0	0

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	525	733	0	0	1184	279	58	0	69	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	525	733	0	0	1184	279	58	0	69	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	525	733	0	0	1184	279	58	0	69	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	525	733	0	0	1184	279	58	0	69	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	525	733	0	0	1184	279	58	0	69	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	525	733	0	0	1184	279	58	0	69	0	0	0

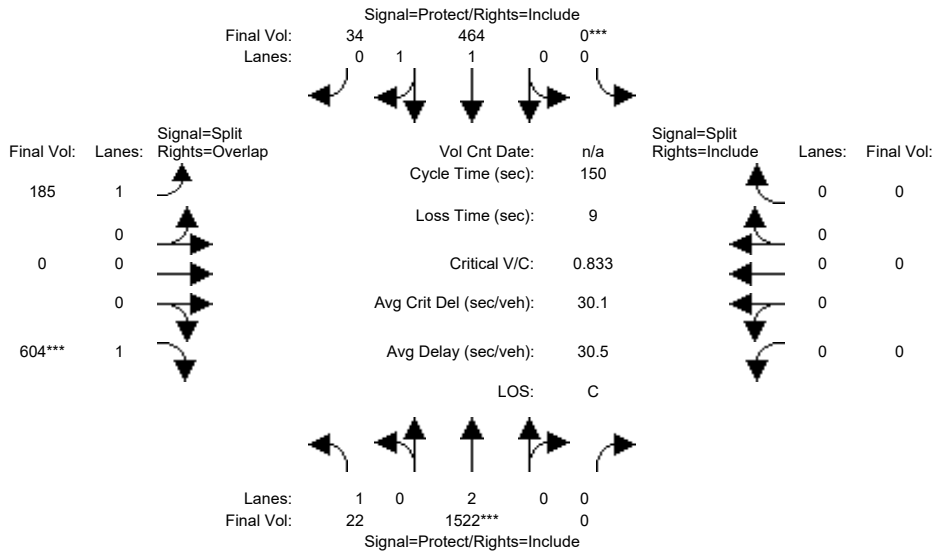
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.92	0.92	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.62	0.38	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2837	668	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.29	0.20	0.00	0.00	0.42	0.42	0.03	0.00	0.04	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	53.8	131	0.0	0.0	77.2	77.2	10.0	0.0	63.8	0.0	0.0	0.0
Volume/Cap:	0.81	0.23	0.00	0.00	0.81	0.81	0.48	0.00	0.10	0.00	0.00	0.00
Uniform Del:	43.5	1.5	0.0	0.0	30.3	30.3	67.5	0.0	25.9	0.0	0.0	0.0
IncrementDel:	7.6	0.0	0.0	0.0	2.9	2.9	3.0	0.0	0.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	51.1	1.5	0.0	0.0	33.2	33.2	70.5	0.0	25.9	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.1	1.5	0.0	0.0	33.2	33.2	70.5	0.0	25.9	0.0	0.0	0.0
LOS by Move:	D	A	A	A	C	C	E	A	C	A	A	A
HCM2kAvgQ:	23	3	0	0	30	30	3	0	2	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Movement:												
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	22	1522	0	0	464	34	185	0	604	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	22	1522	0	0	464	34	185	0	604	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	22	1522	0	0	464	34	185	0	604	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	22	1522	0	0	464	34	185	0	604	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	22	1522	0	0	464	34	185	0	604	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	22	1522	0	0	464	34	185	0	604	0	0	0

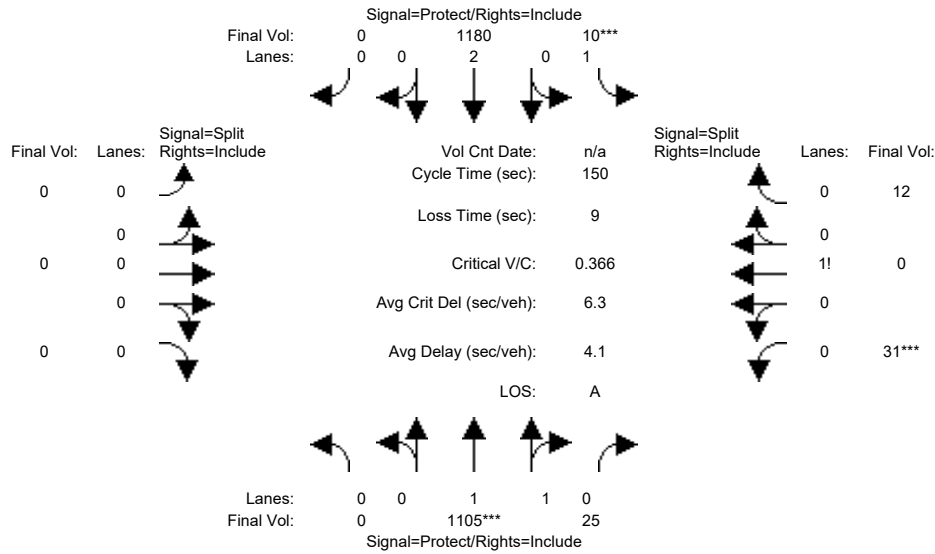
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.94	0.94	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.86	0.14	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3330	244	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.01	0.42	0.00	0.00	0.14	0.14	0.10	0.00	0.37	0.00	0.00	0.00
Crit Moves:	****			****			****			****		
Green Time:	19.9	79.4	0.0	0.0	59.5	59.5	61.6	0.0	81.5	0.0	0.0	0.0
Volume/Cap:	0.09	0.80	0.00	0.00	0.35	0.35	0.25	0.00	0.69	0.00	0.00	0.00
Uniform Del:	57.1	28.7	0.0	0.0	31.7	31.7	29.0	0.0	25.0	0.0	0.0	0.0
IncrementDel:	0.2	2.4	0.0	0.0	0.2	0.2	0.2	0.0	2.3	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	57.3	31.2	0.0	0.0	31.9	31.9	29.2	0.0	27.3	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	31.2	0.0	0.0	31.9	31.9	29.2	0.0	27.3	0.0	0.0	0.0
LOS by Move:	E	C	A	A	C	C	C	A	C	A	A	A
HCM2kAvgQ:	1	31	0	0	8	8	5	0	20	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1105	25	10	1180	0	0	0	0	31	0	12
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1105	25	10	1180	0	0	0	0	31	0	12
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1105	25	10	1180	0	0	0	0	31	0	12
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1105	25	10	1180	0	0	0	0	31	0	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1105	25	10	1180	0	0	0	0	31	0	12
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1105	25	10	1180	0	0	0	0	31	0	12

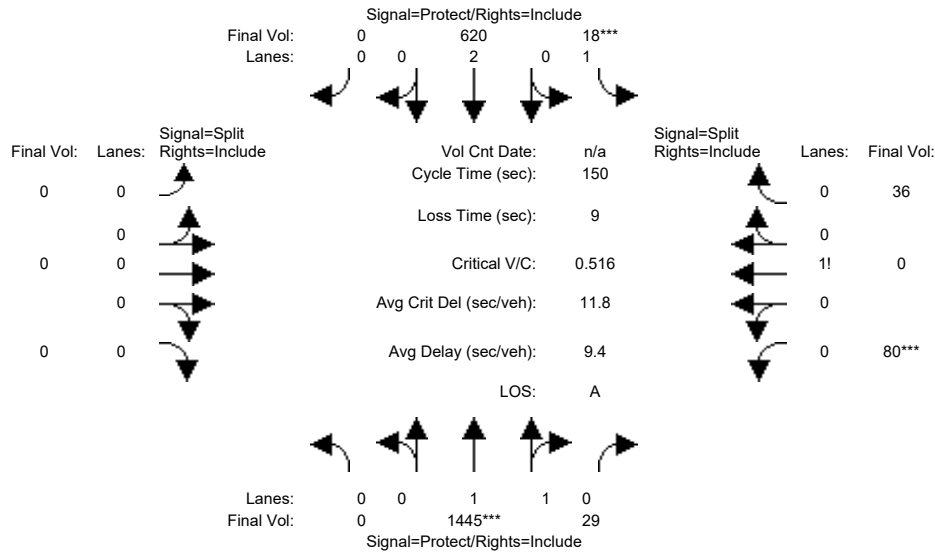
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.93	1.00	0.93
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.72	0.00	0.28
Final Sat.:	0	3520	80	1805	3610	0	0	0	0	1272	0	492

Capacity Analysis Module:												
Vol/Sat:	0.00	0.31	0.31	0.01	0.33	0.00	0.00	0.00	0.00	0.02	0.00	0.02
Crit Moves:	****			****						****		
Green Time:	0.0	124	124.0	7.0	131	0.0	0.0	0.0	0.0	10.0	0.0	10.0
Volume/Cap:	0.00	0.38	0.38	0.12	0.37	0.00	0.00	0.00	0.00	0.37	0.00	0.37
Uniform Del:	0.0	3.3	3.3	68.5	1.8	0.0	0.0	0.0	0.0	67.0	0.0	67.0
IncrementDel:	0.0	0.1	0.1	0.6	0.1	0.0	0.0	0.0	0.0	1.9	0.0	1.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	3.4	3.4	69.2	1.9	0.0	0.0	0.0	0.0	68.9	0.0	68.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	3.4	3.4	69.2	1.9	0.0	0.0	0.0	0.0	68.9	0.0	68.9
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	7	7	1	5	0	0	0	0	2	0	2

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1445	29	18	620	0	0	0	0	80	0	36
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1445	29	18	620	0	0	0	0	80	0	36
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1445	29	18	620	0	0	0	0	80	0	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1445	29	18	620	0	0	0	0	80	0	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1445	29	18	620	0	0	0	0	80	0	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1445	29	18	620	0	0	0	0	80	0	36

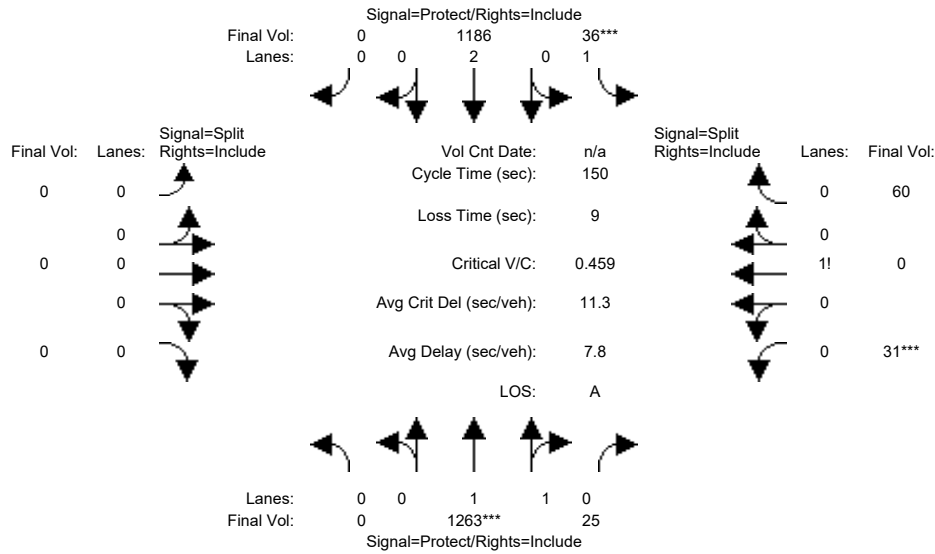
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.93	1.00	0.93
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.69	0.00	0.31
Final Sat.:	0	3528	71	1805	3610	0	0	0	0	1214	0	546

Capacity Analysis Module:												
Vol/Sat:	0.00	0.41	0.41	0.01	0.17	0.00	0.00	0.00	0.00	0.07	0.00	0.07
Crit Moves:	****			****						****		
Green Time:	0.0	115	115.4	7.0	122	0.0	0.0	0.0	0.0	18.6	0.0	18.6
Volume/Cap:	0.00	0.53	0.53	0.21	0.21	0.00	0.00	0.00	0.00	0.53	0.00	0.53
Uniform Del:	0.0	6.7	6.7	68.8	3.1	0.0	0.0	0.0	0.0	61.6	0.0	61.6
IncrementDel:	0.0	0.2	0.2	1.3	0.0	0.0	0.0	0.0	0.0	2.5	0.0	2.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	6.9	6.9	70.1	3.1	0.0	0.0	0.0	0.0	64.2	0.0	64.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	6.9	6.9	70.1	3.1	0.0	0.0	0.0	0.0	64.2	0.0	64.2
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	14	14	1	3	0	0	0	0	6	0	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1263	25	36	1186	0	0	0	0	31	0	60
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1263	25	36	1186	0	0	0	0	31	0	60
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1263	25	36	1186	0	0	0	0	31	0	60
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1263	25	36	1186	0	0	0	0	31	0	60
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1263	25	36	1186	0	0	0	0	31	0	60
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1263	25	36	1186	0	0	0	0	31	0	60

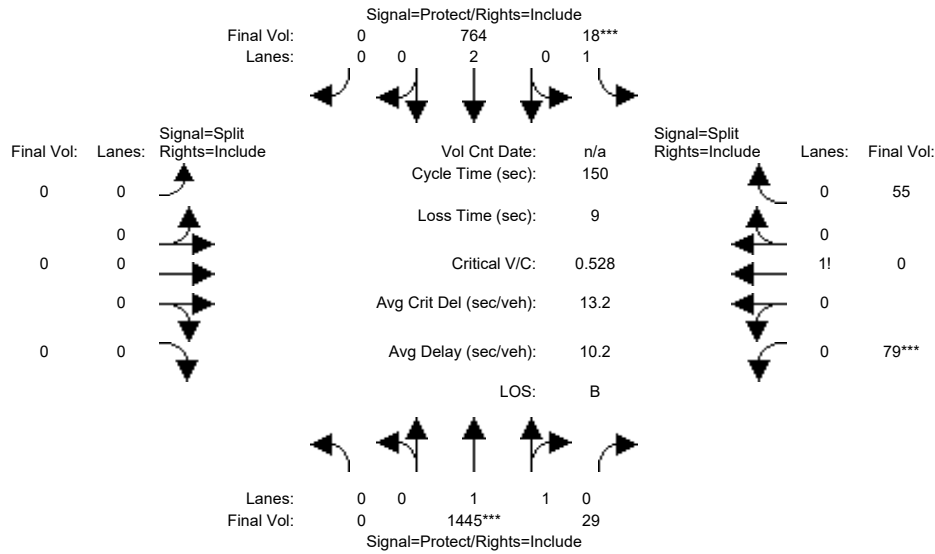
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.90	1.00	0.90
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.34	0.00	0.66
Final Sat.:	0	3529	70	1805	3610	0	0	0	0	580	0	1122

Capacity Analysis Module:												
Vol/Sat:	0.00	0.36	0.36	0.02	0.33	0.00	0.00	0.00	0.00	0.05	0.00	0.05
Crit Moves:	****			****						****		
Green Time:	0.0	117	116.6	7.0	124	0.0	0.0	0.0	0.0	17.4	0.0	17.4
Volume/Cap:	0.00	0.46	0.46	0.43	0.40	0.00	0.00	0.00	0.00	0.46	0.00	0.46
Uniform Del:	0.0	5.8	5.8	69.6	3.5	0.0	0.0	0.0	0.0	61.9	0.0	61.9
IncrementDel:	0.0	0.1	0.1	3.5	0.1	0.0	0.0	0.0	0.0	1.7	0.0	1.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	5.9	5.9	73.0	3.6	0.0	0.0	0.0	0.0	63.6	0.0	63.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	5.9	5.9	73.0	3.6	0.0	0.0	0.0	0.0	63.6	0.0	63.6
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	11	11	2	7	0	0	0	0	4	0	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1445	29	18	764	0	0	0	0	79	0	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1445	29	18	764	0	0	0	0	79	0	55
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1445	29	18	764	0	0	0	0	79	0	55
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1445	29	18	764	0	0	0	0	79	0	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1445	29	18	764	0	0	0	0	79	0	55
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1445	29	18	764	0	0	0	0	79	0	55

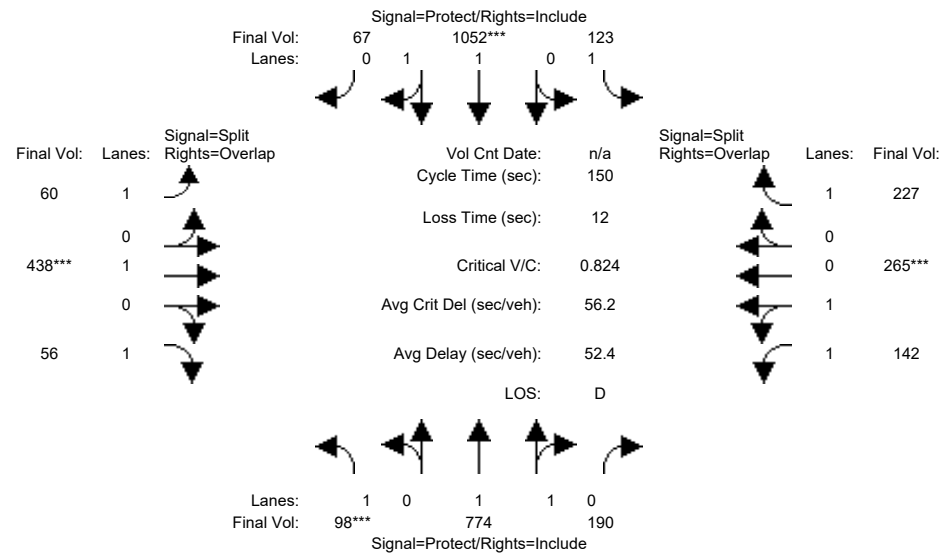
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.92	1.00	0.92
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.59	0.00	0.41
Final Sat.:	0	3528	71	1805	3610	0	0	0	0	1028	0	716

Capacity Analysis Module:												
Vol/Sat:	0.00	0.41	0.41	0.01	0.21	0.00	0.00	0.00	0.00	0.08	0.00	0.08
Crit Moves:	****			****						****		
Green Time:	0.0	113	112.8	7.0	120	0.0	0.0	0.0	0.0	21.2	0.0	21.2
Volume/Cap:	0.00	0.54	0.54	0.21	0.26	0.00	0.00	0.00	0.00	0.54	0.00	0.54
Uniform Del:	0.0	7.8	7.8	68.8	3.8	0.0	0.0	0.0	0.0	59.9	0.0	59.9
IncrementDel:	0.0	0.2	0.2	1.3	0.0	0.0	0.0	0.0	0.0	2.5	0.0	2.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	8.0	8.0	70.1	3.9	0.0	0.0	0.0	0.0	62.4	0.0	62.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.0	8.0	70.1	3.9	0.0	0.0	0.0	0.0	62.4	0.0	62.4
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	15	15	1	5	0	0	0	0	6	0	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	98	774	190	123	1052	67	60	438	56	142	265	227
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	98	774	190	123	1052	67	60	438	56	142	265	227
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	98	774	190	123	1052	67	60	438	56	142	265	227
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	98	774	190	123	1052	67	60	438	56	142	265	227
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	98	774	190	123	1052	67	60	438	56	142	265	227
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	98	774	190	123	1052	67	60	438	56	142	265	227

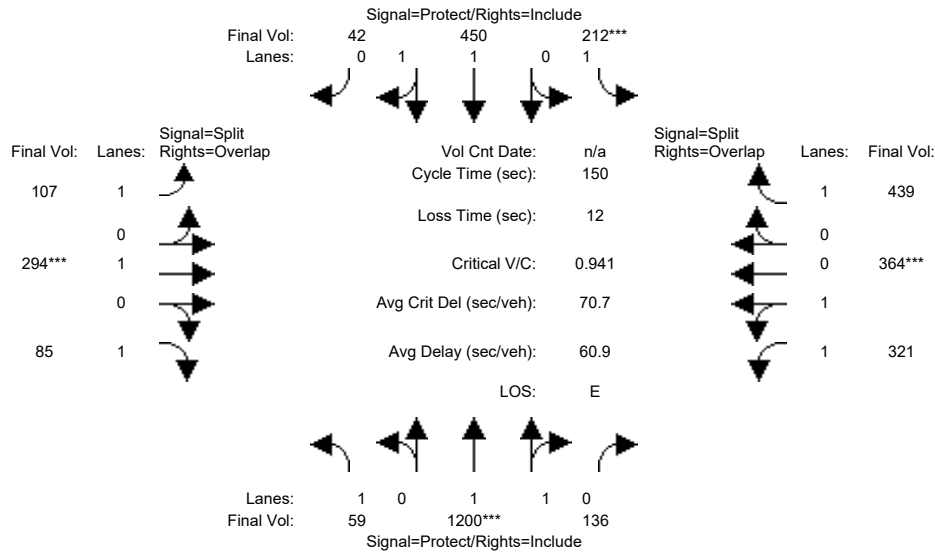
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	0.89	0.89	0.92	0.91	0.91	0.93	0.98	0.83	0.96	0.96	0.83
Lanes:	1.00	1.61	0.39	1.00	1.88	0.12	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1753	2730	670	1753	3266	208	1769	1862	1583	1830	1830	1583

Capacity Analysis Module:												
Vol/Sat:	0.06	0.28	0.28	0.07	0.32	0.32	0.03	0.24	0.04	0.08	0.14	0.14
Crit Moves:	***			***			***			***		
Green Time:	10.2	55.2	55.2	13.7	58.6	58.6	42.8	42.8	53.0	26.4	26.4	40.0
Volume/Cap:	0.82	0.77	0.77	0.77	0.82	0.82	0.12	0.82	0.10	0.44	0.82	0.54
Uniform Del:	69.0	41.8	41.8	66.6	41.0	41.0	39.6	50.1	32.5	55.2	59.6	47.1
IncrementDel:	35.2	3.0	3.0	20.3	4.2	4.2	0.1	10.1	0.1	0.3	10.8	1.4
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	104.3	44.8	44.8	86.9	45.3	45.3	39.7	60.2	32.6	55.6	70.4	48.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	104.3	44.8	44.8	86.9	45.3	45.3	39.7	60.2	32.6	55.6	70.4	48.5
LOS by Move:	F	D	D	F	D	D	D	E	C	E	E	D
HCM2kAvgQ:	6	22	22	7	26	26	2	21	2	6	14	9

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	59	1200	136	212	450	42	107	294	85	321	364	439
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	59	1200	136	212	450	42	107	294	85	321	364	439
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	59	1200	136	212	450	42	107	294	85	321	364	439
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	59	1200	136	212	450	42	107	294	85	321	364	439
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	59	1200	136	212	450	42	107	294	85	321	364	439
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	59	1200	136	212	450	42	107	294	85	321	364	439

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	0.91	0.91	0.92	0.91	0.91	0.93	0.98	0.83	0.96	0.96	0.83
Lanes:	1.00	1.80	0.20	1.00	1.83	0.17	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1753	3101	351	1753	3164	295	1769	1862	1583	1819	1819	1583

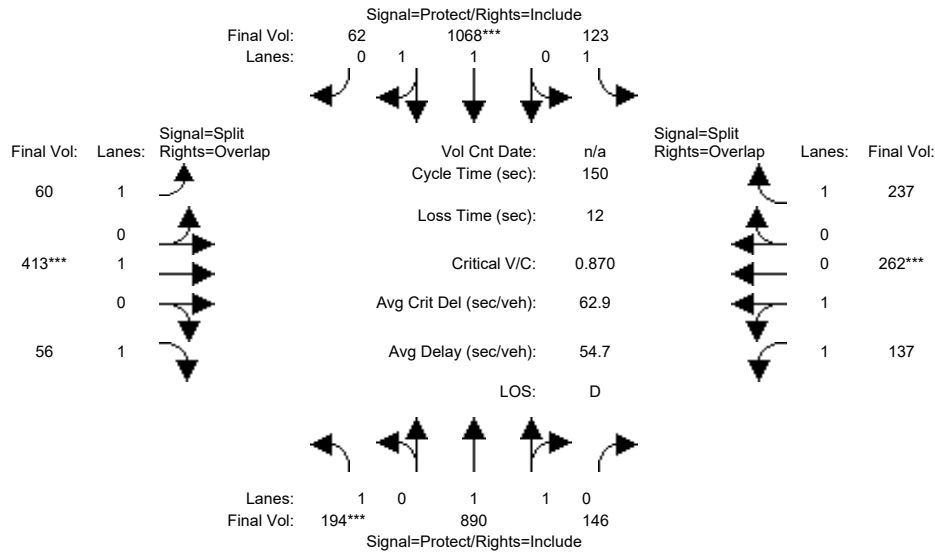
Capacity Analysis Module:												
Vol/Sat:	0.03	0.39	0.39	0.12	0.14	0.14	0.06	0.16	0.05	0.18	0.20	0.28
Crit Moves:	****			****			****			****		
Green Time:	20.0	61.7	61.7	19.3	60.9	60.9	25.2	25.2	45.2	31.9	31.9	51.2
Volume/Cap:	0.25	0.94	0.94	0.94	0.35	0.35	0.36	0.94	0.18	0.83	0.94	0.81
Uniform Del:	58.3	42.4	42.4	64.8	30.8	30.8	55.3	61.7	38.7	56.5	58.1	45.1
IncrementDel:	0.6	12.5	12.5	43.7	0.2	0.2	0.8	35.6	0.2	7.1	20.3	9.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	58.9	54.9	54.9	108.5	31.0	31.0	56.0	97.3	38.9	63.6	78.4	54.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	58.9	54.9	54.9	108.5	31.0	31.0	56.0	97.3	38.9	63.6	78.4	54.2
LOS by Move:	E	D	D	F	C	C	E	F	D	E	E	D
HCM2kAvgQ:	3	35	35	13	8	8	5	17	3	16	20	20

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	194	890	146	123	1068	62	60	413	56	137	262	237
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	194	890	146	123	1068	62	60	413	56	137	262	237
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	194	890	146	123	1068	62	60	413	56	137	262	237
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	194	890	146	123	1068	62	60	413	56	137	262	237
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	194	890	146	123	1068	62	60	413	56	137	262	237
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	194	890	146	123	1068	62	60	413	56	137	262	237

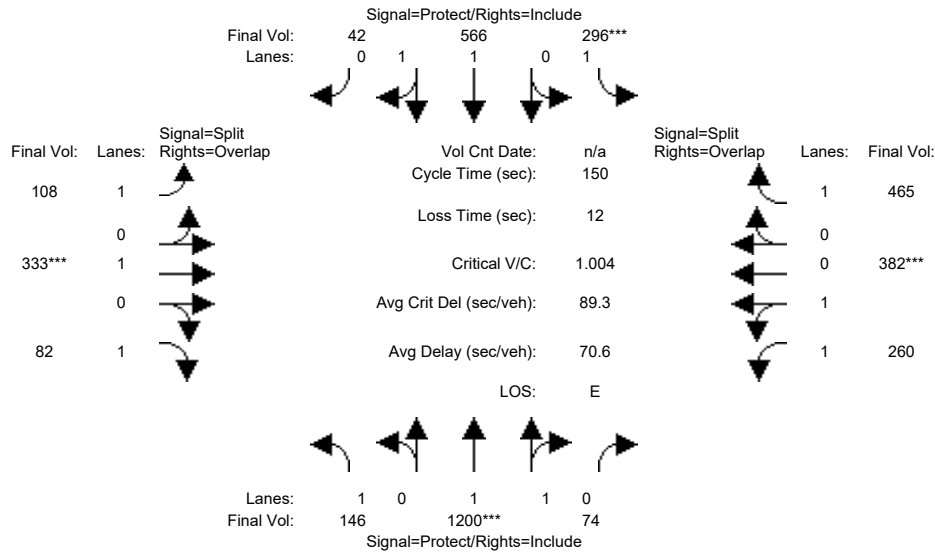
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	0.90	0.90	0.92	0.92	0.92	0.93	0.98	0.83	0.96	0.96	0.83
Lanes:	1.00	1.72	0.28	1.00	1.89	0.11	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1753	2948	484	1753	3286	191	1769	1862	1583	1830	1830	1583

Capacity Analysis Module:												
Vol/Sat:	0.11	0.30	0.30	0.07	0.32	0.32	0.03	0.22	0.04	0.07	0.14	0.15
Crit Moves:	***			***			***			***		
Green Time:	19.1	60.9	60.9	14.2	56.0	56.0	38.2	38.2	57.3	24.7	24.7	38.8
Volume/Cap:	0.87	0.74	0.74	0.74	0.87	0.87	0.13	0.87	0.09	0.46	0.87	0.58
Uniform Del:	64.2	37.9	37.9	66.1	43.6	43.6	43.1	53.5	29.7	56.6	61.1	48.4
IncrementDel:	28.7	2.2	2.2	16.5	6.6	6.6	0.1	15.8	0.1	0.4	16.3	2.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	93.0	40.1	40.1	82.7	50.2	50.2	43.2	69.4	29.8	57.0	77.4	50.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	93.0	40.1	40.1	82.7	50.2	50.2	43.2	69.4	29.8	57.0	77.4	50.5
LOS by Move:	F	D	D	F	D	D	D	E	C	E	E	D
HCM2kAvgQ:	11	22	22	7	28	28	2	21	2	6	14	10

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	146	1200	74	296	566	42	108	333	82	260	382	465
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	146	1200	74	296	566	42	108	333	82	260	382	465
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	146	1200	74	296	566	42	108	333	82	260	382	465
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	146	1200	74	296	566	42	108	333	82	260	382	465
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	146	1200	74	296	566	42	108	333	82	260	382	465
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	146	1200	74	296	566	42	108	333	82	260	382	465

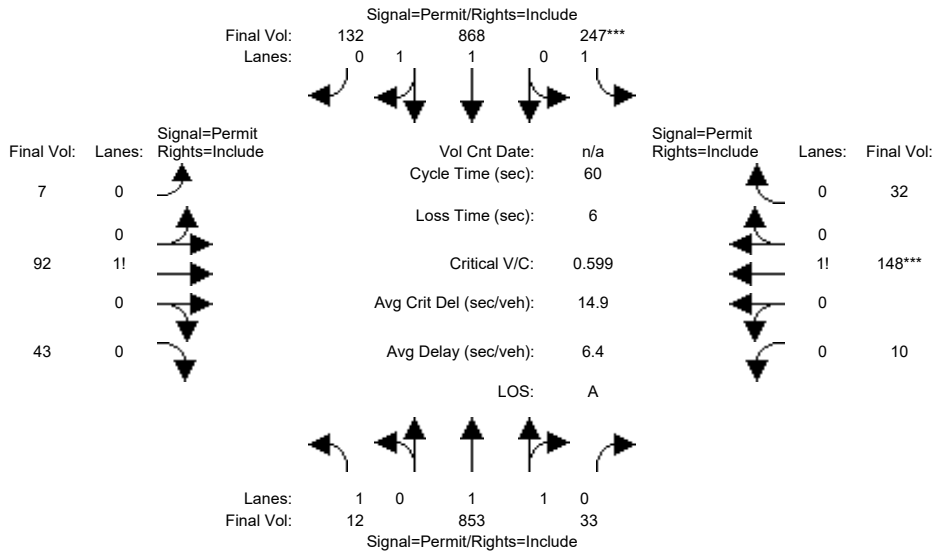
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	0.91	0.91	0.92	0.91	0.91	0.93	0.98	0.83	0.96	0.96	0.83
Lanes:	1.00	1.88	0.12	1.00	1.86	0.14	1.00	1.00	1.00	1.00	1.00	1.00
Final Sat.:	1753	3272	202	1753	3231	240	1769	1862	1583	1825	1825	1583

Capacity Analysis Module:												
Vol/Sat:	0.08	0.37	0.37	0.17	0.18	0.18	0.06	0.18	0.05	0.14	0.21	0.29
Crit Moves:	****			****			****			****		
Green Time:	25.8	54.8	54.8	25.2	54.2	54.2	26.7	26.7	52.5	31.3	31.3	56.5
Volume/Cap:	0.48	1.00	1.00	1.00	0.48	0.48	0.34	1.00	0.15	0.68	1.00	0.78
Uniform Del:	56.1	47.6	47.6	62.4	37.1	37.1	54.0	61.6	33.4	54.8	59.4	41.3
IncrementDel:	1.2	26.3	26.3	53.5	0.3	0.3	0.7	50.5	0.1	2.1	36.6	6.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	57.3	73.9	73.9	115.9	37.4	37.4	54.6	112	33.5	56.9	96.0	47.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	73.9	73.9	115.9	37.4	37.4	54.6	112	33.5	56.9	96.0	47.8
LOS by Move:	E	E	E	F	D	D	D	F	C	E	F	D
HCM2kAvgQ:	6	37	37	18	11	11	4	20	3	12	23	20

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	12	853	33	247	868	132	7	92	43	10	148	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	12	853	33	247	868	132	7	92	43	10	148	32
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	12	853	33	247	868	132	7	92	43	10	148	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	12	853	33	247	868	132	7	92	43	10	148	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	12	853	33	247	868	132	7	92	43	10	148	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	12	853	33	247	868	132	7	92	43	10	148	32

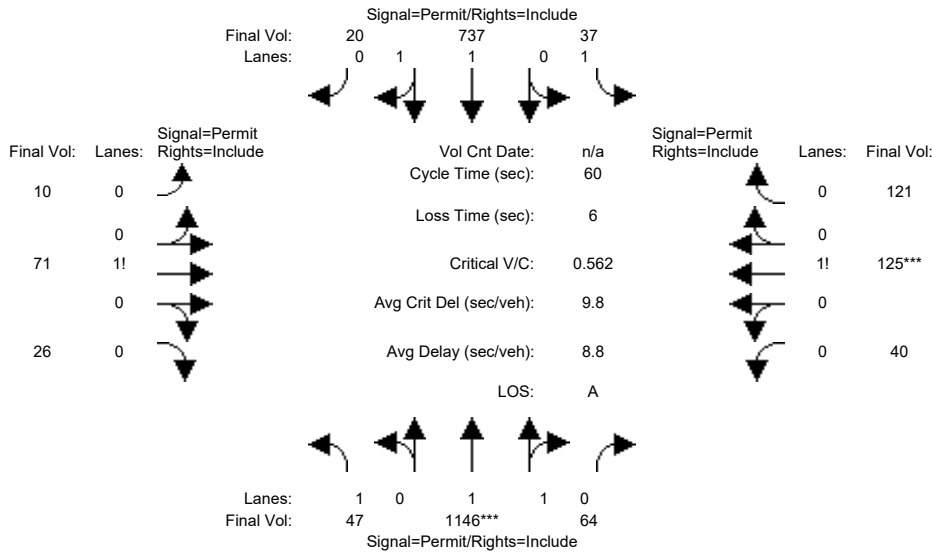
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.26	0.94	0.94	0.30	0.93	0.93	0.95	0.95	0.95	0.96	0.96	0.96
Lanes:	1.00	1.93	0.07	1.00	1.74	0.26	0.05	0.65	0.30	0.05	0.78	0.17
Final Sat.:	498	3455	134	568	3071	467	89	1166	545	96	1421	307

Capacity Analysis Module:												
Vol/Sat:	0.02	0.25	0.25	0.43	0.28	0.28	0.08	0.08	0.08	0.10	0.10	0.10
Crit Moves:				****						****		
Green Time:	43.6	43.6	43.6	43.6	43.6	43.6	10.4	10.4	10.4	10.4	10.4	10.4
Volume/Cap:	0.03	0.34	0.34	0.60	0.39	0.39	0.45	0.45	0.45	0.60	0.60	0.60
Uniform Del:	2.3	3.0	3.0	4.0	3.1	3.1	22.2	22.2	22.2	22.9	22.9	22.9
IncrementDel:	0.0	0.1	0.1	2.4	0.1	0.1	1.0	1.0	1.0	3.1	3.1	3.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	2.3	3.1	3.1	6.4	3.2	3.2	23.3	23.3	23.3	26.0	26.0	26.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	2.3	3.1	3.1	6.4	3.2	3.2	23.3	23.3	23.3	26.0	26.0	26.0
LOS by Move:	A	A	A	A	A	A	C	C	C	C	C	C
HCM2kAvgQ:	0	3	3	3	4	4	3	3	3	4	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #12: (41) University Avenue and Runnymede Street

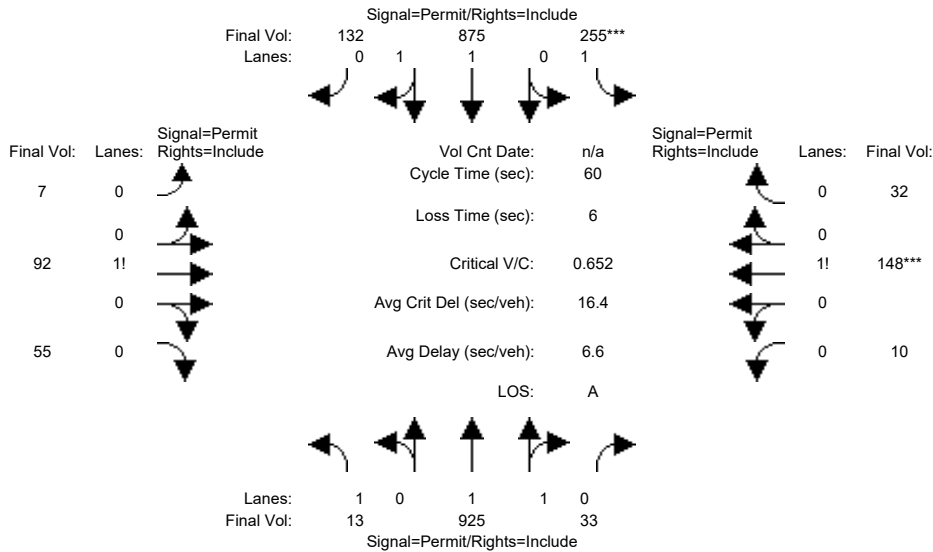


Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	47	1146	64	37	737	20	10	71	26	40	125	121
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	47	1146	64	37	737	20	10	71	26	40	125	121
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	47	1146	64	37	737	20	10	71	26	40	125	121
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	47	1146	64	37	737	20	10	71	26	40	125	121
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	1146	64	37	737	20	10	71	26	40	125	121
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	47	1146	64	37	737	20	10	71	26	40	125	121
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.32	0.94	0.94	0.17	0.95	0.95	0.93	0.93	0.93	0.90	0.90	0.90
Lanes:	1.00	1.89	0.11	1.00	1.95	0.05	0.09	0.67	0.24	0.14	0.44	0.42
Final Sat.:	608	3392	189	317	3501	95	166	1178	431	238	744	720
Capacity Analysis Module:												
Vol/Sat:	0.08	0.34	0.34	0.12	0.21	0.21	0.06	0.06	0.06	0.17	0.17	0.17
Crit Moves:	****									****		
Green Time:	36.1	36.1	36.1	36.1	36.1	36.1	17.9	17.9	17.9	17.9	17.9	17.9
Volume/Cap:	0.13	0.56	0.56	0.19	0.35	0.35	0.20	0.20	0.20	0.56	0.56	0.56
Uniform Del:	5.2	7.2	7.2	5.4	6.0	6.0	15.7	15.7	15.7	17.7	17.7	17.7
IncrementDel:	0.2	0.3	0.3	0.5	0.1	0.1	0.2	0.2	0.2	1.4	1.4	1.4
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	5.3	7.6	7.6	5.9	6.1	6.1	15.9	15.9	15.9	19.2	19.2	19.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	5.3	7.6	7.6	5.9	6.1	6.1	15.9	15.9	15.9	19.2	19.2	19.2
LOS by Move:	A	A	A	A	A	A	B	B	B	B	B	B
HCM2kAvgQ:	0	8	8	1	4	4	2	2	2	5	5	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	13	925	33	255	875	132	7	92	55	10	148	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	13	925	33	255	875	132	7	92	55	10	148	32
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	13	925	33	255	875	132	7	92	55	10	148	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	13	925	33	255	875	132	7	92	55	10	148	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	13	925	33	255	875	132	7	92	55	10	148	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	13	925	33	255	875	132	7	92	55	10	148	32

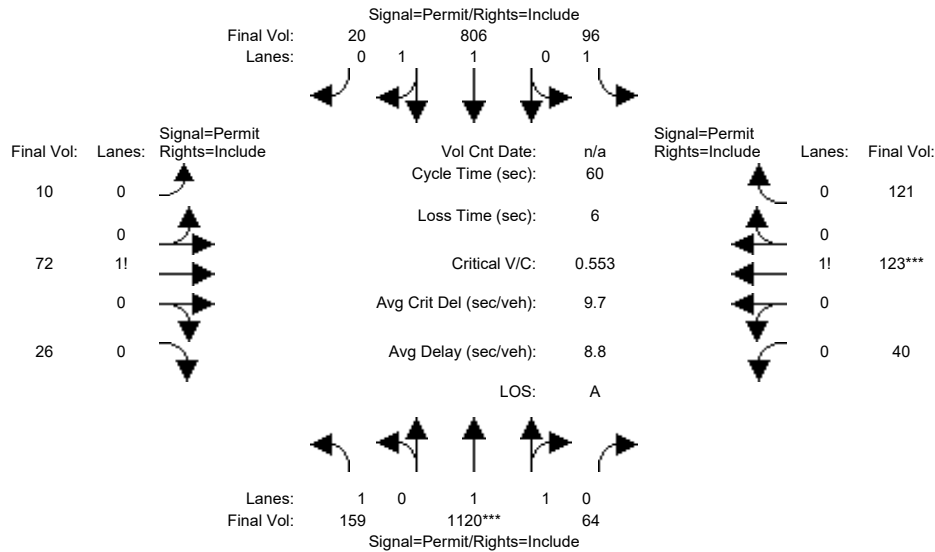
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.26	0.95	0.95	0.28	0.93	0.93	0.94	0.94	0.94	0.96	0.96	0.96
Lanes:	1.00	1.93	0.07	1.00	1.74	0.26	0.04	0.60	0.36	0.05	0.78	0.17
Final Sat.:	496	3468	124	528	3074	464	81	1067	638	96	1424	308

Capacity Analysis Module:												
Vol/Sat:	0.03	0.27	0.27	0.48	0.28	0.28	0.09	0.09	0.09	0.10	0.10	0.10
Crit Moves:				****						****		
Green Time:	44.0	44.0	44.0	44.0	44.0	44.0	10.0	10.0	10.0	10.0	10.0	10.0
Volume/Cap:	0.04	0.36	0.36	0.66	0.39	0.39	0.52	0.52	0.52	0.62	0.62	0.62
Uniform Del:	2.2	2.9	2.9	4.1	3.0	3.0	22.8	22.8	22.8	23.2	23.2	23.2
IncrementDel:	0.0	0.1	0.1	4.1	0.1	0.1	1.6	1.6	1.6	4.0	4.0	4.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	2.2	3.0	3.0	8.3	3.1	3.1	24.4	24.4	24.4	27.2	27.2	27.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	2.2	3.0	3.0	8.3	3.1	3.1	24.4	24.4	24.4	27.2	27.2	27.2
LOS by Move:	A	A	A	A	A	A	C	C	C	C	C	C
HCM2kAvgQ:	0	4	4	4	4	4	3	3	3	4	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	159	1120	64	96	806	20	10	72	26	40	123	121
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	159	1120	64	96	806	20	10	72	26	40	123	121
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	159	1120	64	96	806	20	10	72	26	40	123	121
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	159	1120	64	96	806	20	10	72	26	40	123	121
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	159	1120	64	96	806	20	10	72	26	40	123	121
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	159	1120	64	96	806	20	10	72	26	40	123	121

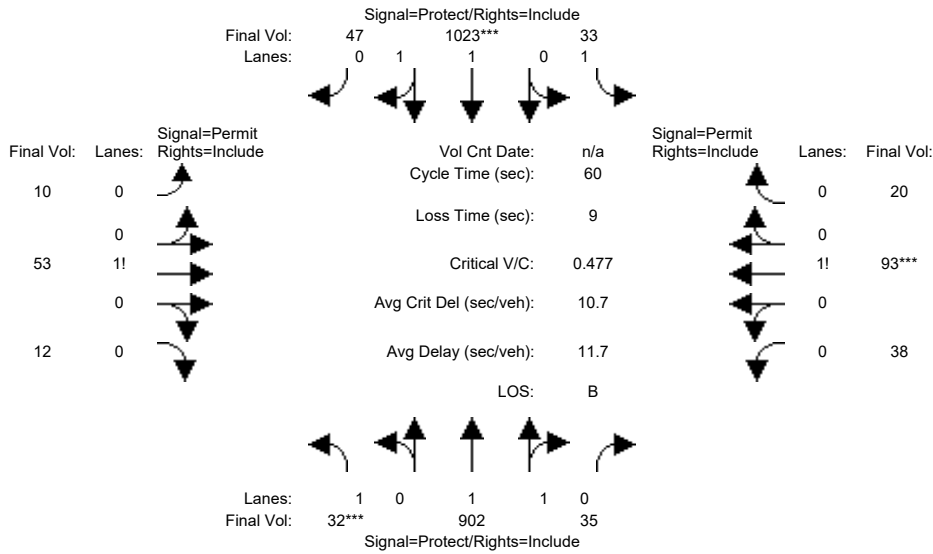
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.29	0.94	0.94	0.17	0.95	0.95	0.93	0.93	0.93	0.89	0.89	0.89
Lanes:	1.00	1.89	0.11	1.00	1.95	0.05	0.09	0.67	0.24	0.14	0.43	0.43
Final Sat.:	557	3388	194	331	3509	87	164	1183	427	239	736	724

Capacity Analysis Module:												
Vol/Sat:	0.29	0.33	0.33	0.29	0.23	0.23	0.06	0.06	0.06	0.17	0.17	0.17
Crit Moves:	****									****		
Green Time:	35.9	35.9	35.9	35.9	35.9	35.9	18.1	18.1	18.1	18.1	18.1	18.1
Volume/Cap:	0.48	0.55	0.55	0.49	0.38	0.38	0.20	0.20	0.20	0.55	0.55	0.55
Uniform Del:	6.8	7.2	7.2	6.8	6.3	6.3	15.6	15.6	15.6	17.5	17.5	17.5
IncrementDel:	1.1	0.3	0.3	1.9	0.1	0.1	0.2	0.2	0.2	1.3	1.3	1.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	7.9	7.6	7.6	8.7	6.4	6.4	15.7	15.7	15.7	18.9	18.9	18.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.9	7.6	7.6	8.7	6.4	6.4	15.7	15.7	15.7	18.9	18.9	18.9
LOS by Move:	A	A	A	A	A	A	B	B	B	B	B	B
HCM2kAvgQ:	2	7	7	2	4	4	2	2	2	5	5	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	32	902	35	33	1023	47	10	53	12	38	93	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	902	35	33	1023	47	10	53	12	38	93	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	32	902	35	33	1023	47	10	53	12	38	93	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	32	902	35	33	1023	47	10	53	12	38	93	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	32	902	35	33	1023	47	10	53	12	38	93	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	32	902	35	33	1023	47	10	53	12	38	93	20

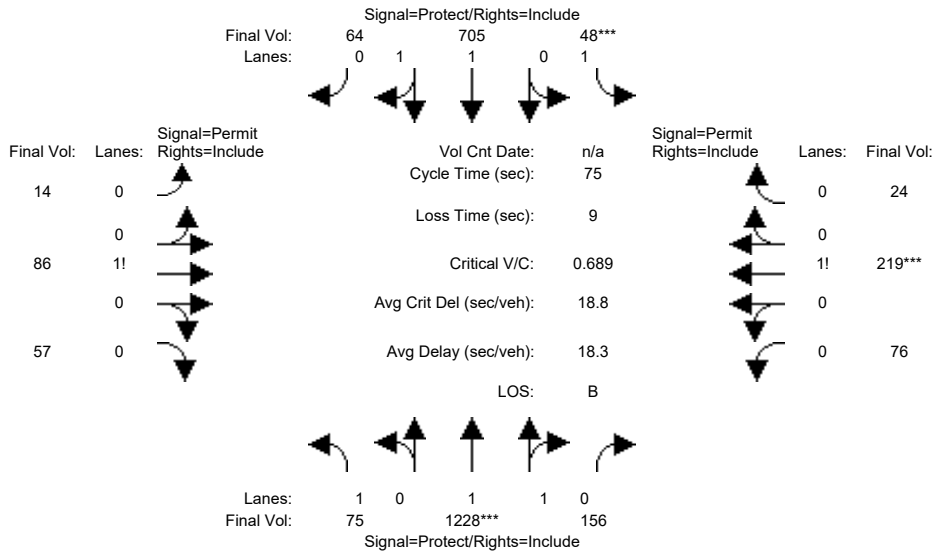
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.94	0.94	0.95	0.94	0.94	0.94	0.94	0.94	0.89	0.89	0.89
Lanes:	1.00	1.93	0.07	1.00	1.91	0.09	0.13	0.71	0.16	0.25	0.62	0.13
Final Sat.:	1805	3454	134	1805	3427	157	239	1265	286	425	1041	224

Capacity Analysis Module:												
Vol/Sat:	0.02	0.26	0.26	0.02	0.30	0.30	0.04	0.04	0.04	0.09	0.09	0.09
Crit Moves:	***			***						***		
Green Time:	7.0	28.2	28.2	12.6	33.9	33.9	10.1	10.1	10.1	10.1	10.1	10.1
Volume/Cap:	0.15	0.55	0.55	0.09	0.53	0.53	0.25	0.25	0.25	0.53	0.53	0.53
Uniform Del:	23.8	11.4	11.4	19.1	8.1	8.1	21.6	21.6	21.6	22.8	22.8	22.8
IncrementDel:	0.3	0.4	0.4	0.1	0.3	0.3	0.4	0.4	0.4	1.9	1.9	1.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	24.2	11.8	11.8	19.2	8.4	8.4	22.1	22.1	22.1	24.6	24.6	24.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.2	11.8	11.8	19.2	8.4	8.4	22.1	22.1	22.1	24.6	24.6	24.6
LOS by Move:	C	B	B	B	A	A	C	C	C	C	C	C
HCM2kAvgQ:	1	7	7	1	7	7	1	1	1	3	3	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	75	1228	156	48	705	64	14	86	57	76	219	24
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1228	156	48	705	64	14	86	57	76	219	24
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	1228	156	48	705	64	14	86	57	76	219	24
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1228	156	48	705	64	14	86	57	76	219	24
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1228	156	48	705	64	14	86	57	76	219	24
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	75	1228	156	48	705	64	14	86	57	76	219	24

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	0.94	0.94	0.92	0.92	0.92	0.88	0.88	0.88
Lanes:	1.00	1.77	0.23	1.00	1.83	0.17	0.09	0.55	0.36	0.24	0.69	0.07
Final Sat.:	1805	3149	400	1805	3270	297	156	957	634	400	1152	126

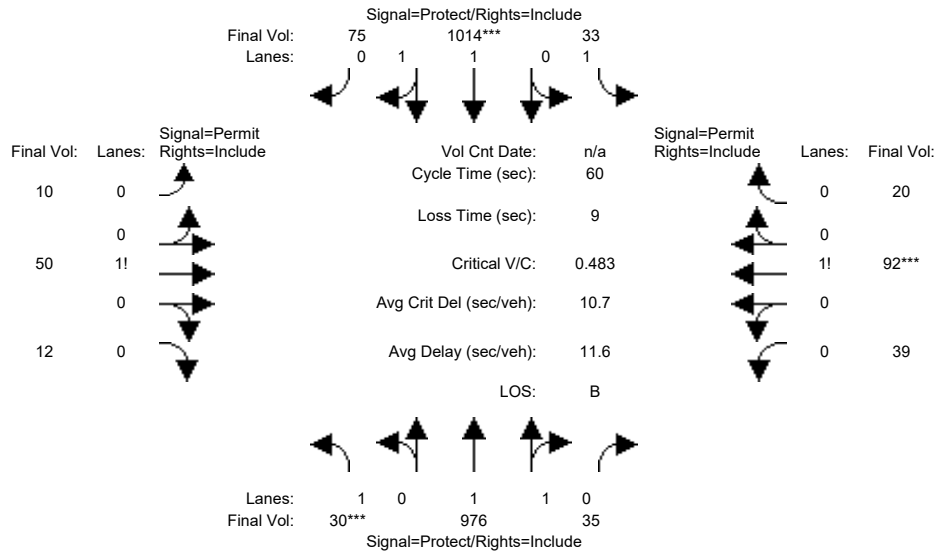
Capacity Analysis Module:												
Vol/Sat:	0.04	0.39	0.39	0.03	0.22	0.22	0.09	0.09	0.09	0.19	0.19	0.19
Crit Moves:	****			****						****		
Green Time:	14.1	39.7	39.7	7.0	32.6	32.6	19.3	19.3	19.3	19.3	19.3	19.3
Volume/Cap:	0.22	0.74	0.74	0.28	0.50	0.50	0.35	0.35	0.35	0.74	0.74	0.74
Uniform Del:	25.8	13.6	13.6	31.7	15.3	15.3	22.7	22.7	22.7	25.5	25.5	25.5
IncrementDel:	0.3	1.6	1.6	0.9	0.3	0.3	0.5	0.5	0.5	6.6	6.6	6.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	26.1	15.2	15.2	32.6	15.6	15.6	23.2	23.2	23.2	32.1	32.1	32.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	26.1	15.2	15.2	32.6	15.6	15.6	23.2	23.2	23.2	32.1	32.1	32.1
LOS by Move:	C	B	B	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	2	14	14	1	7	7	3	3	3	8	8	8

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	30	976	35	33	1014	75	10	50	12	39	92	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	30	976	35	33	1014	75	10	50	12	39	92	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	976	35	33	1014	75	10	50	12	39	92	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	30	976	35	33	1014	75	10	50	12	39	92	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	30	976	35	33	1014	75	10	50	12	39	92	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	30	976	35	33	1014	75	10	50	12	39	92	20

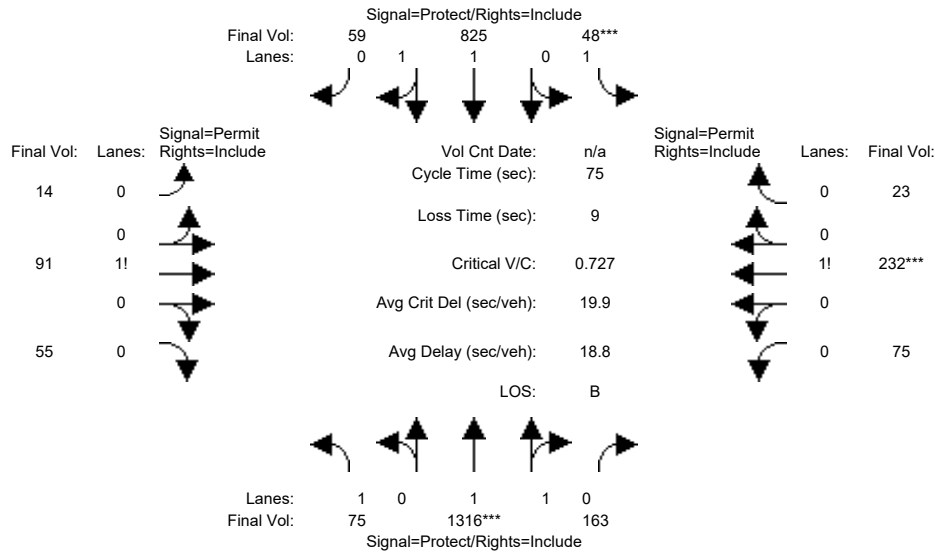
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.95	0.95	0.94	0.94	0.94	0.94	0.94	0.89	0.89	0.89
Lanes:	1.00	1.93	0.07	1.00	1.86	0.14	0.14	0.69	0.17	0.26	0.61	0.13
Final Sat.:	1805	3468	124	1805	3328	246	248	1240	298	436	1028	223

Capacity Analysis Module:												
Vol/Sat:	0.02	0.28	0.28	0.02	0.30	0.30	0.04	0.04	0.04	0.09	0.09	0.09
Crit Moves:	***			***						***		
Green Time:	7.0	29.0	29.0	12.0	34.0	34.0	10.0	10.0	10.0	10.0	10.0	10.0
Volume/Cap:	0.14	0.58	0.58	0.09	0.54	0.54	0.24	0.24	0.24	0.54	0.54	0.54
Uniform Del:	23.8	11.2	11.2	19.5	8.1	8.1	21.7	21.7	21.7	22.9	22.9	22.9
IncrementDel:	0.3	0.5	0.5	0.1	0.3	0.3	0.4	0.4	0.4	2.1	2.1	2.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	24.1	11.7	11.7	19.7	8.4	8.4	22.1	22.1	22.1	24.9	24.9	24.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.1	11.7	11.7	19.7	8.4	8.4	22.1	22.1	22.1	24.9	24.9	24.9
LOS by Move:	C	B	B	B	A	A	C	C	C	C	C	C
HCM2kAvgQ:	1	8	8	1	7	7	1	1	1	3	3	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:

Base Vol:	75	1316	163	48	825	59	14	91	55	75	232	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1316	163	48	825	59	14	91	55	75	232	23
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	1316	163	48	825	59	14	91	55	75	232	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1316	163	48	825	59	14	91	55	75	232	23
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1316	163	48	825	59	14	91	55	75	232	23
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	75	1316	163	48	825	59	14	91	55	75	232	23

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	0.94	0.94	0.92	0.92	0.92	0.88	0.88	0.88
Lanes:	1.00	1.78	0.22	1.00	1.87	0.13	0.09	0.57	0.34	0.23	0.70	0.07
Final Sat.:	1805	3161	391	1805	3335	239	153	994	601	382	1181	117

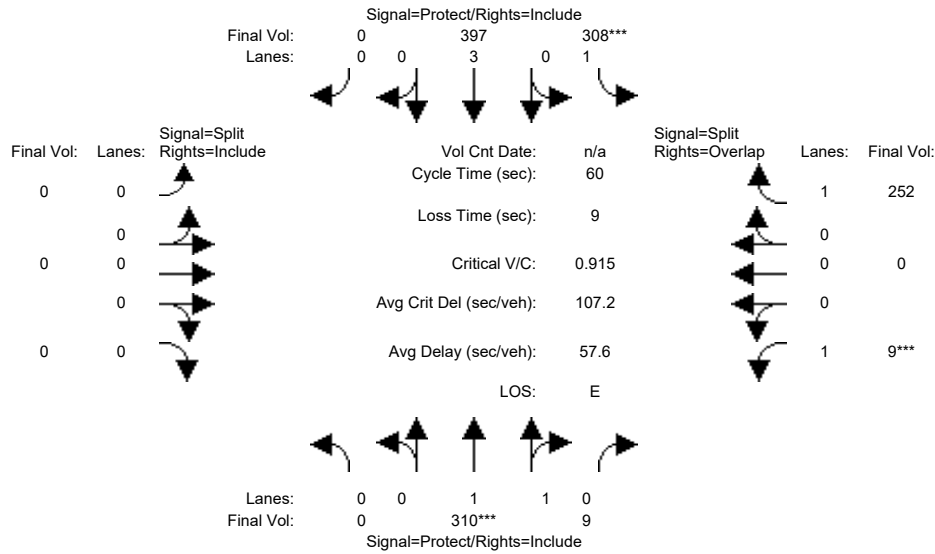
Capacity Analysis Module:

Vol/Sat:	0.04	0.42	0.42	0.03	0.25	0.25	0.09	0.09	0.09	0.20	0.20	0.20
Crit Moves:	****			****						****		
Green Time:	12.9	40.1	40.1	7.0	34.2	34.2	18.9	18.9	18.9	18.9	18.9	18.9
Volume/Cap:	0.24	0.78	0.78	0.28	0.54	0.54	0.36	0.36	0.36	0.78	0.78	0.78
Uniform Del:	26.8	13.9	13.9	31.7	14.8	14.8	23.1	23.1	23.1	26.1	26.1	26.1
IncrementDel:	0.4	2.1	2.1	0.9	0.4	0.4	0.5	0.5	0.5	8.9	8.9	8.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	27.2	16.1	16.1	32.6	15.1	15.1	23.6	23.6	23.6	35.0	35.0	35.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	27.2	16.1	16.1	32.6	15.1	15.1	23.6	23.6	23.6	35.0	35.0	35.0
LOS by Move:	C	B	B	C	B	B	C	C	C	D	D	D
HCM2kAvgQ:	2	16	16	1	8	8	3	3	3	9	9	9

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	310	9	308	397	0	0	0	0	9	0	252
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	310	9	308	397	0	0	0	0	9	0	252
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	310	9	308	397	0	0	0	0	9	0	252
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	310	9	308	397	0	0	0	0	9	0	252
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	310	9	308	397	0	0	0	0	9	0	252
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	310	9	308	397	0	0	0	0	9	0	252

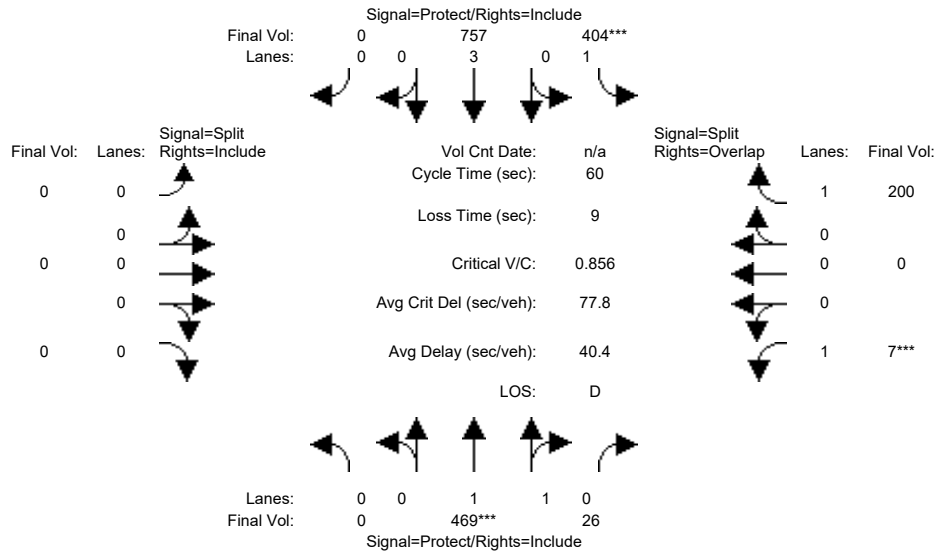
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.34	0.32	0.32	0.32	0.31	0.34	0.34	0.34	0.34	0.32	0.34	0.29
Lanes:	0.00	1.94	0.06	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1188	34	614	1764	0	0	0	0	614	0	549

Capacity Analysis Module:												
Vol/Sat:	0.00	0.26	0.26	0.50	0.23	0.00	0.00	0.00	0.00	0.01	0.00	0.46
Crit Moves:	****			****						****		
Green Time:	0.0	14.0	14.0	27.0	41.0	0.0	0.0	0.0	0.0	10.0	0.0	37.0
Volume/Cap:	0.00	1.12	1.12	1.12	0.33	0.00	0.00	0.00	0.00	0.09	0.00	0.74
Uniform Del:	0.0	23.0	23.0	16.5	3.9	0.0	0.0	0.0	0.0	21.1	0.0	8.2
IncrementDel:	0.0	88.2	88.2	89.1	0.2	0.0	0.0	0.0	0.0	0.4	0.0	8.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	111	111.2	105.6	4.0	0.0	0.0	0.0	0.0	21.5	0.0	16.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	111	111.2	105.6	4.0	0.0	0.0	0.0	0.0	21.5	0.0	16.9
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	B
HCM2kAvgQ:	0	9	9	14	1	0	0	0	0	0	0	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	469	26	404	757	0	0	0	0	7	0	200
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	469	26	404	757	0	0	0	0	7	0	200
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	469	26	404	757	0	0	0	0	7	0	200
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	469	26	404	757	0	0	0	0	7	0	200
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	469	26	404	757	0	0	0	0	7	0	200
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	469	26	404	757	0	0	0	0	7	0	200

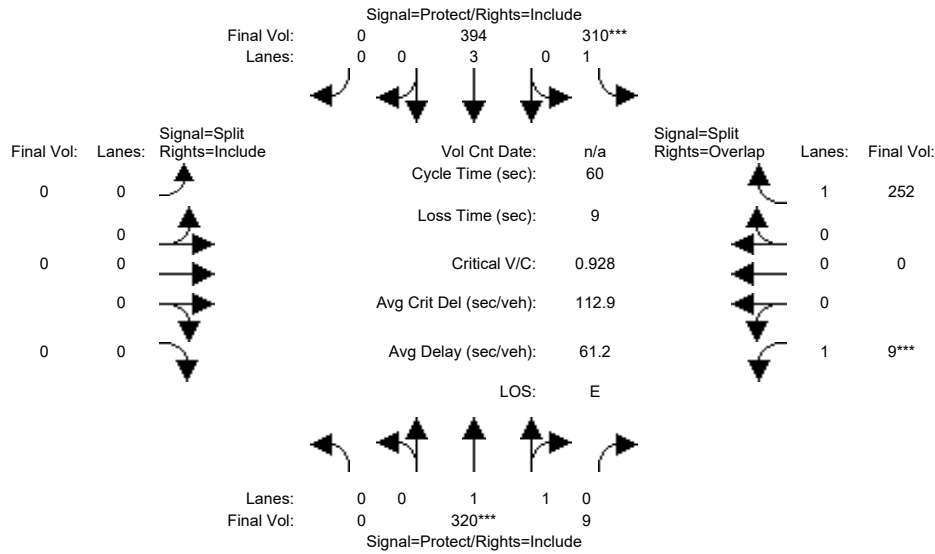
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.50	0.47	0.47	0.48	0.46	0.50	0.50	0.50	0.50	0.48	0.50	0.43
Lanes:	0.00	1.89	0.11	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1707	95	908	2609	0	0	0	0	908	0	812

Capacity Analysis Module:												
Vol/Sat:	0.00	0.27	0.27	0.44	0.29	0.00	0.00	0.00	0.00	0.01	0.00	0.25
Crit Moves:	****			****						****		
Green Time:	0.0	15.7	15.7	25.3	41.0	0.0	0.0	0.0	0.0	10.0	0.0	35.3
Volume/Cap:	0.00	1.05	1.05	1.05	0.42	0.00	0.00	0.00	0.00	0.05	0.00	0.42
Uniform Del:	0.0	22.2	22.2	17.3	4.2	0.0	0.0	0.0	0.0	21.0	0.0	6.7
IncrementDel:	0.0	56.3	56.3	60.7	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	78.4	78.4	78.0	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	78.4	78.4	78.0	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.3
LOS by Move:	A	E	E	E	A	A	A	A	A	C	A	A
HCM2kAvgQ:	0	11	11	15	3	0	0	0	0	0	0	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	320	9	310	394	0	0	0	0	9	0	252
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	320	9	310	394	0	0	0	0	9	0	252
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	320	9	310	394	0	0	0	0	9	0	252
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	320	9	310	394	0	0	0	0	9	0	252
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	320	9	310	394	0	0	0	0	9	0	252
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	320	9	310	394	0	0	0	0	9	0	252

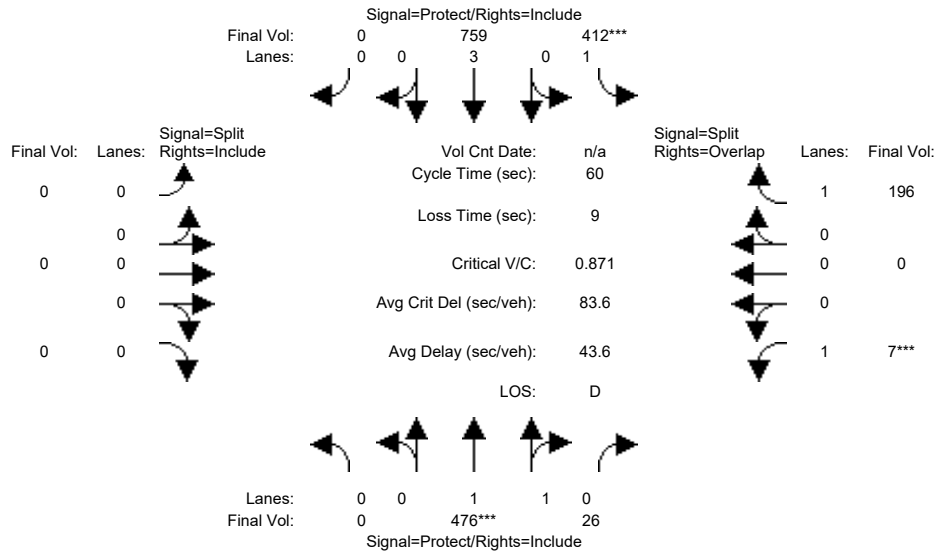
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.34	0.32	0.32	0.32	0.31	0.34	0.34	0.34	0.34	0.32	0.34	0.29
Lanes:	0.00	1.95	0.05	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1189	33	614	1764	0	0	0	0	614	0	549

Capacity Analysis Module:												
Vol/Sat:	0.00	0.27	0.27	0.51	0.22	0.00	0.00	0.00	0.00	0.01	0.00	0.46
Crit Moves:	****			****						****		
Green Time:	0.0	14.3	14.3	26.7	41.0	0.0	0.0	0.0	0.0	10.0	0.0	36.7
Volume/Cap:	0.00	1.13	1.13	1.13	0.33	0.00	0.00	0.00	0.00	0.09	0.00	0.75
Uniform Del:	0.0	22.9	22.9	16.6	3.9	0.0	0.0	0.0	0.0	21.1	0.0	8.3
IncrementDel:	0.0	93.6	93.6	95.1	0.2	0.0	0.0	0.0	0.0	0.4	0.0	9.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	117	116.5	111.8	4.0	0.0	0.0	0.0	0.0	21.5	0.0	17.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	117	116.5	111.8	4.0	0.0	0.0	0.0	0.0	21.5	0.0	17.3
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	B
HCM2kAvgQ:	0	9	9	14	1	0	0	0	0	0	0	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	476	26	412	759	0	0	0	0	7	0	196
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	476	26	412	759	0	0	0	0	7	0	196
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	476	26	412	759	0	0	0	0	7	0	196
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	476	26	412	759	0	0	0	0	7	0	196
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	476	26	412	759	0	0	0	0	7	0	196
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	476	26	412	759	0	0	0	0	7	0	196

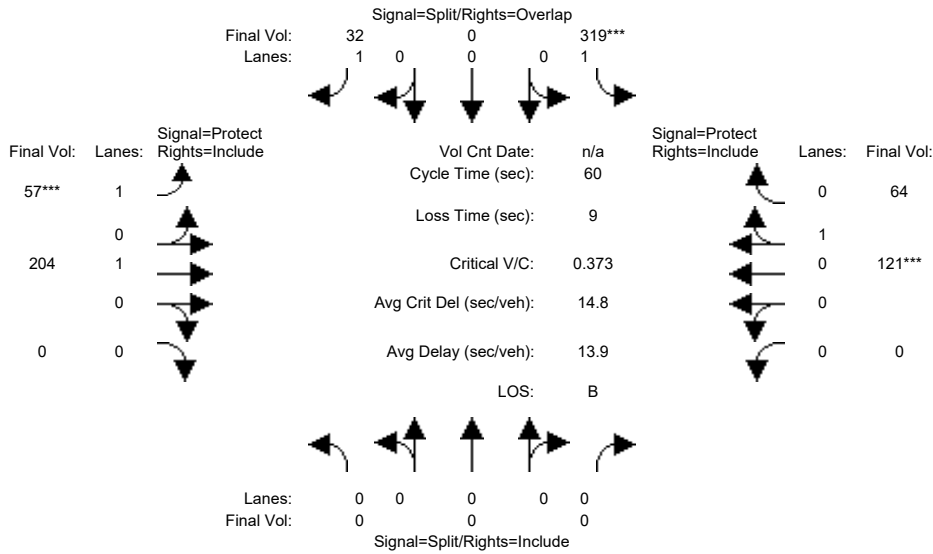
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.50	0.47	0.47	0.48	0.46	0.50	0.50	0.50	0.50	0.48	0.50	0.43
Lanes:	0.00	1.90	0.10	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1708	93	908	2609	0	0	0	0	908	0	812

Capacity Analysis Module:												
Vol/Sat:	0.00	0.28	0.28	0.45	0.29	0.00	0.00	0.00	0.00	0.01	0.00	0.24
Crit Moves:	****			****						****		
Green Time:	0.0	15.6	15.6	25.4	41.0	0.0	0.0	0.0	0.0	10.0	0.0	35.4
Volume/Cap:	0.00	1.07	1.07	1.07	0.43	0.00	0.00	0.00	0.00	0.05	0.00	0.41
Uniform Del:	0.0	22.2	22.2	17.3	4.2	0.0	0.0	0.0	0.0	21.0	0.0	6.6
IncemntDel:	0.0	62.2	62.2	66.4	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	84.4	84.4	83.7	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	84.4	84.4	83.7	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.2
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	A
HCM2kAvgQ:	0	11	11	16	3	0	0	0	0	0	0	2

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	319	0	32	57	204	0	0	121	64
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	319	0	32	57	204	0	0	121	64
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	319	0	32	57	204	0	0	121	64
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	319	0	32	57	204	0	0	121	64
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	319	0	32	57	204	0	0	121	64
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	319	0	32	57	204	0	0	121	64

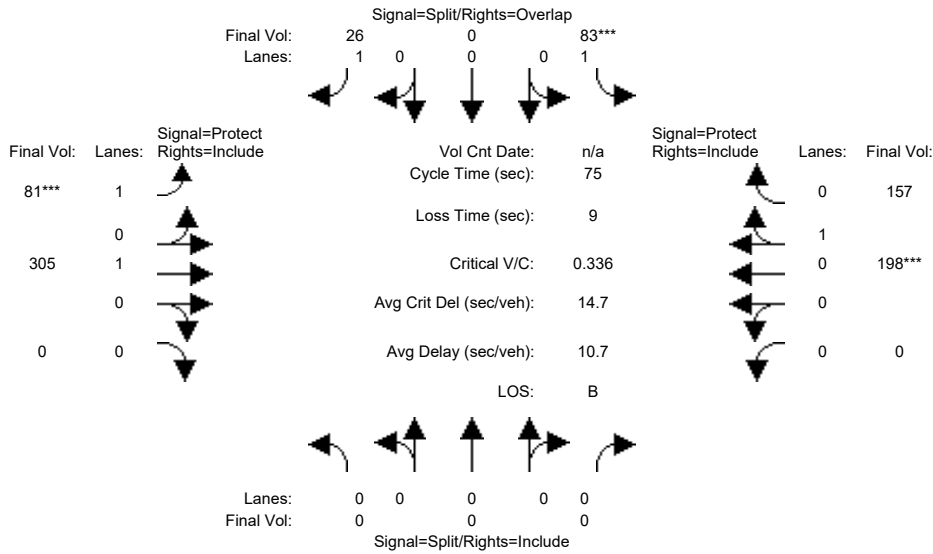
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.93	0.93
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.65	0.35
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	1161	614

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.18	0.00	0.02	0.03	0.11	0.00	0.00	0.10	0.10
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	27.9	0.0	34.9	7.0	23.1	0.0	0.0	16.1	16.1
Volume/Cap:	0.00	0.00	0.00	0.39	0.00	0.03	0.28	0.28	0.00	0.00	0.39	0.39
Uniform Del:	0.0	0.0	0.0	10.5	0.0	5.4	24.2	12.7	0.0	0.0	17.9	17.9
IncrementDel:	0.0	0.0	0.0	0.3	0.0	0.0	0.7	0.2	0.0	0.0	0.5	0.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	10.8	0.0	5.4	24.9	12.9	0.0	0.0	18.4	18.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	10.8	0.0	5.4	24.9	12.9	0.0	0.0	18.4	18.4
LOS by Move:	A	A	A	B	A	A	C	B	A	A	B	B
HCM2kAvgQ:	0	0	0	4	0	0	1	3	0	0	3	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	83	0	26	81	305	0	0	198	157
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	83	0	26	81	305	0	0	198	157
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	83	0	26	81	305	0	0	198	157
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	83	0	26	81	305	0	0	198	157
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	83	0	26	81	305	0	0	198	157
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	83	0	26	81	305	0	0	198	157

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.56	0.44
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	976	774

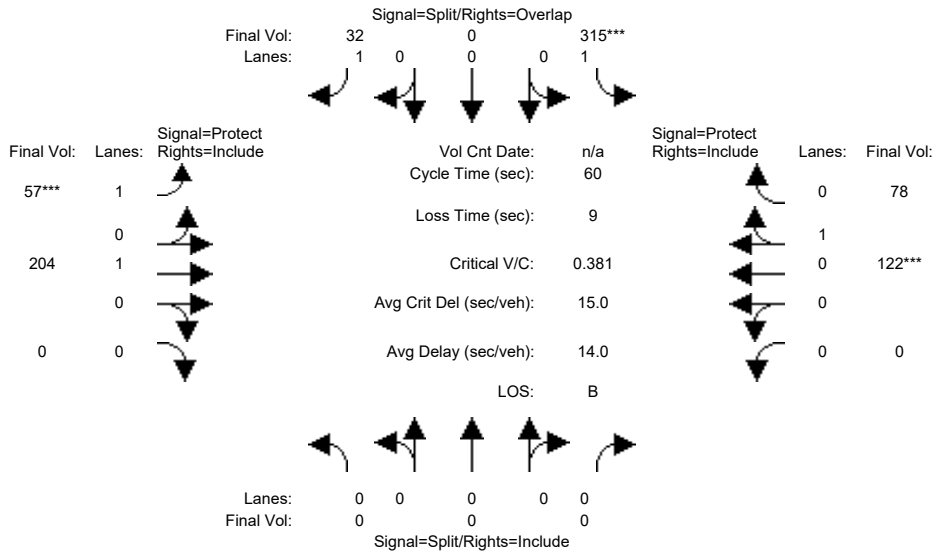
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.05	0.00	0.02	0.05	0.16	0.00	0.00	0.20	0.20
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	10.5	0.0	20.7	10.2	55.5	0.0	0.0	45.3	45.3
Volume/Cap:	0.00	0.00	0.00	0.34	0.00	0.06	0.34	0.22	0.00	0.00	0.34	0.34
Uniform Del:	0.0	0.0	0.0	29.1	0.0	20.0	29.3	3.0	0.0	0.0	7.4	7.4
IncrementDel:	0.0	0.0	0.0	0.8	0.0	0.1	0.8	0.1	0.0	0.0	0.2	0.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	29.9	0.0	20.0	30.1	3.1	0.0	0.0	7.6	7.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	29.9	0.0	20.0	30.1	3.1	0.0	0.0	7.6	7.6
LOS by Move:	A	A	A	C	A	C	C	A	A	A	A	A
HCM2kAvgQ:	0	0	0	2	0	0	2	2	0	0	4	4

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	315	0	32	57	204	0	0	122	78
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	315	0	32	57	204	0	0	122	78
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	315	0	32	57	204	0	0	122	78
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	315	0	32	57	204	0	0	122	78
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	315	0	32	57	204	0	0	122	78
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	315	0	32	57	204	0	0	122	78

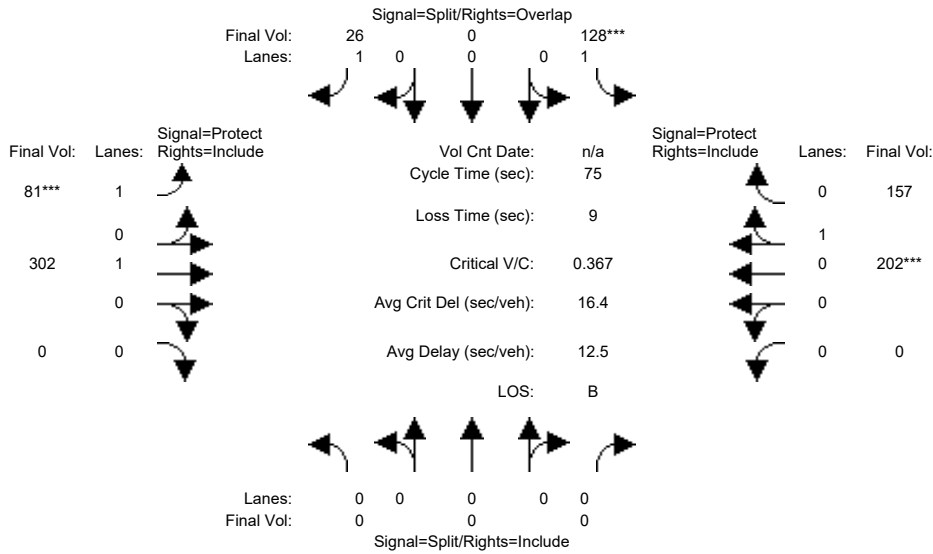
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.93	0.93
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.61	0.39
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	1076	688

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.18	0.00	0.02	0.03	0.11	0.00	0.00	0.11	0.11
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	26.9	0.0	33.9	7.0	24.1	0.0	0.0	17.1	17.1
Volume/Cap:	0.00	0.00	0.00	0.40	0.00	0.04	0.28	0.27	0.00	0.00	0.40	0.40
Uniform Del:	0.0	0.0	0.0	11.1	0.0	5.8	24.2	12.0	0.0	0.0	17.3	17.3
IncrementDel:	0.0	0.0	0.0	0.3	0.0	0.0	0.7	0.2	0.0	0.0	0.5	0.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	11.5	0.0	5.8	24.9	12.2	0.0	0.0	17.8	17.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	11.5	0.0	5.8	24.9	12.2	0.0	0.0	17.8	17.8
LOS by Move:	A	A	A	B	A	A	C	B	A	A	B	B
HCM2kAvgQ:	0	0	0	4	0	0	1	3	0	0	3	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	128	0	26	81	302	0	0	202	157
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	128	0	26	81	302	0	0	202	157
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	128	0	26	81	302	0	0	202	157
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	128	0	26	81	302	0	0	202	157
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	128	0	26	81	302	0	0	202	157
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	128	0	26	81	302	0	0	202	157

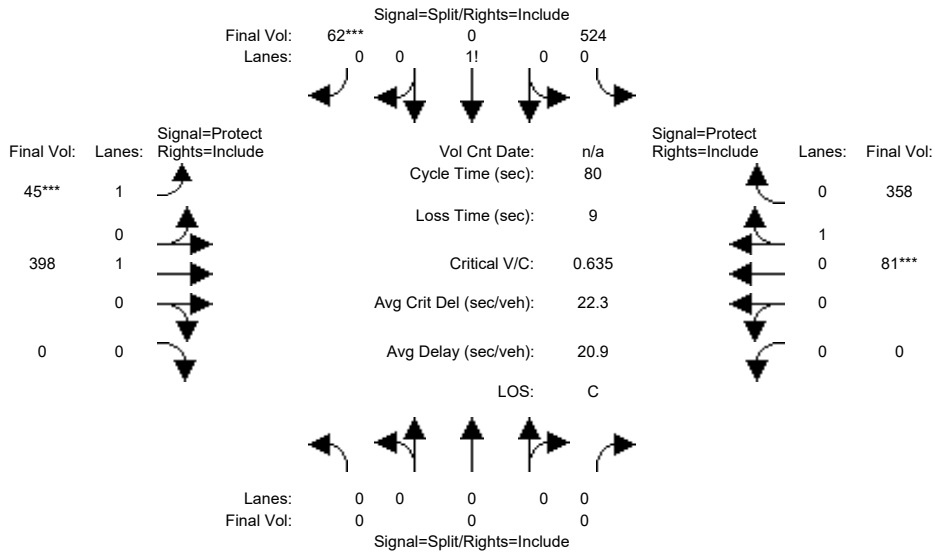
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.56	0.44
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	986	766

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.07	0.00	0.02	0.05	0.16	0.00	0.00	0.20	0.20
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	14.8	0.0	24.1	9.4	51.2	0.0	0.0	41.9	41.9
Volume/Cap:	0.00	0.00	0.00	0.37	0.00	0.05	0.37	0.24	0.00	0.00	0.37	0.37
Uniform Del:	0.0	0.0	0.0	26.1	0.0	17.5	30.1	4.5	0.0	0.0	9.2	9.2
IncrementDel:	0.0	0.0	0.0	0.7	0.0	0.0	1.0	0.1	0.0	0.0	0.2	0.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	26.7	0.0	17.6	31.1	4.6	0.0	0.0	9.4	9.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	26.7	0.0	17.6	31.1	4.6	0.0	0.0	9.4	9.4
LOS by Move:	A	A	A	C	A	B	C	A	A	A	A	A
HCM2kAvgQ:	0	0	0	3	0	0	2	3	0	0	5	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	524	0	62	45	398	0	0	81	358
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	524	0	62	45	398	0	0	81	358
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	524	0	62	45	398	0	0	81	358
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	524	0	62	45	398	0	0	81	358
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	524	0	62	45	398	0	0	81	358
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	524	0	62	45	398	0	0	81	358

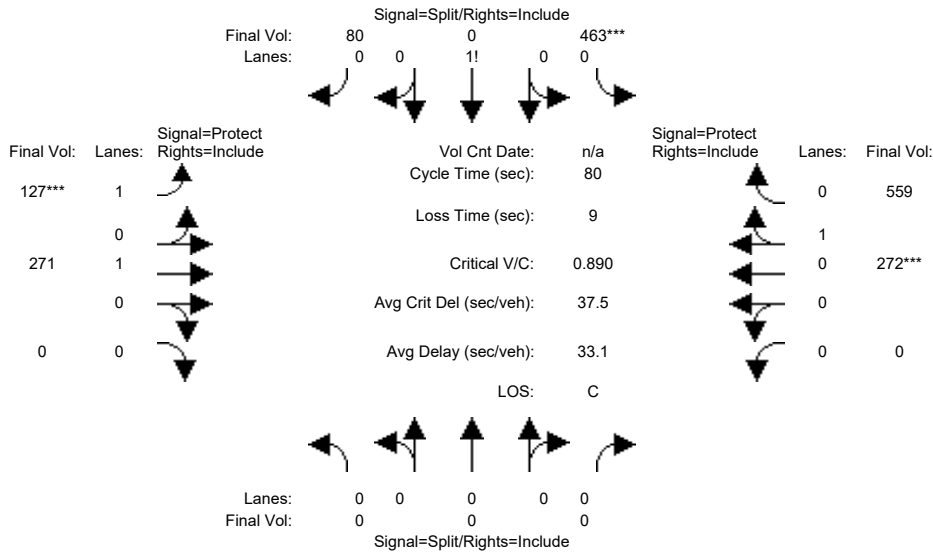
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.89	0.00	0.11	1.00	1.00	0.00	0.00	0.18	0.82
Final Sat.:	0	0	0	1699	0	201	1900	1900	0	0	351	1549

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.31	0.00	0.31	0.02	0.21	0.00	0.00	0.23	0.23
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	36.6	0.0	36.6	7.0	34.4	0.0	0.0	27.4	27.4
Volume/Cap:	0.00	0.00	0.00	0.67	0.00	0.67	0.27	0.49	0.00	0.00	0.67	0.67
Uniform Del:	0.0	0.0	0.0	17.0	0.0	17.0	34.1	16.4	0.0	0.0	22.5	22.5
IncrementDel:	0.0	0.0	0.0	2.1	0.0	2.1	0.9	0.5	0.0	0.0	2.8	2.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	19.1	0.0	19.1	35.0	16.9	0.0	0.0	25.3	25.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	19.1	0.0	19.1	35.0	16.9	0.0	0.0	25.3	25.3
LOS by Move:	A	A	A	B	A	B	C	B	A	A	C	C
HCM2kAvgQ:	0	0	0	12	0	12	1	7	0	0	10	10

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	463	0	80	127	271	0	0	272	559
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	463	0	80	127	271	0	0	272	559
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	463	0	80	127	271	0	0	272	559
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	463	0	80	127	271	0	0	272	559
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	463	0	80	127	271	0	0	272	559
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	463	0	80	127	271	0	0	272	559

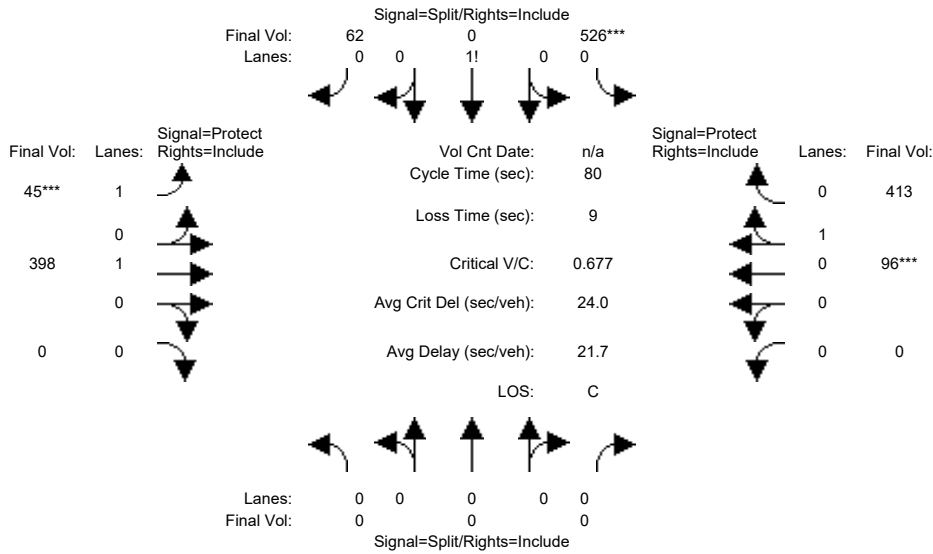
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.85	0.00	0.15	1.00	1.00	0.00	0.00	0.33	0.67
Final Sat.:	0	0	0	1620	0	280	1900	1900	0	0	622	1278

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.29	0.00	0.29	0.07	0.14	0.00	0.00	0.44	0.44
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	25.3	0.0	25.3	7.0	45.7	0.0	0.0	38.7	38.7
Volume/Cap:	0.00	0.00	0.00	0.90	0.00	0.90	0.76	0.25	0.00	0.00	0.90	0.90
Uniform Del:	0.0	0.0	0.0	26.2	0.0	26.2	35.7	8.6	0.0	0.0	18.9	18.9
IncrementDel:	0.0	0.0	0.0	17.1	0.0	17.1	18.7	0.1	0.0	0.0	12.2	12.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	43.3	0.0	43.3	54.4	8.7	0.0	0.0	31.1	31.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	43.3	0.0	43.3	54.4	8.7	0.0	0.0	31.1	31.1
LOS by Move:	A	A	A	D	A	D	D	A	A	A	C	C
HCM2kAvgQ:	0	0	0	17	0	17	5	3	0	0	23	23

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	526	0	62	45	398	0	0	96	413
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	526	0	62	45	398	0	0	96	413
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	526	0	62	45	398	0	0	96	413
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	526	0	62	45	398	0	0	96	413
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	526	0	62	45	398	0	0	96	413
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	526	0	62	45	398	0	0	96	413

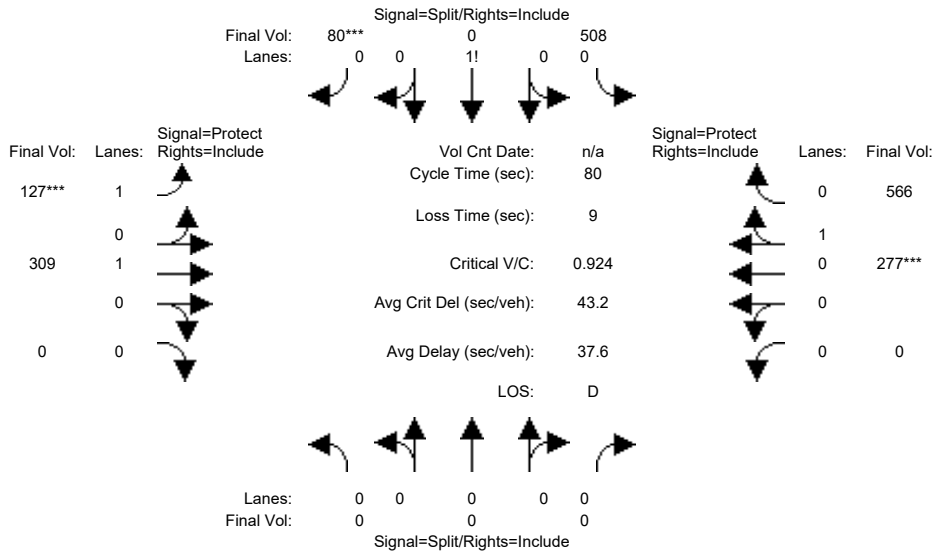
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.89	0.00	0.11	1.00	1.00	0.00	0.00	0.19	0.81
Final Sat.:	0	0	0	1700	0	200	1900	1900	0	0	358	1542

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.31	0.00	0.31	0.02	0.21	0.00	0.00	0.27	0.27
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	34.3	0.0	34.3	7.0	36.7	0.0	0.0	29.7	29.7
Volume/Cap:	0.00	0.00	0.00	0.72	0.00	0.72	0.27	0.46	0.00	0.00	0.72	0.72
Uniform Del:	0.0	0.0	0.0	18.9	0.0	18.9	34.1	14.8	0.0	0.0	21.6	21.6
IncrementDel:	0.0	0.0	0.0	3.2	0.0	3.2	0.9	0.4	0.0	0.0	3.7	3.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	22.1	0.0	22.1	35.0	15.2	0.0	0.0	25.3	25.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	22.1	0.0	22.1	35.0	15.2	0.0	0.0	25.3	25.3
LOS by Move:	A	A	A	C	A	C	C	B	A	A	C	C
HCM2kAvgQ:	0	0	0	13	0	13	1	7	0	0	12	12

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	508	0	80	127	309	0	0	277	566
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	508	0	80	127	309	0	0	277	566
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	508	0	80	127	309	0	0	277	566
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	508	0	80	127	309	0	0	277	566
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	508	0	80	127	309	0	0	277	566
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	508	0	80	127	309	0	0	277	566

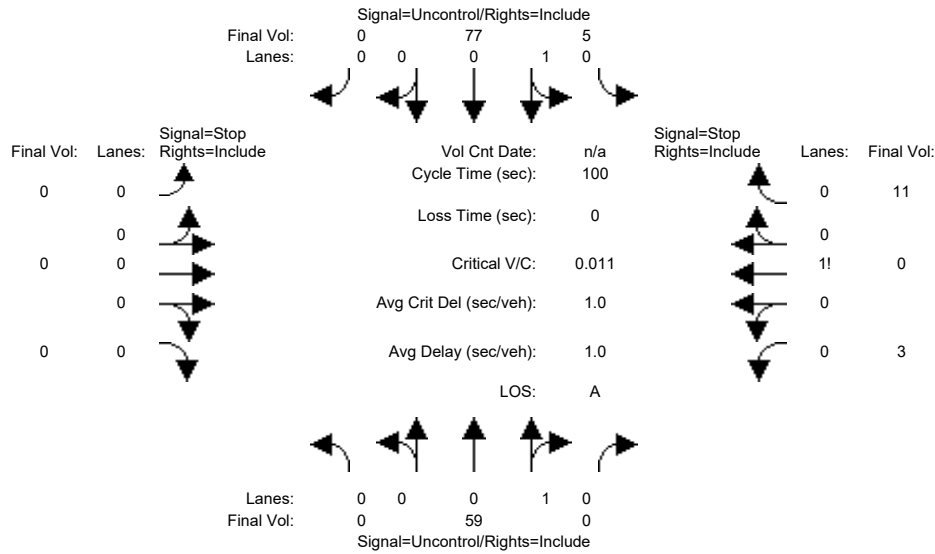
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.86	0.00	0.14	1.00	1.00	0.00	0.00	0.33	0.67
Final Sat.:	0	0	0	1641	0	259	1900	1900	0	0	624	1276

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.31	0.00	0.31	0.07	0.16	0.00	0.00	0.44	0.44
Crit Moves:				****		****	****			****		****
Green Time:	0.0	0.0	0.0	26.3	0.0	26.3	7.0	44.7	0.0	0.0	37.7	37.7
Volume/Cap:	0.00	0.00	0.00	0.94	0.00	0.94	0.76	0.29	0.00	0.00	0.94	0.94
Uniform Del:	0.0	0.0	0.0	26.1	0.0	26.1	35.7	9.3	0.0	0.0	20.1	20.1
IncrcmntDel:	0.0	0.0	0.0	22.6	0.0	22.6	18.7	0.2	0.0	0.0	17.6	17.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	48.7	0.0	48.7	54.4	9.5	0.0	0.0	37.7	37.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	48.7	0.0	48.7	54.4	9.5	0.0	0.0	37.7	37.7
LOS by Move:	A	A	A	D	A	D	D	A	A	A	D	D
HCM2kAvgQ:	0	0	0	19	0	19	5	4	0	0	25	25

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background AM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table for Critical Gap Module with 12 columns and 2 rows of data for Critical Gp and FollowUpTim.

Table for Capacity Module with 12 columns and 4 rows of data for Cnflct Vol, Potent Cap., Move Cap., and Volume/Cap.

Table for Level Of Service Module with 12 columns and 10 rows of data including 2Way95thQ, Control Del, LOS by Move, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	8.8

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=14]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=155]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11

Major Street Volume: 141  
 Minor Approach Volume: 14  
 Minor Approach Volume Threshold: 742

SIGNAL WARRANT DISCLAIMER

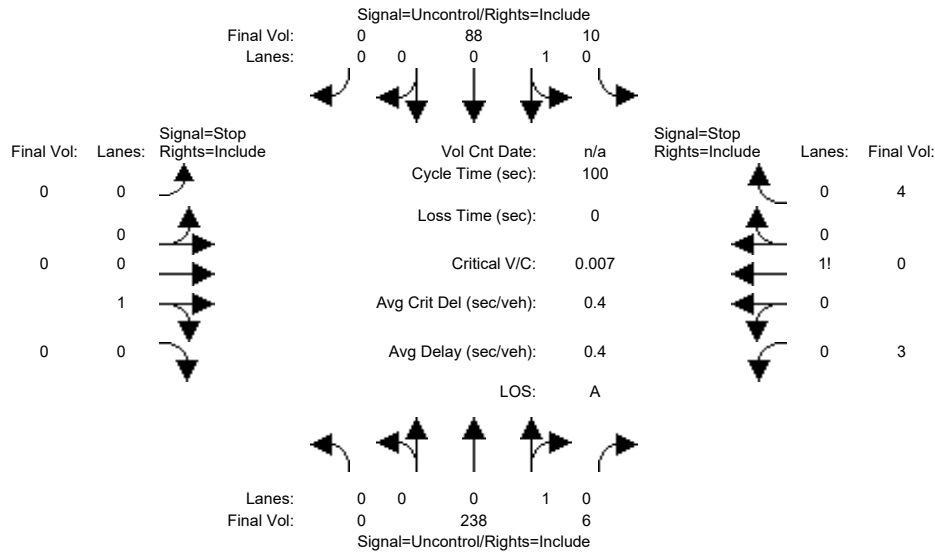
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background PM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table for Critical Gap Module with 12 columns and 2 rows of data for Critical Gap and FollowUpTime.

Table for Capacity Module with 12 columns and 4 rows of data for Cnflct Vol, Potent Cap., Move Cap., and Volume/Cap.

Table for Level Of Service Module with 12 columns and 10 rows of data including 2Way95thQ, Control Del, LOS by Move, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.0

Approach[westbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=0.0]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=7]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=349]  
FAIL - Total volume less than 650 for intersection  
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #32 (51) East Bayshore Road and Holland Street  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4

Major Street Volume: 342  
Minor Approach Volume: 7  
Minor Approach Volume Threshold: 506

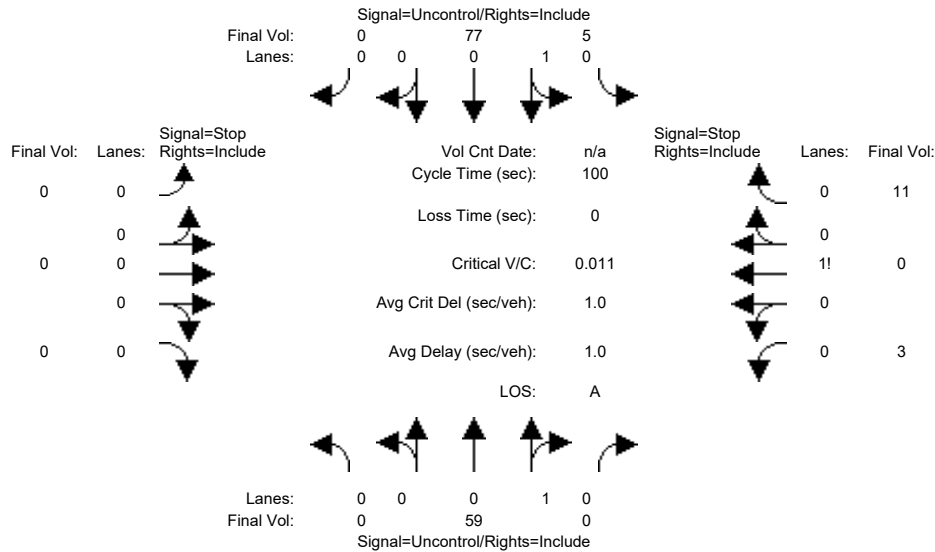
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background+Project AM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume).

Table with 12 columns representing movements and rows for Critical Gap Module (Critical Gp, FollowUpTim).

Table with 12 columns representing movements and rows for Capacity Module (Cnflct Vol, Potent Cap., Move Cap., Volume/Cap.).

Table with 12 columns representing movements and rows for Level Of Service Module (2Way95thQ, Control Del, LOS by Move, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS).

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	8.8

Approach[westbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=0.0]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=14]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=155]  
FAIL - Total volume less than 650 for intersection  
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #32 (51) East Bayshore Road and Holland Street  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11

Major Street Volume: 141  
Minor Approach Volume: 14  
Minor Approach Volume Threshold: 742

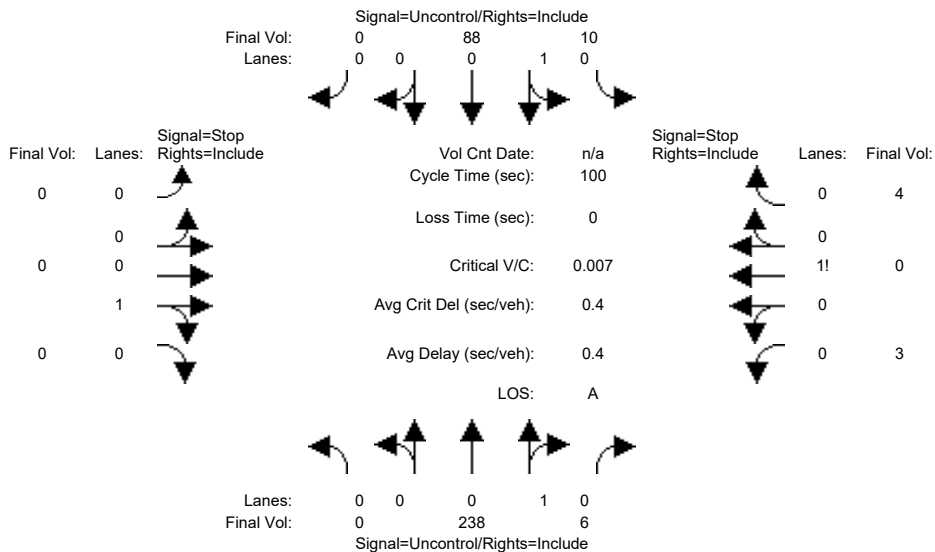
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background+Project PM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table for Critical Gap Module with 12 columns and 2 rows of data for Critical Gap and FollowUpTim.

Table for Capacity Module with 12 columns and 4 rows of data for Cnflct Vol, Potent Cap., Move Cap., and Volume/Cap.

Table for Level Of Service Module with 12 columns and 10 rows of data including 2Way95thQ, Control Del, LOS by Move, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*
Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	10.0

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=7]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=349]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4

Major Street Volume: 342  
 Minor Approach Volume: 7  
 Minor Approach Volume Threshold: 506

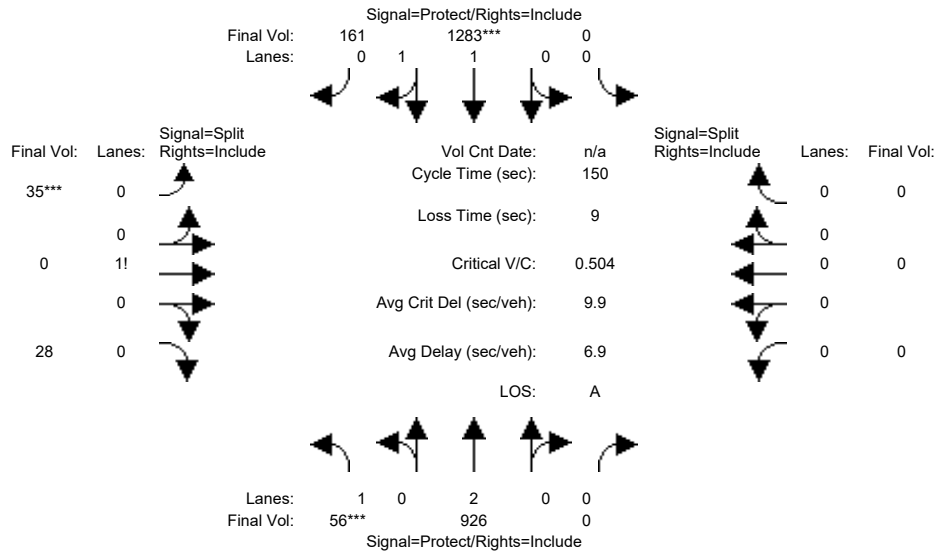
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive

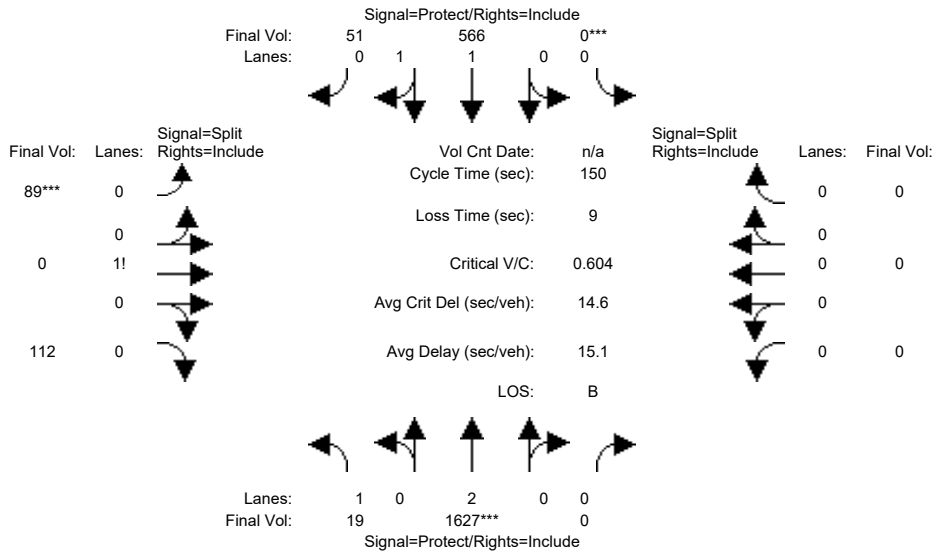


Street Name:	University Avenue						Kavanaugh Drive					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	56	926	0	0	1283	161	35	0	28	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	56	926	0	0	1283	161	35	0	28	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	56	926	0	0	1283	161	35	0	28	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	56	926	0	0	1283	161	35	0	28	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	56	926	0	0	1283	161	35	0	28	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	56	926	0	0	1283	161	35	0	28	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.91	1.00	0.91	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.78	0.22	0.56	0.00	0.44	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3153	396	965	0	772	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.03	0.26	0.00	0.00	0.41	0.41	0.04	0.00	0.04	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	9.2	130	0.0	0.0	121	121.0	10.8	0.0	10.8	0.0	0.0	0.0
Volume/Cap:	0.50	0.30	0.00	0.00	0.50	0.50	0.50	0.00	0.50	0.00	0.00	0.00
Uniform Del:	68.2	1.8	0.0	0.0	4.7	4.7	67.0	0.0	67.0	0.0	0.0	0.0
IncrementDel:	3.7	0.1	0.0	0.0	0.1	0.1	3.3	0.0	3.3	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	71.9	1.8	0.0	0.0	4.9	4.9	70.3	0.0	70.3	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	71.9	1.8	0.0	0.0	4.9	4.9	70.3	0.0	70.3	0.0	0.0	0.0
LOS by Move:	E	A	A	A	A	A	E	A	E	A	A	A
HCM2kAvgQ:	3	4	0	0	11	11	3	0	3	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	19	1627	0	0	566	51	89	0	112	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	19	1627	0	0	566	51	89	0	112	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	19	1627	0	0	566	51	89	0	112	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	19	1627	0	0	566	51	89	0	112	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	19	1627	0	0	566	51	89	0	112	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	19	1627	0	0	566	51	89	0	112	0	0	0

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.94	0.94	0.90	1.00	0.90	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.83	0.17	0.44	0.00	0.56	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3272	295	761	0	958	0	0	0

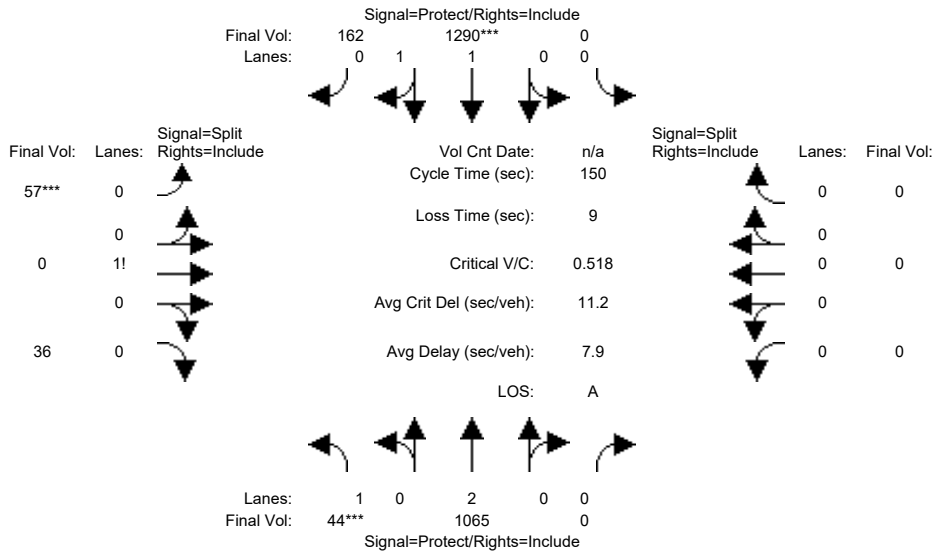
Capacity Analysis Module:												
Vol/Sat:	0.01	0.45	0.00	0.00	0.17	0.17	0.12	0.00	0.12	0.00	0.00	0.00
Crit Moves:	****			****			****					
Green Time:	23.8	112	0.0	0.0	88.2	88.2	29.0	0.0	29.0	0.0	0.0	0.0
Volume/Cap:	0.07	0.60	0.00	0.00	0.29	0.29	0.60	0.00	0.60	0.00	0.00	0.00
Uniform Del:	53.7	8.8	0.0	0.0	15.4	15.4	55.2	0.0	55.2	0.0	0.0	0.0
IncrementDel:	0.1	0.4	0.0	0.0	0.1	0.1	3.1	0.0	3.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	53.8	9.2	0.0	0.0	15.5	15.5	58.4	0.0	58.4	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	53.8	9.2	0.0	0.0	15.5	15.5	58.4	0.0	58.4	0.0	0.0	0.0
LOS by Move:	D	A	A	A	B	B	E	A	E	A	A	A
HCM2kAvgQ:	1	18	0	0	7	7	9	0	9	0	0	0

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	44	1065	0	0	1290	162	57	0	36	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	44	1065	0	0	1290	162	57	0	36	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	44	1065	0	0	1290	162	57	0	36	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	44	1065	0	0	1290	162	57	0	36	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	44	1065	0	0	1290	162	57	0	36	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	44	1065	0	0	1290	162	57	0	36	0	0	0

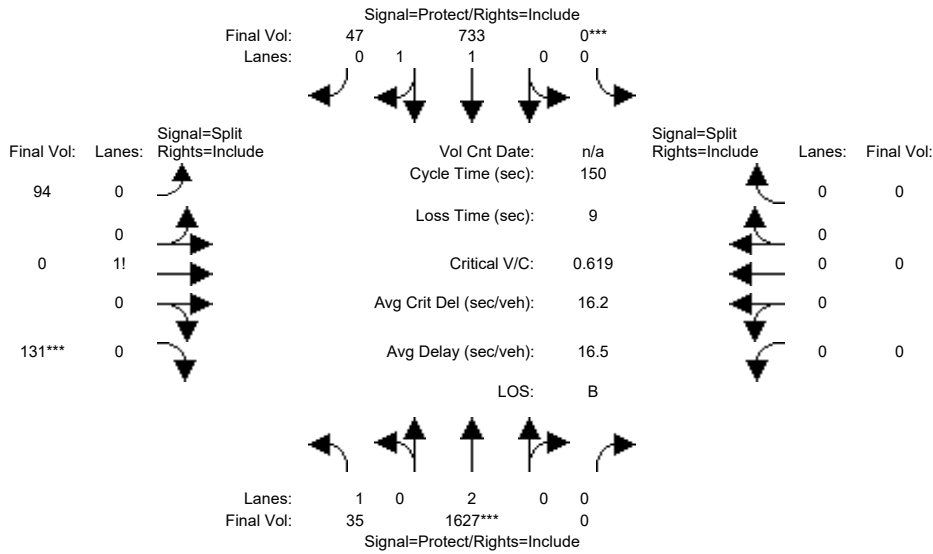
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.92	1.00	0.92	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.78	0.22	0.61	0.00	0.39	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3153	396	1071	0	676	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.02	0.30	0.00	0.00	0.41	0.41	0.05	0.00	0.05	0.00	0.00	0.00
Crit Moves:	***			***			***					
Green Time:	7.1	126	0.0	0.0	119	118.5	15.4	0.0	15.4	0.0	0.0	0.0
Volume/Cap:	0.52	0.35	0.00	0.00	0.52	0.52	0.52	0.00	0.52	0.00	0.00	0.00
Uniform Del:	69.8	2.8	0.0	0.0	5.6	5.6	63.8	0.0	63.8	0.0	0.0	0.0
IncrementDel:	5.5	0.1	0.0	0.0	0.2	0.2	2.6	0.0	2.6	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	75.3	2.9	0.0	0.0	5.8	5.8	66.4	0.0	66.4	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	75.3	2.9	0.0	0.0	5.8	5.8	66.4	0.0	66.4	0.0	0.0	0.0
LOS by Move:	E	A	A	A	A	A	E	A	E	A	A	A
HCM2kAvgQ:	3	6	0	0	12	12	5	0	5	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	35	1627	0	0	733	47	94	0	131	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	35	1627	0	0	733	47	94	0	131	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	35	1627	0	0	733	47	94	0	131	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	35	1627	0	0	733	47	94	0	131	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	35	1627	0	0	733	47	94	0	131	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	35	1627	0	0	733	47	94	0	131	0	0	0

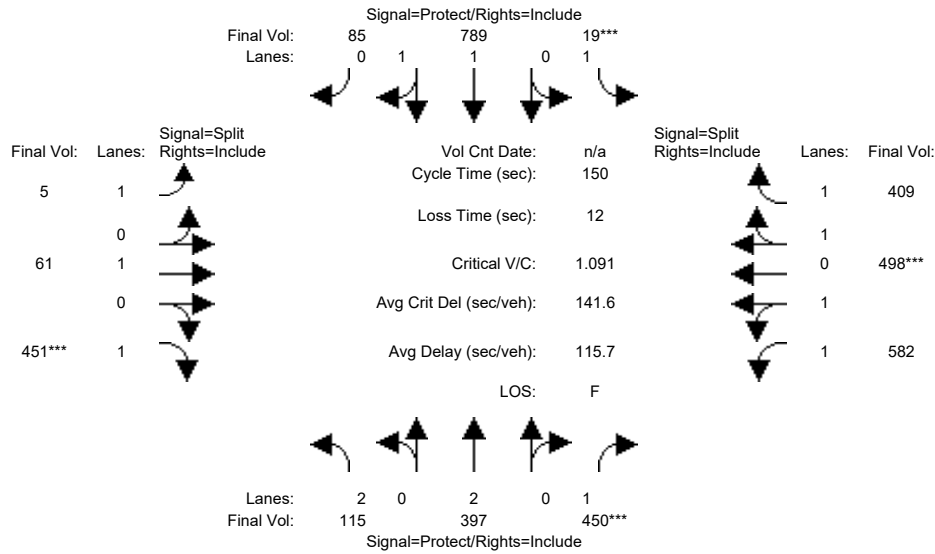
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.94	0.94	0.90	1.00	0.90	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.88	0.12	0.42	0.00	0.58	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3362	216	716	0	998	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.02	0.45	0.00	0.00	0.22	0.22	0.13	0.00	0.13	0.00	0.00	0.00
Crit Moves:	****			****			****			****		
Green Time:	19.3	109	0.0	0.0	90.0	90.0	31.8	0.0	31.8	0.0	0.0	0.0
Volume/Cap:	0.15	0.62	0.00	0.00	0.36	0.36	0.62	0.00	0.62	0.00	0.00	0.00
Uniform Del:	58.1	10.1	0.0	0.0	15.4	15.4	53.6	0.0	53.6	0.0	0.0	0.0
IncrementDel:	0.3	0.5	0.0	0.0	0.1	0.1	3.2	0.0	3.2	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	58.4	10.6	0.0	0.0	15.5	15.5	56.9	0.0	56.9	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	58.4	10.6	0.0	0.0	15.5	15.5	56.9	0.0	56.9	0.0	0.0	0.0
LOS by Move:	E	B	A	A	B	B	E	A	E	A	A	A
HCM2kAvgQ:	1	19	0	0	9	9	10	0	10	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:												
Base Vol:	115	397	450	19	789	85	5	61	451	582	498	409
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	115	397	450	19	789	85	5	61	451	582	498	409
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	115	397	450	19	789	85	5	61	451	582	498	409
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	115	397	450	19	789	85	5	61	451	582	498	409
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	115	397	450	19	789	85	5	61	451	582	498	409
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	115	397	450	19	789	85	5	61	451	582	498	409

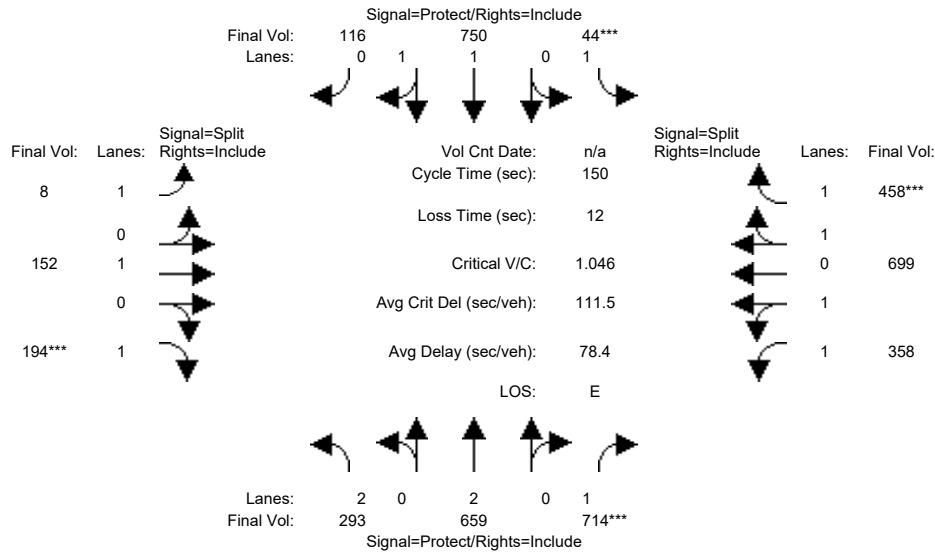
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.75	0.67	0.75	0.73	0.73	0.75	0.79	0.67	0.70	0.70	0.70
Lanes:	2.00	2.00	1.00	1.00	1.81	0.19	1.00	1.00	1.00	1.56	1.34	1.10
Final Sat.:	2749	2834	1268	1417	2520	271	1417	1492	1268	2084	1783	1465

Capacity Analysis Module:												
Vol/Sat:	0.04	0.14	0.35	0.01	0.31	0.31	0.00	0.04	0.36	0.28	0.28	0.28
Crit Moves:			****	****					****	****	****	
Green Time:	10.0	45.9	45.9	10.0	45.9	45.9	46.0	46.0	46.0	36.1	36.1	36.1
Volume/Cap:	0.63	0.46	1.16	0.20	1.02	1.02	0.01	0.13	1.16	1.16	1.16	1.16
Uniform Del:	68.2	42.0	52.1	66.2	52.1	52.1	36.2	37.6	52.0	56.9	56.9	56.9
IncrementDel:	6.7	0.4	97.0	1.1	36.8	36.8	0.0	0.1	97.0	81.1	81.1	81.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	74.9	42.4	149.1	67.3	88.9	88.9	36.2	37.7	149.0	138.0	138	138.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	74.9	42.4	149.1	67.3	88.9	88.9	36.2	37.7	149.0	138.0	138	138.0
LOS by Move:	E	D	F	E	F	F	D	D	F	F	F	F
HCM2kAvgQ:	4	8	31	1	27	27	0	2	31	27	27	27

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	11	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:

Base Vol:	293	659	714	44	750	116	8	152	194	358	699	458
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	293	659	714	44	750	116	8	152	194	358	699	458
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	293	659	714	44	750	116	8	152	194	358	699	458
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	293	659	714	44	750	116	8	152	194	358	699	458
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	293	659	714	44	750	116	8	152	194	358	699	458
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	293	659	714	44	750	116	8	152	194	358	699	458

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.78	0.80	0.72	0.80	0.79	0.79	0.80	0.85	0.72	0.76	0.76	0.76
Lanes:	2.00	2.00	1.00	1.00	1.73	0.27	1.00	1.00	1.00	1.00	1.81	1.19
Final Sat.:	2959	3050	1365	1525	2589	400	1525	1606	1365	1439	2608	1709

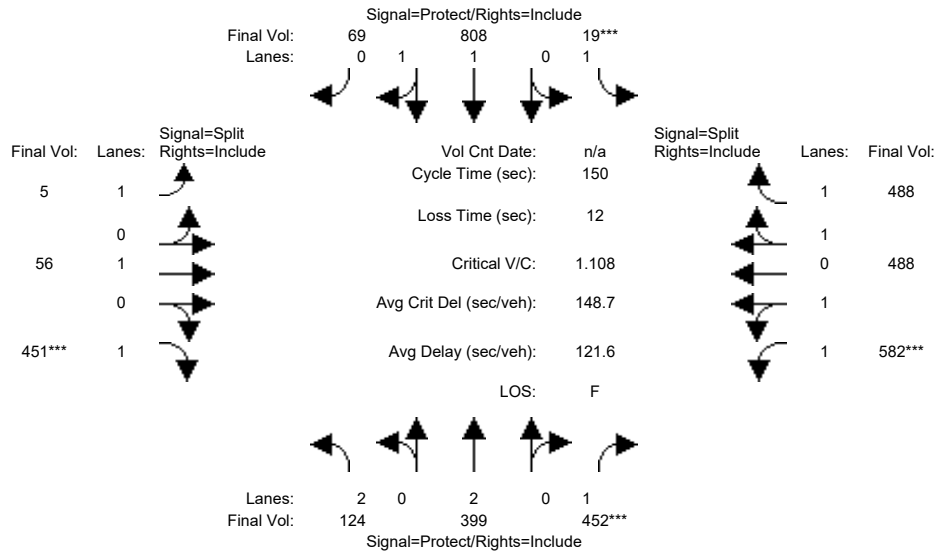
Capacity Analysis Module:

Vol/Sat:	0.10	0.22	0.52	0.03	0.29	0.29	0.01	0.09	0.14	0.25	0.27	0.27
Crit Moves:			****	****					****			****
Green Time:	20.8	71.8	71.8	10.0	60.9	60.9	19.5	19.5	19.5	36.8	36.8	36.8
Volume/Cap:	0.71	0.45	1.09	0.43	0.71	0.71	0.04	0.73	1.09	1.02	1.09	1.09
Uniform Del:	61.7	26.0	39.1	67.3	37.2	37.2	57.1	62.7	65.3	56.6	56.6	56.6
IncrcmntDel:	5.8	0.2	63.6	2.9	2.0	2.0	0.1	12.2	94.9	27.2	54.0	54.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	67.6	26.3	102.7	70.2	39.3	39.3	57.2	74.9	160.1	83.8	111	110.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	67.6	26.3	102.7	70.2	39.3	39.3	57.2	74.9	160.1	83.8	111	110.7
LOS by Move:	E	C	F	E	D	D	E	E	F	F	F	F
HCM2kAvgQ:	8	10	44	2	18	18	0	8	14	23	27	27

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:

Base Vol:	124	399	452	19	808	69	5	56	451	582	488	488
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	124	399	452	19	808	69	5	56	451	582	488	488
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	124	399	452	19	808	69	5	56	451	582	488	488
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	124	399	452	19	808	69	5	56	451	582	488	488
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	124	399	452	19	808	69	5	56	451	582	488	488
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	124	399	452	19	808	69	5	56	451	582	488	488

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.75	0.67	0.75	0.74	0.74	0.75	0.79	0.67	0.70	0.70	0.70
Lanes:	2.00	2.00	1.00	1.00	1.84	0.16	1.00	1.00	1.00	1.50	1.25	1.25
Final Sat.:	2749	2834	1268	1417	2580	220	1417	1492	1268	1981	1661	1661

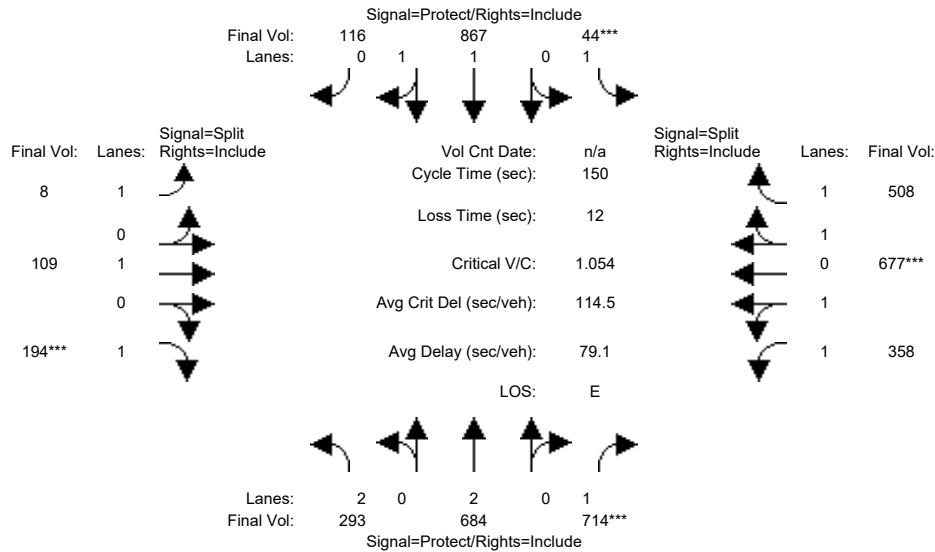
Capacity Analysis Module:

Vol/Sat:	0.05	0.14	0.36	0.01	0.31	0.31	0.00	0.04	0.36	0.29	0.29	0.29
Crit Moves:			****	****					****	****		
Green Time:	10.0	45.4	45.4	10.0	45.4	45.4	45.3	45.3	45.3	37.4	37.4	37.4
Volume/Cap:	0.68	0.47	1.18	0.20	1.04	1.04	0.01	0.12	1.18	1.18	1.18	1.18
Uniform Del:	68.4	42.5	52.3	66.2	52.3	52.3	36.7	38.0	52.4	56.3	56.3	56.3
IncrcmntDel:	9.7	0.4	104.4	1.1	40.5	40.5	0.0	0.1	104.4	88.7	88.7	88.7
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	78.1	42.9	156.7	67.3	92.8	92.8	36.7	38.1	156.8	145.0	145	145.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	78.1	42.9	156.7	67.3	92.8	92.8	36.7	38.1	156.8	145.0	145	145.0
LOS by Move:	E	D	F	E	F	F	D	D	F	F	F	F
HCM2kAvgQ:	4	8	32	1	28	28	0	2	32	29	29	29

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	11	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:

Base Vol:	293	684	714	44	867	116	8	109	194	358	677	508
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	293	684	714	44	867	116	8	109	194	358	677	508
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	293	684	714	44	867	116	8	109	194	358	677	508
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	293	684	714	44	867	116	8	109	194	358	677	508
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	293	684	714	44	867	116	8	109	194	358	677	508
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	293	684	714	44	867	116	8	109	194	358	677	508

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.78	0.80	0.72	0.80	0.79	0.79	0.80	0.85	0.72	0.76	0.76	0.76
Lanes:	2.00	2.00	1.00	1.00	1.76	0.24	1.00	1.00	1.00	1.00	1.71	1.29
Final Sat.:	2959	3050	1365	1525	2642	353	1525	1606	1365	1435	2459	1845

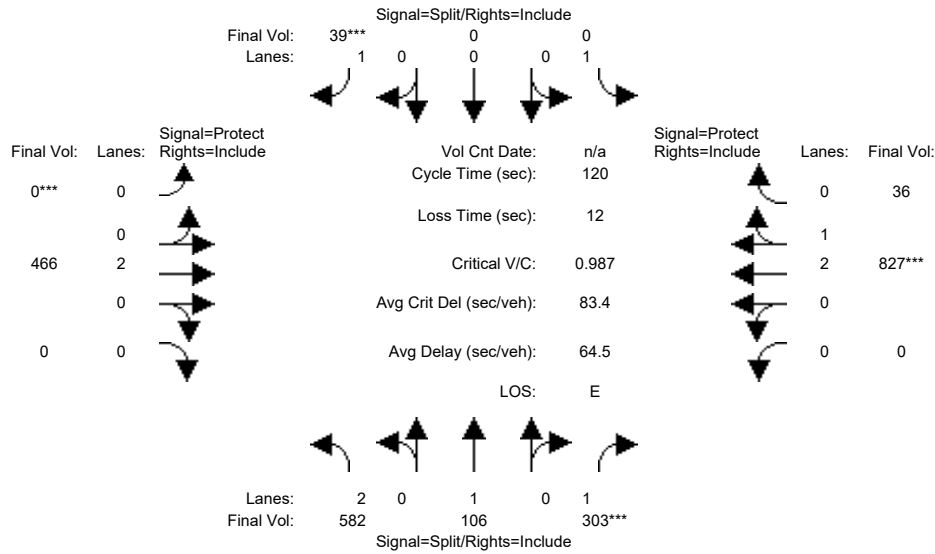
Capacity Analysis Module:

Vol/Sat:	0.10	0.22	0.52	0.03	0.33	0.33	0.01	0.07	0.14	0.25	0.28	0.28
Crit Moves:			****	****					****		****	
Green Time:	18.8	71.2	71.2	10.0	62.4	62.4	19.3	19.3	19.3	37.5	37.5	37.5
Volume/Cap:	0.79	0.47	1.10	0.43	0.79	0.79	0.04	0.53	1.10	1.00	1.10	1.10
Uniform Del:	63.7	26.7	39.4	67.3	38.1	38.1	57.2	61.0	65.3	56.3	56.3	56.3
IncrementDel:	10.8	0.2	66.7	2.9	3.5	3.5	0.1	2.5	97.9	22.7	57.2	57.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	74.5	26.9	106.1	70.2	41.6	41.6	57.3	63.6	163.2	78.9	113	113.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	74.5	26.9	106.1	70.2	41.6	41.6	57.3	63.6	163.2	78.9	113	113.5
LOS by Move:	E	C	F	E	D	D	E	E	F	E	F	F
HCM2kAvgQ:	9	11	44	2	22	22	0	5	14	23	27	27

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	8	8	8	12	12	12	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:

Base Vol:	582	106	303	0	0	39	0	466	0	0	827	36
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	582	106	303	0	0	39	0	466	0	0	827	36
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	582	106	303	0	0	39	0	466	0	0	827	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	582	106	303	0	0	39	0	466	0	0	827	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	582	106	303	0	0	39	0	466	0	0	827	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	582	106	303	0	0	39	0	466	0	0	827	36

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.39	0.43	0.36	0.43	0.43	0.36	0.43	0.41	0.43	0.43	0.39	0.39
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.87	0.13
Final Sat.:	1495	811	690	811	0	690	0	1541	0	0	2110	92

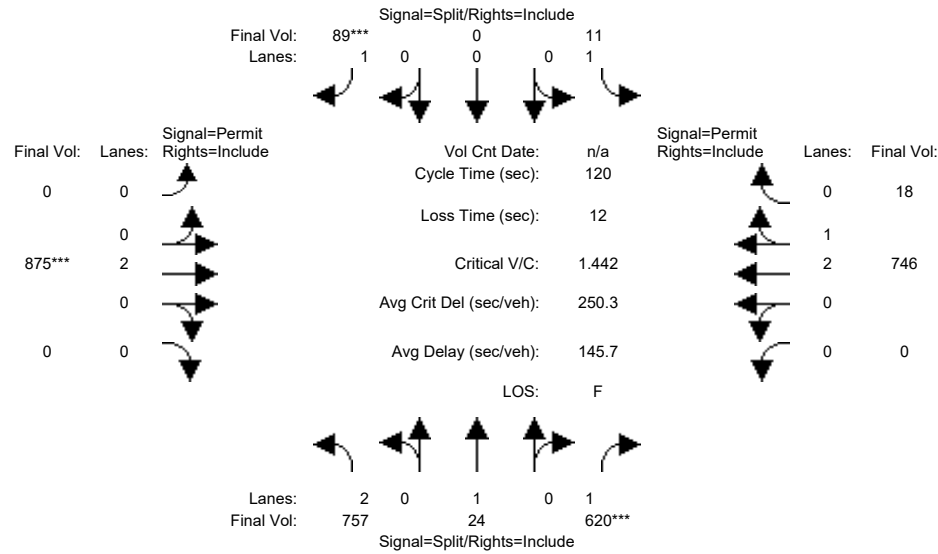
Capacity Analysis Module:

Vol/Sat:	0.39	0.13	0.44	0.00	0.00	0.06	0.00	0.30	0.00	0.00	0.39	0.39
Crit Moves:			****			****	****				****	
Green Time:	50.7	50.7	50.7	0.0	0.0	12.0	0.0	45.3	0.0	0.0	45.3	45.3
Volume/Cap:	0.92	0.31	1.04	0.00	0.00	0.57	0.00	0.80	0.00	0.00	1.04	1.04
Uniform Del:	32.7	23.0	34.6	0.0	0.0	51.5	0.0	33.4	0.0	0.0	37.4	37.4
IncrcmntDel:	18.9	0.5	63.3	0.0	0.0	10.5	0.0	7.8	0.0	0.0	41.9	41.9
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	51.6	23.5	97.9	0.0	0.0	62.0	0.0	41.2	0.0	0.0	79.2	79.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.6	23.5	97.9	0.0	0.0	62.0	0.0	41.2	0.0	0.0	79.2	79.2
LOS by Move:	D	C	F	A	A	E	A	D	A	A	E	E
HCM2kAvgQ:	14	3	17	0	0	2	0	10	0	0	18	18

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	8	8	8	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	3.6	3.6	3.6	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:

Base Vol:	757	24	620	11	0	89	0	875	0	0	746	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	757	24	620	11	0	89	0	875	0	0	746	18
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	757	24	620	11	0	89	0	875	0	0	746	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	757	24	620	11	0	89	0	875	0	0	746	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	757	24	620	11	0	89	0	875	0	0	746	18
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	757	24	620	11	0	89	0	875	0	0	746	18

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.48	0.53	0.45	0.50	0.53	0.45	0.53	0.50	0.53	0.53	0.48	0.48
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.93	0.07
Final Sat.:	1838	998	848	948	0	848	0	1895	0	0	2648	64

Capacity Analysis Module:

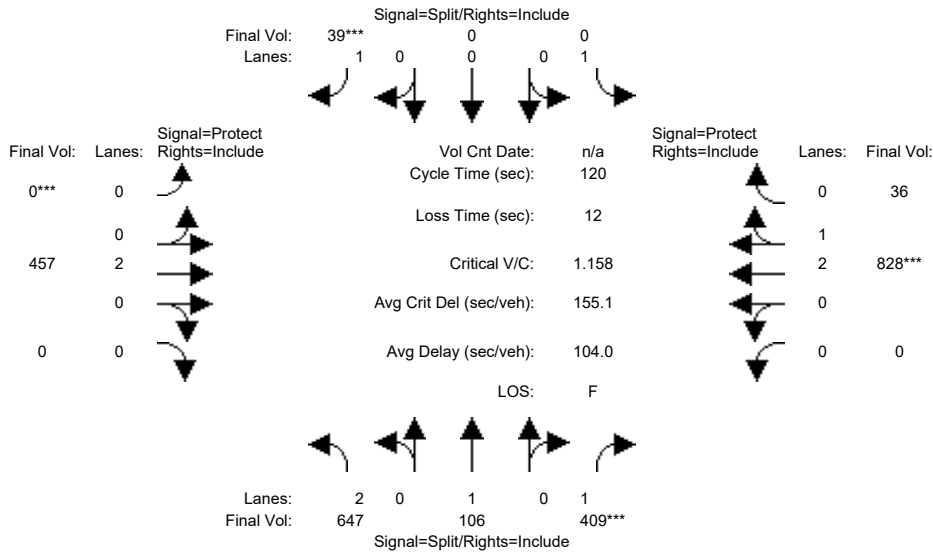
Vol/Sat:	0.41	0.02	0.73	0.01	0.00	0.10	0.00	0.46	0.00	0.00	0.28	0.28
Crit Moves:			****			****		****				
Green Time:	60.8	60.8	60.8	8.7	0.0	8.7	0.0	38.4	0.0	0.0	38.4	38.4
Volume/Cap:	0.81	0.05	1.44	0.16	0.00	1.44	0.00	1.44	0.00	0.00	0.88	0.88
Uniform Del:	24.8	14.9	29.6	52.2	0.0	55.6	0.0	40.8	0.0	0.0	38.6	38.6
IncrementDel:	5.5	0.0	211.8	1.1	0.0	269.2	0.0	208	0.0	0.0	10.3	10.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	30.3	15.0	241.3	53.3	0.0	324.9	0.0	249	0.0	0.0	48.9	48.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.3	15.0	241.3	53.3	0.0	324.9	0.0	249	0.0	0.0	48.9	48.9
LOS by Move:	C	B	F	D	A	F	A	F	A	A	D	D
HCM2kAvgQ:	14	0	47	1	0	8	0	36	0	0	13	13

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	8	8	8	12	12	12	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:												
Base Vol:	647	106	409	0	0	39	0	457	0	0	828	36
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	647	106	409	0	0	39	0	457	0	0	828	36
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	647	106	409	0	0	39	0	457	0	0	828	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	647	106	409	0	0	39	0	457	0	0	828	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	647	106	409	0	0	39	0	457	0	0	828	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	647	106	409	0	0	39	0	457	0	0	828	36

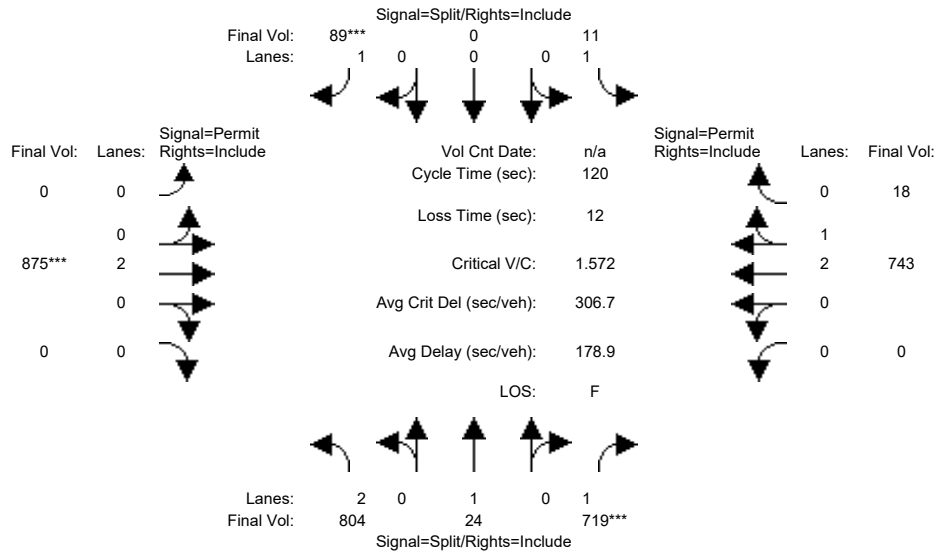
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.39	0.43	0.36	0.43	0.43	0.36	0.43	0.41	0.43	0.43	0.39	0.39
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.87	0.13
Final Sat.:	1495	811	690	811	0	690	0	1541	0	0	2110	92

Capacity Analysis Module:												
Vol/Sat:	0.43	0.13	0.59	0.00	0.00	0.06	0.00	0.30	0.00	0.00	0.39	0.39
Crit Moves:			****			****	****				****	
Green Time:	57.8	57.8	57.8	0.0	0.0	12.0	0.0	38.2	0.0	0.0	38.2	38.2
Volume/Cap:	0.90	0.27	1.23	0.00	0.00	0.57	0.00	0.93	0.00	0.00	1.23	1.23
Uniform Del:	28.4	18.6	31.1	0.0	0.0	51.5	0.0	39.6	0.0	0.0	40.9	40.9
IncrcmntDel:	14.2	0.4	127.9	0.0	0.0	10.5	0.0	24.5	0.0	0.0	117	116.6
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	42.6	18.9	159.0	0.0	0.0	62.0	0.0	64.1	0.0	0.0	157	157.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	42.6	18.9	159.0	0.0	0.0	62.0	0.0	64.1	0.0	0.0	157	157.5
LOS by Move:	D	B	F	A	A	E	A	E	A	A	F	F
HCM2kAvgQ:	15	2	27	0	0	2	0	12	0	0	22	22

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	8	8	8	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	3.6	3.6	3.6	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:

Base Vol:	804	24	719	11	0	89	0	875	0	0	743	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	804	24	719	11	0	89	0	875	0	0	743	18
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	804	24	719	11	0	89	0	875	0	0	743	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	804	24	719	11	0	89	0	875	0	0	743	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	804	24	719	11	0	89	0	875	0	0	743	18
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	804	24	719	11	0	89	0	875	0	0	743	18

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.48	0.53	0.45	0.50	0.53	0.45	0.53	0.50	0.53	0.53	0.48	0.48
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.93	0.07
Final Sat.:	1838	998	848	948	0	848	0	1895	0	0	2648	64

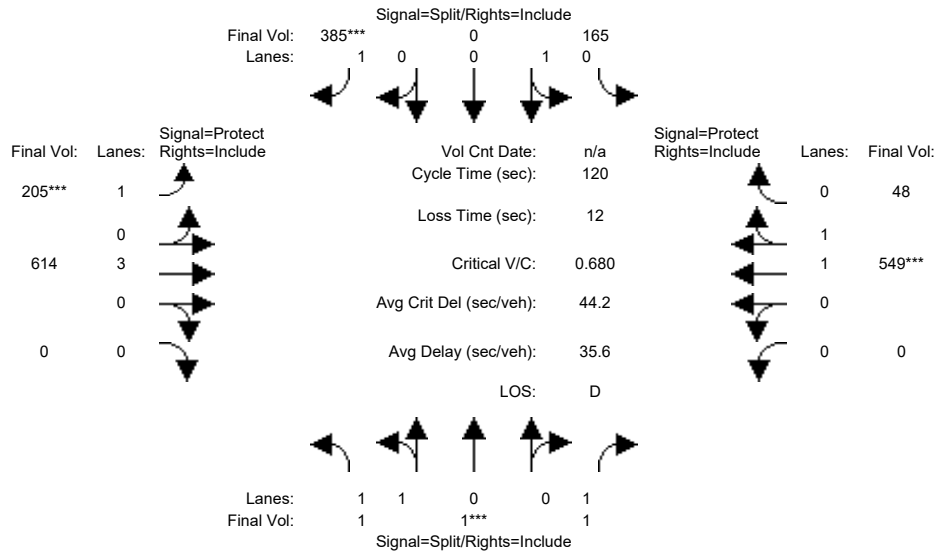
Capacity Analysis Module:

Vol/Sat:	0.44	0.02	0.85	0.01	0.00	0.10	0.00	0.46	0.00	0.00	0.28	0.28
Crit Moves:			****			****		****				
Green Time:	64.7	64.7	64.7	8.0	0.0	8.0	0.0	35.2	0.0	0.0	35.2	35.2
Volume/Cap:	0.81	0.04	1.57	0.17	0.00	1.57	0.00	1.57	0.00	0.00	0.96	0.96
Uniform Del:	22.6	13.0	27.6	52.9	0.0	56.0	0.0	42.4	0.0	0.0	41.6	41.6
IncrcmntDel:	5.1	0.0	267.7	1.3	0.0	326.2	0.0	266	0.0	0.0	21.6	21.6
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	27.7	13.1	295.4	54.2	0.0	382.2	0.0	308	0.0	0.0	63.2	63.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	27.7	13.1	295.4	54.2	0.0	382.2	0.0	308	0.0	0.0	63.2	63.2
LOS by Move:	C	B	F	D	A	F	A	F	A	A	E	E
HCM2kAvgQ:	15	0	59	1	0	9	0	39	0	0	14	14

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	10	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:

Base Vol:	1	1	1	165	0	385	205	614	0	0	549	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	1	165	0	385	205	614	0	0	549	48
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	1	1	165	0	385	205	614	0	0	549	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	1	1	165	0	385	205	614	0	0	549	48
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	1	1	165	0	385	205	614	0	0	549	48
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	1	1	165	0	385	205	614	0	0	549	48

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	0.83	0.72	0.81	0.85	0.72	0.81	0.77	0.85	0.85	0.80	0.80
Lanes:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.84	0.16
Final Sat.:	1576	1576	1373	1537	0	1373	1534	4409	0	0	2788	244

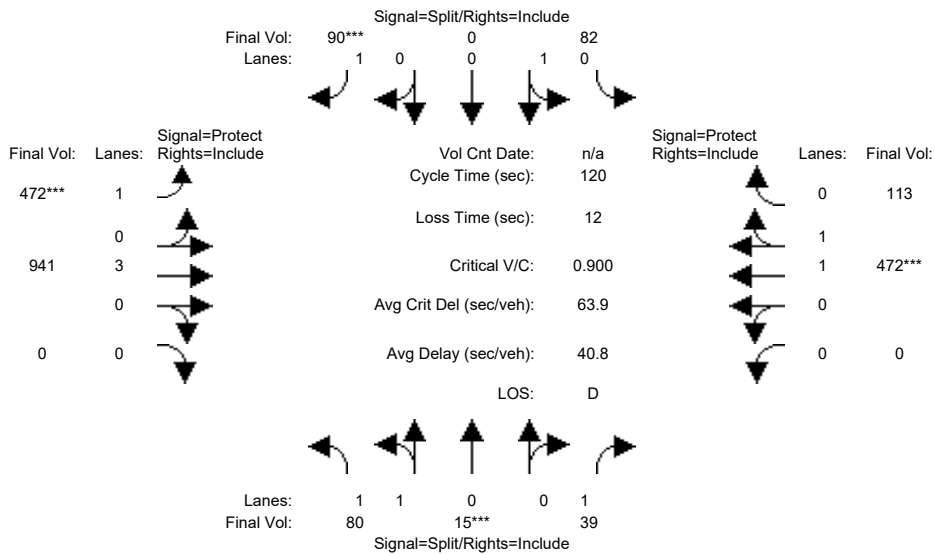
Capacity Analysis Module:

Vol/Sat:	0.00	0.00	0.00	0.11	0.00	0.28	0.13	0.14	0.00	0.00	0.20	0.20
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	45.4	0.0	45.4	21.6	53.6	0.0	0.0	31.9	31.9
Volume/Cap:	0.01	0.01	0.01	0.28	0.00	0.74	0.74	0.31	0.00	0.00	0.74	0.74
Uniform Del:	51.4	51.4	51.4	25.9	0.0	32.2	46.5	21.4	0.0	0.0	40.3	40.3
IncrementDel:	0.0	0.0	0.0	0.3	0.0	5.6	10.2	0.1	0.0	0.0	3.7	3.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	51.4	51.4	51.4	26.2	0.0	37.8	56.7	21.5	0.0	0.0	44.0	44.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.4	51.4	51.4	26.2	0.0	37.8	56.7	21.5	0.0	0.0	44.0	44.0
LOS by Move:	D	D	D	C	A	D	E	C	A	A	D	D
HCM2kAvgQ:	0	0	0	4	0	14	9	5	0	0	12	12

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	7	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:

Base Vol:	80	15	39	82	0	90	472	941	0	0	472	113
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	80	15	39	82	0	90	472	941	0	0	472	113
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	15	39	82	0	90	472	941	0	0	472	113
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	80	15	39	82	0	90	472	941	0	0	472	113
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	80	15	39	82	0	90	472	941	0	0	472	113
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	80	15	39	82	0	90	472	941	0	0	472	113

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.60	0.60	0.54	0.60	0.63	0.54	0.60	0.57	0.63	0.63	0.58	0.58
Lanes:	1.68	0.32	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.61	0.39
Final Sat.:	1935	363	1017	1140	0	1017	1137	3268	0	0	1782	427

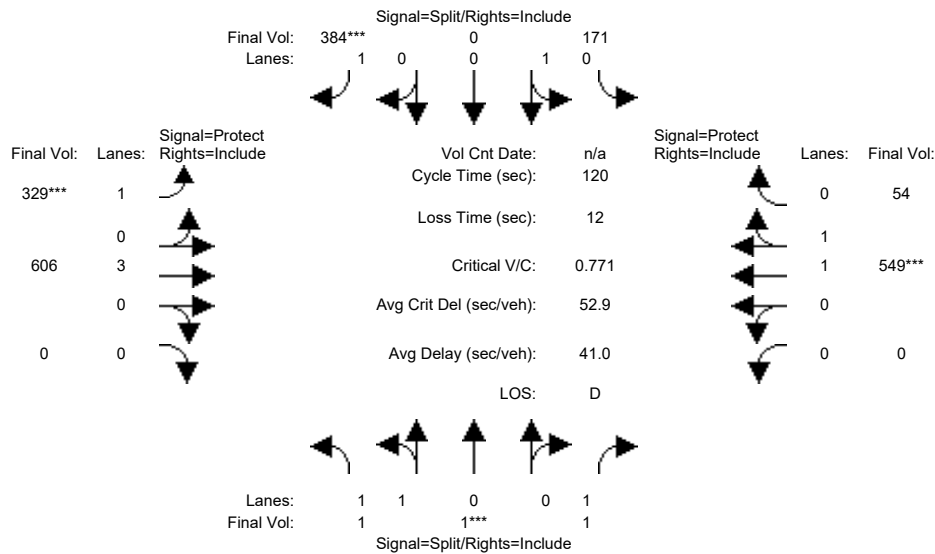
Capacity Analysis Module:

Vol/Sat:	0.04	0.04	0.04	0.07	0.00	0.09	0.42	0.29	0.00	0.00	0.26	0.26
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	11.4	0.0	11.4	53.5	87.6	0.0	0.0	34.1	34.1
Volume/Cap:	0.55	0.55	0.51	0.76	0.00	0.93	0.93	0.39	0.00	0.00	0.93	0.93
Uniform Del:	53.6	53.6	53.4	53.0	0.0	53.9	31.5	6.1	0.0	0.0	41.8	41.8
IncrementDel:	3.8	3.8	5.7	26.1	0.0	69.4	24.1	0.1	0.0	0.0	20.7	20.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	57.3	57.3	59.1	79.0	0.0	123.3	55.6	6.2	0.0	0.0	62.5	62.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	57.3	59.1	79.0	0.0	123.3	55.6	6.2	0.0	0.0	62.5	62.5
LOS by Move:	E	E	E	E	A	F	E	A	A	A	E	E
HCM2kAvgQ:	3	3	2	5	0	6	21	5	0	0	15	15

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	10	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:												
Base Vol:	1	1	1	171	0	384	329	606	0	0	549	54
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	1	171	0	384	329	606	0	0	549	54
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	1	1	171	0	384	329	606	0	0	549	54
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	1	1	171	0	384	329	606	0	0	549	54
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	1	1	171	0	384	329	606	0	0	549	54
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	1	1	171	0	384	329	606	0	0	549	54

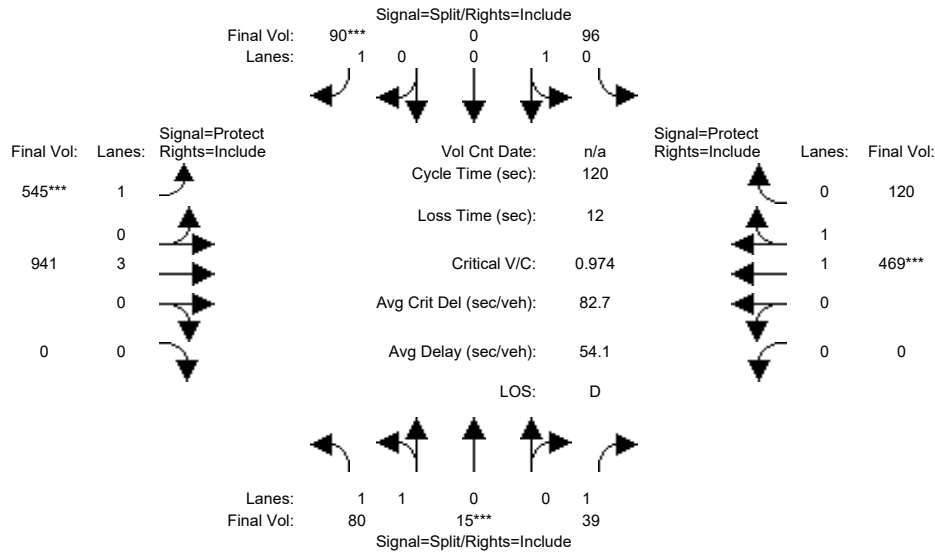
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	0.83	0.72	0.81	0.85	0.72	0.81	0.77	0.85	0.85	0.80	0.80
Lanes:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.82	0.18
Final Sat.:	1576	1576	1373	1537	0	1373	1534	4409	0	0	2757	271

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.11	0.00	0.28	0.21	0.14	0.00	0.00	0.20	0.20
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	39.9	0.0	39.9	30.6	59.1	0.0	0.0	28.4	28.4
Volume/Cap:	0.01	0.01	0.01	0.33	0.00	0.84	0.84	0.28	0.00	0.00	0.84	0.84
Uniform Del:	51.4	51.4	51.4	30.0	0.0	37.1	42.4	17.9	0.0	0.0	43.6	43.6
IncrcmntDel:	0.0	0.0	0.0	0.4	0.0	13.1	14.9	0.1	0.0	0.0	8.8	8.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	51.4	51.4	51.4	30.4	0.0	50.1	57.3	18.0	0.0	0.0	52.4	52.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.4	51.4	51.4	30.4	0.0	50.1	57.3	18.0	0.0	0.0	52.4	52.4
LOS by Move:	D	D	D	C	A	D	E	B	A	A	D	D
HCM2kAvgQ:	0	0	0	5	0	16	14	5	0	0	14	14

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	7	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:

Base Vol:	80	15	39	96	0	90	545	941	0	0	469	120
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	80	15	39	96	0	90	545	941	0	0	469	120
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	15	39	96	0	90	545	941	0	0	469	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	80	15	39	96	0	90	545	941	0	0	469	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	80	15	39	96	0	90	545	941	0	0	469	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	80	15	39	96	0	90	545	941	0	0	469	120

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.60	0.60	0.54	0.60	0.63	0.54	0.60	0.57	0.63	0.63	0.58	0.58
Lanes:	1.68	0.32	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.59	0.41
Final Sat.:	1935	363	1017	1140	0	1017	1137	3268	0	0	1755	449

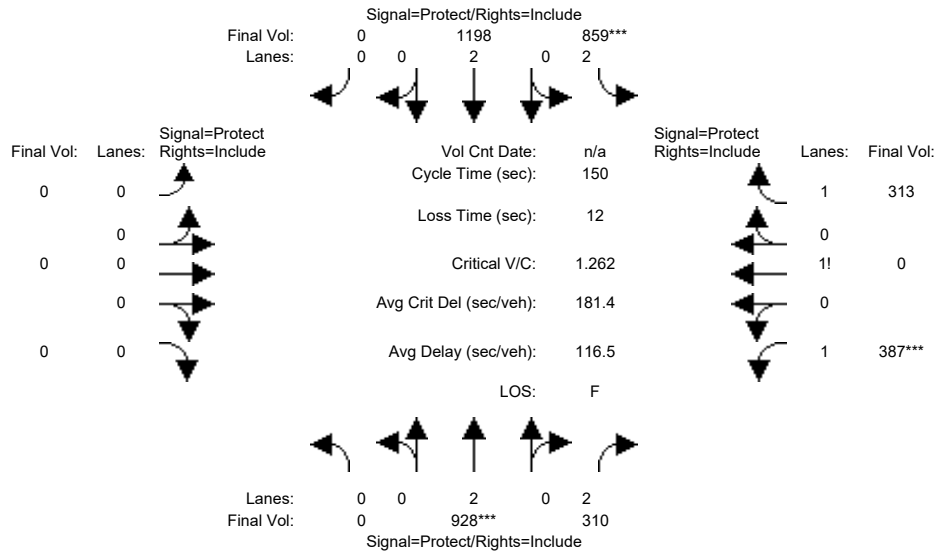
Capacity Analysis Module:

Vol/Sat:	0.04	0.04	0.04	0.08	0.00	0.09	0.48	0.29	0.00	0.00	0.27	0.27
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	10.5	0.0	10.5	56.8	88.5	0.0	0.0	31.7	31.7
Volume/Cap:	0.55	0.55	0.51	0.96	0.00	1.01	1.01	0.39	0.00	0.00	1.01	1.01
Uniform Del:	53.6	53.6	53.4	54.6	0.0	54.8	31.6	5.8	0.0	0.0	44.2	44.2
IncrcmntDel:	3.8	3.8	5.7	78.2	0.0	98.8	41.8	0.1	0.0	0.0	40.4	40.4
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	57.3	57.3	59.1	132.8	0.0	153.5	73.4	5.9	0.0	0.0	84.5	84.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	57.3	59.1	132.8	0.0	153.5	73.4	5.9	0.0	0.0	84.5	84.5
LOS by Move:	E	E	E	F	A	F	E	A	A	A	F	F
HCM2kAvgQ:	3	3	2	6	0	6	27	5	0	0	17	17

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #48: (46) University/US 101 SB Ramps



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:

Base Vol:	0	928	310	859	1198	0	0	0	0	387	0	313
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	928	310	859	1198	0	0	0	0	387	0	313
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	928	310	859	1198	0	0	0	0	387	0	313
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	928	310	859	1198	0	0	0	0	387	0	313
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	928	310	859	1198	0	0	0	0	387	0	313
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	928	310	859	1198	0	0	0	0	387	0	313

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.56	0.53	0.42	0.51	0.53	0.56	0.56	0.56	0.56	0.51	0.56	0.51
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.55	0.00	1.45
Final Sat.:	0	2011	1583	1950	2011	0	0	0	0	1492	0	1390

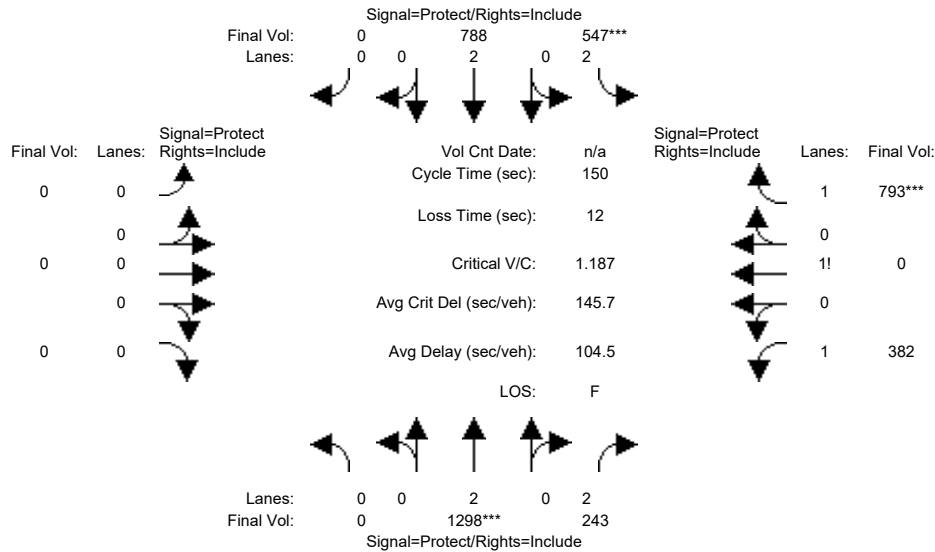
Capacity Analysis Module:

Vol/Sat:	0.00	0.46	0.20	0.44	0.60	0.00	0.00	0.00	0.00	0.26	0.00	0.23
Crit Moves:		****		****						****		
Green Time:	0.0	54.8	54.8	52.3	107	0.0	0.0	0.0	0.0	30.8	0.0	30.8
Volume/Cap:	0.00	1.26	0.54	1.26	0.83	0.00	0.00	0.00	0.00	1.26	0.00	1.10
Uniform Del:	0.0	47.6	37.5	48.8	15.1	0.0	0.0	0.0	0.0	59.6	0.0	59.6
IncrcmntDel:	0.0	129	1.0	129.6	4.4	0.0	0.0	0.0	0.0	132.0	0.0	64.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	176	38.5	178.5	19.5	0.0	0.0	0.0	0.0	191.6	0.0	124.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	176	38.5	178.5	19.5	0.0	0.0	0.0	0.0	191.6	0.0	124.1
LOS by Move:	A	F	D	F	B	A	A	A	A	F	A	F
HCM2kAvgQ:	0	37	7	34	23	0	0	0	0	20	0	16

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #48: (46) University/US 101 SB Ramps



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:

Base Vol:	0	1298	243	547	788	0	0	0	0	382	0	793
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1298	243	547	788	0	0	0	0	382	0	793
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1298	243	547	788	0	0	0	0	382	0	793
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1298	243	547	788	0	0	0	0	382	0	793
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1298	243	547	788	0	0	0	0	382	0	793
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1298	243	547	788	0	0	0	0	382	0	793

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.69	0.55	0.67	0.69	0.73	0.73	0.73	0.73	0.65	0.73	0.65
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.33	0.00	1.67
Final Sat.:	0	2635	2075	2556	2635	0	0	0	0	1626	0	2055

Capacity Analysis Module:

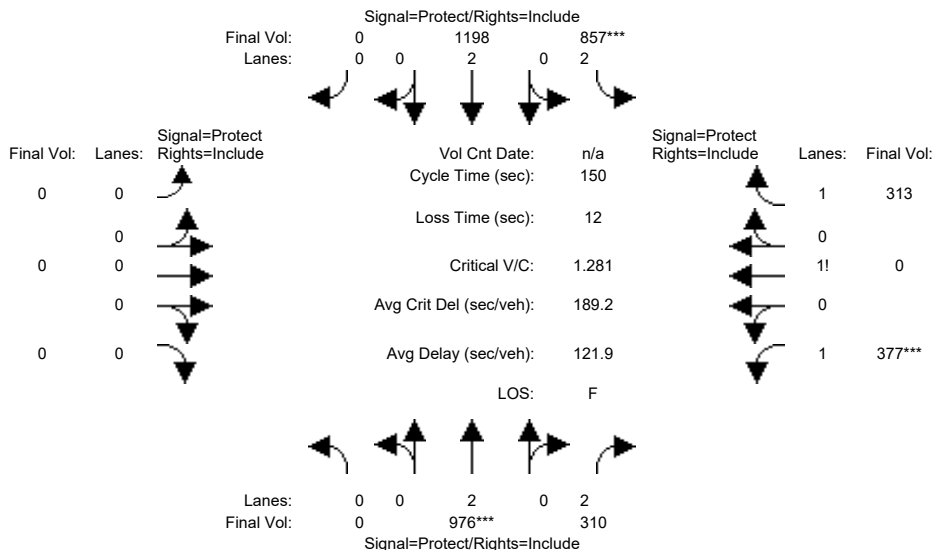
Vol/Sat:	0.00	0.49	0.12	0.21	0.30	0.00	0.00	0.00	0.00	0.23	0.00	0.39
Crit Moves:		****		****								****
Green Time:	0.0	62.2	62.2	27.0	89.3	0.0	0.0	0.0	0.0	48.7	0.0	48.7
Volume/Cap:	0.00	1.19	0.28	1.19	0.50	0.00	0.00	0.00	0.00	0.72	0.00	1.19
Uniform Del:	0.0	43.9	29.1	61.5	17.5	0.0	0.0	0.0	0.0	44.7	0.0	50.6
IncrementDel:	0.0	93.7	0.2	104.3	0.3	0.0	0.0	0.0	0.0	1.6	0.0	94.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	138	29.3	165.8	17.8	0.0	0.0	0.0	0.0	46.3	0.0	145.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	138	29.3	165.8	17.8	0.0	0.0	0.0	0.0	46.3	0.0	145.2
LOS by Move:	A	F	C	F	B	A	A	A	A	D	A	F
HCM2kAvgQ:	0	47	4	21	11	0	0	0	0	13	0	33

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #48: (46) University/US 101 SB Ramps



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:

Base Vol:	0	976	310	857	1198	0	0	0	0	377	0	313
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	976	310	857	1198	0	0	0	0	377	0	313
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	976	310	857	1198	0	0	0	0	377	0	313
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	976	310	857	1198	0	0	0	0	377	0	313
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	976	310	857	1198	0	0	0	0	377	0	313
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	976	310	857	1198	0	0	0	0	377	0	313

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.56	0.53	0.42	0.51	0.53	0.56	0.56	0.56	0.56	0.51	0.56	0.51
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.55	0.00	1.45
Final Sat.:	0	2011	1583	1950	2011	0	0	0	0	1484	0	1395

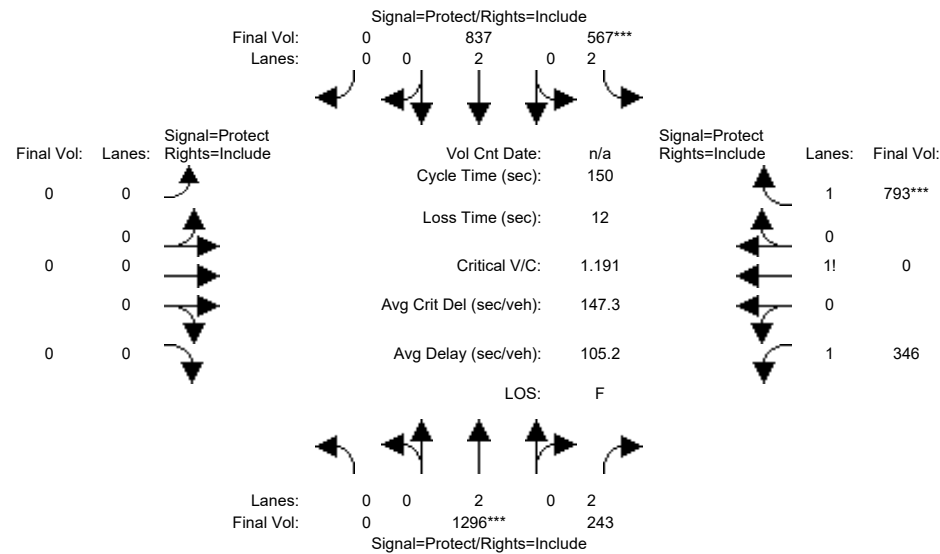
Capacity Analysis Module:

Vol/Sat:	0.00	0.49	0.20	0.44	0.60	0.00	0.00	0.00	0.00	0.25	0.00	0.22
Crit Moves:		****		****						****		
Green Time:	0.0	56.8	56.8	51.4	108	0.0	0.0	0.0	0.0	29.7	0.0	29.7
Volume/Cap:	0.00	1.28	0.52	1.28	0.83	0.00	0.00	0.00	0.00	1.28	0.00	1.13
Uniform Del:	0.0	46.6	36.0	49.3	14.4	0.0	0.0	0.0	0.0	60.1	0.0	60.1
IncrcmntDel:	0.0	137	0.8	137.8	4.0	0.0	0.0	0.0	0.0	140.3	0.0	78.4
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	183	36.8	187.1	18.4	0.0	0.0	0.0	0.0	200.5	0.0	138.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	183	36.8	187.1	18.4	0.0	0.0	0.0	0.0	200.5	0.0	138.6
LOS by Move:	A	F	D	F	B	A	A	A	A	F	A	F
HCM2kAvgQ:	0	39	7	34	22	0	0	0	0	20	0	16

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #48: (46) University/US 101 SB Ramps



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:

Base Vol:	0	1296	243	567	837	0	0	0	0	346	0	793
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1296	243	567	837	0	0	0	0	346	0	793
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1296	243	567	837	0	0	0	0	346	0	793
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1296	243	567	837	0	0	0	0	346	0	793
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1296	243	567	837	0	0	0	0	346	0	793
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1296	243	567	837	0	0	0	0	346	0	793

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.69	0.55	0.67	0.69	0.73	0.73	0.73	0.73	0.64	0.73	0.64
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.30	0.00	1.70
Final Sat.:	0	2635	2075	2556	2635	0	0	0	0	1596	0	2076

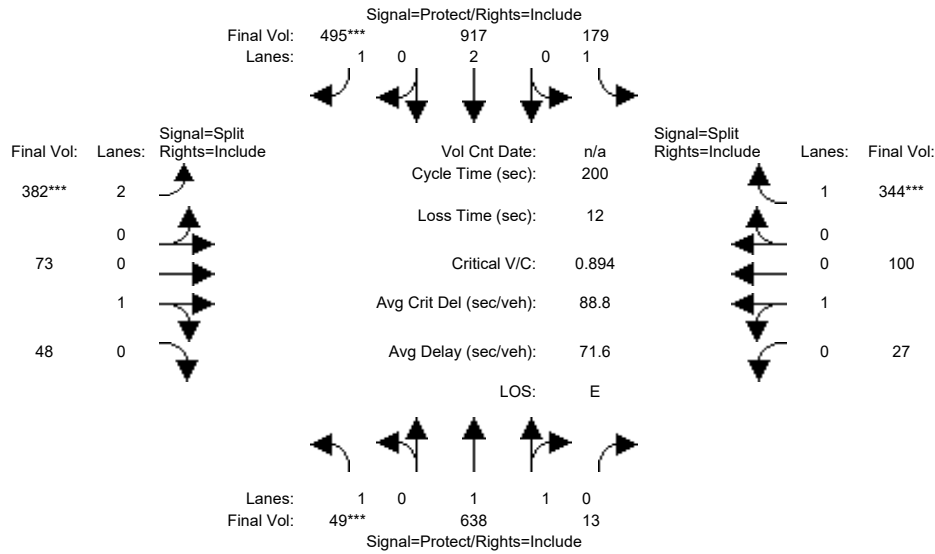
Capacity Analysis Module:

Vol/Sat:	0.00	0.49	0.12	0.22	0.32	0.00	0.00	0.00	0.00	0.22	0.00	0.38
Crit Moves:		****		****								****
Green Time:	0.0	61.9	61.9	27.9	89.9	0.0	0.0	0.0	0.0	48.1	0.0	48.1
Volume/Cap:	0.00	1.19	0.28	1.19	0.53	0.00	0.00	0.00	0.00	0.68	0.00	1.19
Uniform Del:	0.0	44.0	29.3	61.0	17.6	0.0	0.0	0.0	0.0	44.2	0.0	50.9
IncrementDel:	0.0	95.2	0.2	105.1	0.3	0.0	0.0	0.0	0.0	1.1	0.0	96.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	139	29.5	166.1	18.0	0.0	0.0	0.0	0.0	45.3	0.0	147.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	139	29.5	166.1	18.0	0.0	0.0	0.0	0.0	45.3	0.0	147.3
LOS by Move:	A	F	C	F	B	A	A	A	A	D	A	F
HCM2kAvgQ:	0	47	4	22	12	0	0	0	0	11	0	33

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	10	10	10
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:

Base Vol:	49	638	13	179	917	495	382	73	48	27	100	344
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	638	13	179	917	495	382	73	48	27	100	344
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	49	638	13	179	917	495	382	73	48	27	100	344
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	49	638	13	179	917	495	382	73	48	27	100	344
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	49	638	13	179	917	495	382	73	48	27	100	344
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	49	638	13	179	917	495	382	73	48	27	100	344

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.74	0.74	0.74	0.66	0.72	0.73	0.73	0.77	0.77	0.66
Lanes:	1.00	1.96	0.04	1.00	2.00	1.00	2.00	0.60	0.40	0.21	0.79	1.00
Final Sat.:	1408	2751	56	1408	2816	1260	2731	840	553	312	1154	1260

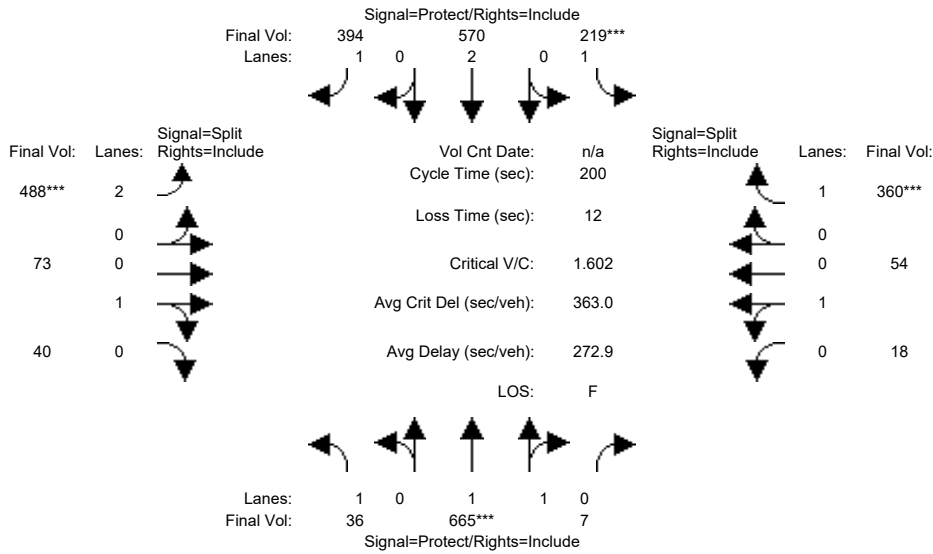
Capacity Analysis Module:

Vol/Sat:	0.03	0.23	0.23	0.13	0.33	0.39	0.14	0.09	0.09	0.09	0.09	0.27
Crit Moves:	***					****	****					****
Green Time:	7.8	61.8	61.8	33.9	87.9	87.9	31.3	31.3	31.3	61.1	61.1	61.1
Volume/Cap:	0.89	0.75	0.75	0.75	0.74	0.89	0.89	0.56	0.56	0.28	0.28	0.89
Uniform Del:	95.7	62.2	62.2	79.0	46.6	51.8	82.7	77.9	77.9	52.8	52.8	66.4
IncrementDel:	83.7	3.7	3.7	12.5	2.4	16.9	20.7	3.1	3.1	0.4	0.4	22.4
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	179.4	65.9	65.9	91.5	49.0	68.7	103.4	81.1	81.1	53.2	53.2	88.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	179.4	65.9	65.9	91.5	49.0	68.7	103.4	81.1	81.1	53.2	53.2	88.8
LOS by Move:	F	E	E	F	D	E	F	F	F	D	D	F
HCM2kAvgQ:	5	20	20	12	25	30	14	7	7	6	6	23

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #49: (47) University/Woodland

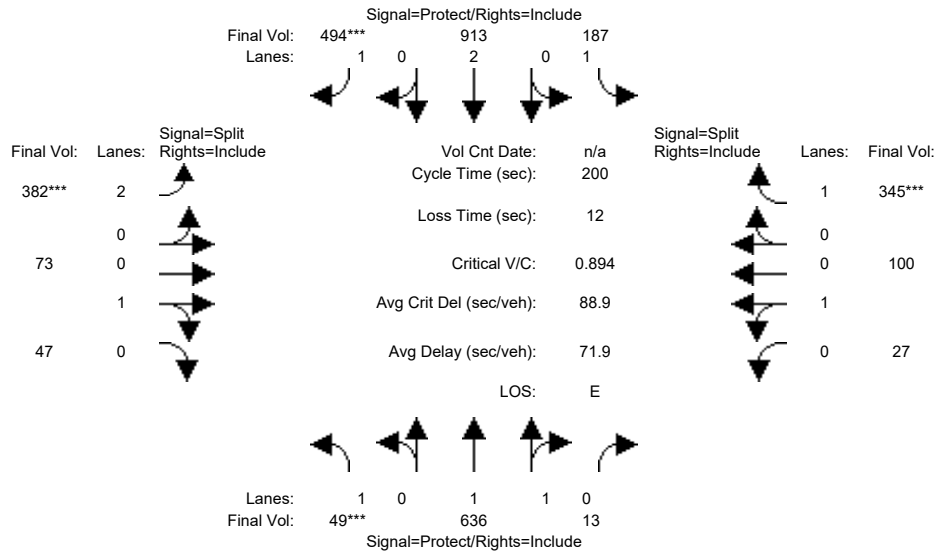


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	11	11	11
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6
Volume Module:												
Base Vol:	36	665	7	219	570	394	488	73	40	18	54	360
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	36	665	7	219	570	394	488	73	40	18	54	360
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	36	665	7	219	570	394	488	73	40	18	54	360
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	36	665	7	219	570	394	488	73	40	18	54	360
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	36	665	7	219	570	394	488	73	40	18	54	360
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	36	665	7	219	570	394	488	73	40	18	54	360
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.42	0.42	0.42	0.42	0.42	0.38	0.41	0.42	0.42	0.44	0.44	0.38
Lanes:	1.00	1.98	0.02	1.00	2.00	1.00	2.00	0.65	0.35	0.25	0.75	1.00
Final Sat.:	803	1588	17	803	1606	719	1558	517	283	209	627	719
Capacity Analysis Module:												
Vol/Sat:	0.04	0.42	0.42	0.27	0.35	0.55	0.31	0.14	0.14	0.09	0.09	0.50
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	6.5	52.3	52.3	34.0	79.8	79.8	39.1	39.1	39.1	62.6	62.6	62.6
Volume/Cap:	1.37	1.60	1.60	1.60	0.89	1.37	1.60	0.72	0.72	0.28	0.28	1.60
Uniform Del:	96.7	73.9	73.9	83.0	56.0	60.1	80.4	75.3	75.3	51.7	51.7	68.7
IncrementDel:	306.7	282	281.7	302.1	14.4	188.8	285.6	15.2	15.2	0.6	0.6	290.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	403.4	356	355.5	385.1	70.4	248.9	366.1	90.5	90.5	52.3	52.3	359.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	403.4	356	355.5	385.1	70.4	248.9	366.1	90.5	90.5	52.3	52.3	359.3
LOS by Move:	F	F	F	F	E	F	F	F	F	D	D	F
HCM2kAvgQ:	5	39	39	25	20	38	28	8	8	3	3	39

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	10	10	10
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:												
Base Vol:	49	636	13	187	913	494	382	73	47	27	100	345
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	636	13	187	913	494	382	73	47	27	100	345
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	49	636	13	187	913	494	382	73	47	27	100	345
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	49	636	13	187	913	494	382	73	47	27	100	345
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	49	636	13	187	913	494	382	73	47	27	100	345
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	49	636	13	187	913	494	382	73	47	27	100	345

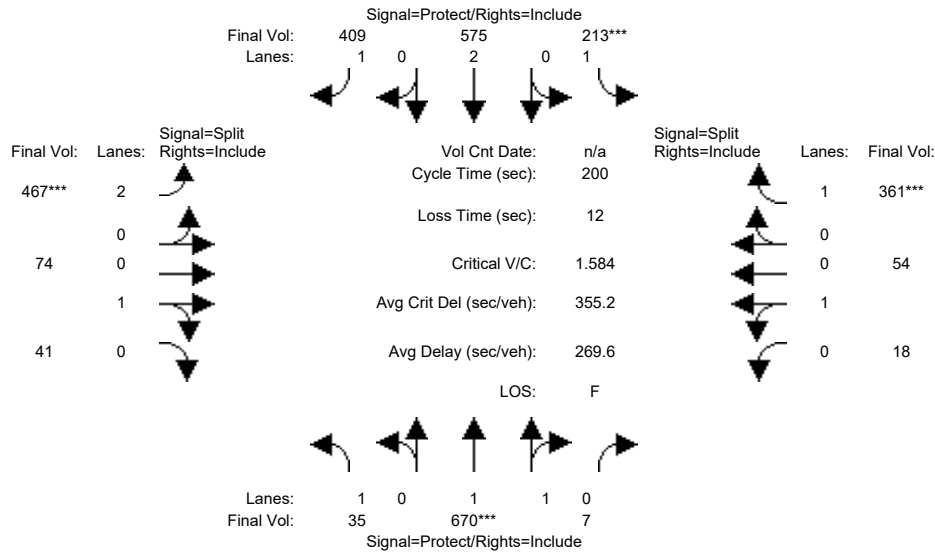
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.74	0.74	0.74	0.66	0.72	0.73	0.73	0.77	0.77	0.66
Lanes:	1.00	1.96	0.04	1.00	2.00	1.00	2.00	0.61	0.39	0.21	0.79	1.00
Final Sat.:	1408	2751	56	1408	2816	1260	2731	848	546	312	1154	1260

Capacity Analysis Module:												
Vol/Sat:	0.03	0.23	0.23	0.13	0.32	0.39	0.14	0.09	0.09	0.09	0.09	0.27
Crit Moves:	****					****	****					****
Green Time:	7.8	60.6	60.6	34.8	87.7	87.7	31.3	31.3	31.3	61.2	61.2	61.2
Volume/Cap:	0.89	0.76	0.76	0.76	0.74	0.89	0.89	0.55	0.55	0.28	0.28	0.89
Uniform Del:	95.7	63.2	63.2	78.6	46.7	51.9	82.7	77.9	77.9	52.7	52.7	66.3
IncrementDel:	83.7	4.1	4.1	13.2	2.4	16.9	20.7	3.0	3.0	0.3	0.3	22.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	179.4	67.3	67.3	91.8	49.1	68.8	103.4	80.9	80.9	53.0	53.0	88.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	179.4	67.3	67.3	91.8	49.1	68.8	103.4	80.9	80.9	53.0	53.0	88.6
LOS by Move:	F	E	E	F	D	E	F	F	F	D	D	F
HCM2kAvgQ:	5	20	20	12	25	30	14	7	7	6	6	23

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #49: (47) University/Woodland

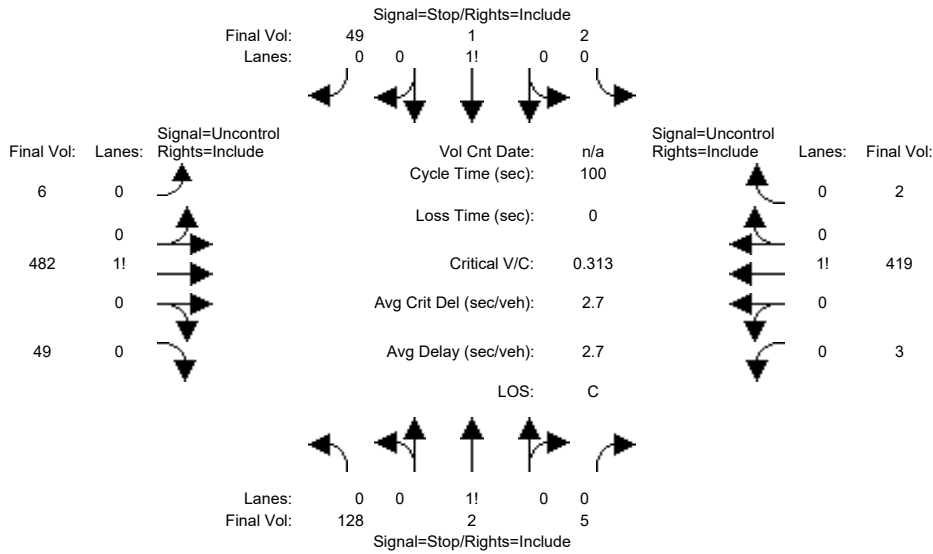


Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	11	11	11
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6
Volume Module:												
Base Vol:	35	670	7	213	575	409	467	74	41	18	54	361
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	35	670	7	213	575	409	467	74	41	18	54	361
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	35	670	7	213	575	409	467	74	41	18	54	361
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	35	670	7	213	575	409	467	74	41	18	54	361
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	35	670	7	213	575	409	467	74	41	18	54	361
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	35	670	7	213	575	409	467	74	41	18	54	361
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.42	0.42	0.42	0.42	0.42	0.38	0.41	0.42	0.42	0.44	0.44	0.38
Lanes:	1.00	1.98	0.02	1.00	2.00	1.00	2.00	0.64	0.36	0.25	0.75	1.00
Final Sat.:	803	1588	17	803	1606	719	1558	515	285	209	627	719
Capacity Analysis Module:												
Vol/Sat:	0.04	0.42	0.42	0.27	0.36	0.57	0.30	0.14	0.14	0.09	0.09	0.50
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	6.2	53.3	53.3	33.5	80.6	80.6	37.8	37.8	37.8	63.4	63.4	63.4
Volume/Cap:	1.41	1.58	1.58	1.58	0.89	1.41	1.58	0.76	0.76	0.27	0.27	1.58
Uniform Del:	96.9	73.4	73.4	83.3	55.5	59.7	81.1	76.8	76.8	51.0	51.0	68.3
IncrementDel:	326.9	274	273.8	295.2	14.2	205.0	278.5	19.9	19.9	0.6	0.6	282.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	423.9	347	347.2	378.4	69.7	264.7	359.5	96.6	96.6	51.6	51.6	351.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	423.9	347	347.2	378.4	69.7	264.7	359.5	96.6	96.6	51.6	51.6	351.0
LOS by Move:	F	F	F	F	E	F	F	F	F	D	D	F
HCM2kAvgQ:	5	39	39	24	20	41	27	8	8	3	3	39

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background AM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name: Saratoga Avenue Newbridge Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 12 columns representing movements and 2 rows of critical gap data including Critical Gap and FollowUpTime.

Table with 12 columns representing movements and 6 rows of capacity data including Conflict Vol, Potent Cap., Move Cap., Total Cap., and Volume/Cap.

Table with 12 columns representing movements and 8 rows of level of service data including 2Way95thQ, Control Del, LOS by Move, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	128 2 5	2 1 49	6 482 49	3 419 2
ApproachDel:	17.9	11.3	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.7]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=135]  
 SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=4][total volume=1148]  
 SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.2]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=52]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=4][total volume=1148]  
 SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER  
 This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #52 (52) Saratoga Avenue and Newbridge Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	128 2 5	2 1 49	6 482 49	3 419 2

Major Street Volume: 961  
 Minor Approach Volume: 135  
 Minor Approach Volume Threshold: 230

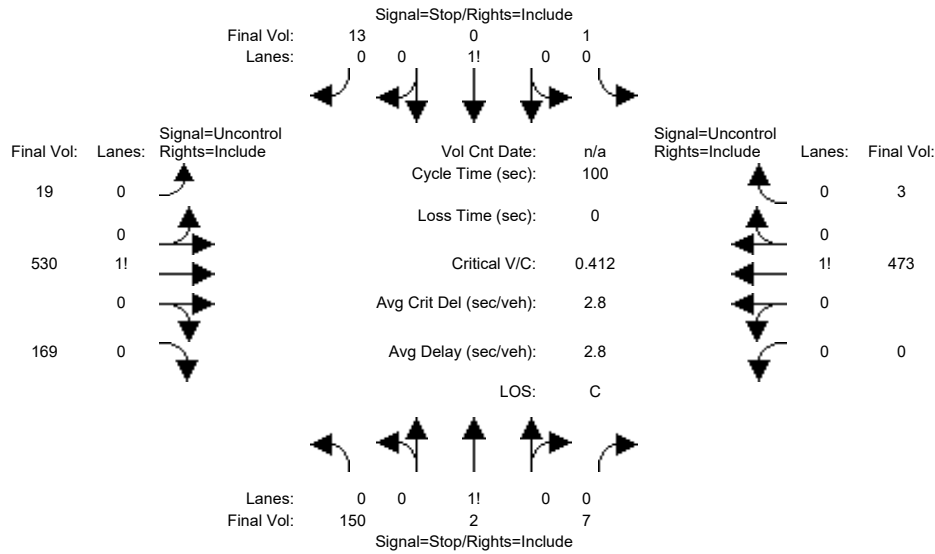
SIGNAL WARRANT DISCLAIMER  
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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background PM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name: Saratoga Avenue Newbridge Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 13 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 13 columns and 2 rows showing Critical Gap and FollowUpTim for each movement.

Table with 13 columns and 5 rows showing Capacity Module data including Cnflct Vol, Potent Cap., Move Cap., Total Cap, and Volume/Cap.

Table with 13 columns and 10 rows showing Level Of Service Module data including 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	150 2 7	1 0 13	19 530 169	0 473 3
ApproachDel:	22.0	11.5	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=1.0]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=159]  
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=4][total volume=1367]  
SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=0.0]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=14]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=4][total volume=1367]  
SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #52 (52) Saratoga Avenue and Newbridge Street  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	150 2 7	1 0 13	19 530 169	0 473 3

Major Street Volume: 1194  
Minor Approach Volume: 159  
Minor Approach Volume Threshold: 172

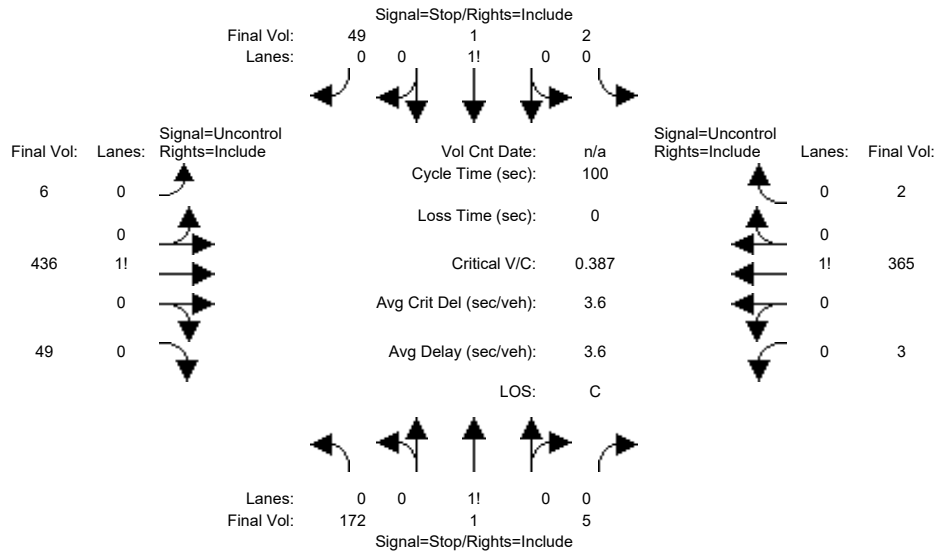
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background+Project AM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name: Saratoga Avenue Newbridge Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 13 columns representing movements and 13 rows representing volume modules (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume).

Table with 13 columns representing movements and 13 rows representing critical gap modules (Critical Gp, FollowUpTim).

Table with 13 columns representing movements and 13 rows representing capacity modules (Cnflct Vol, Potent Cap., Move Cap., Total Cap, Volume/Cap).

Table with 13 columns representing movements and 13 rows representing level of service modules (2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS).

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	172 1 5	2 1 49	6 436 49	3 365 2
ApproachDel:	18.2	10.9	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.9]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=178]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1091]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=52]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1091]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #52 (52) Saratoga Avenue and Newbridge Street

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	172 1 5	2 1 49	6 436 49	3 365 2

Major Street Volume: 861

Minor Approach Volume: 178

Minor Approach Volume Threshold: 259

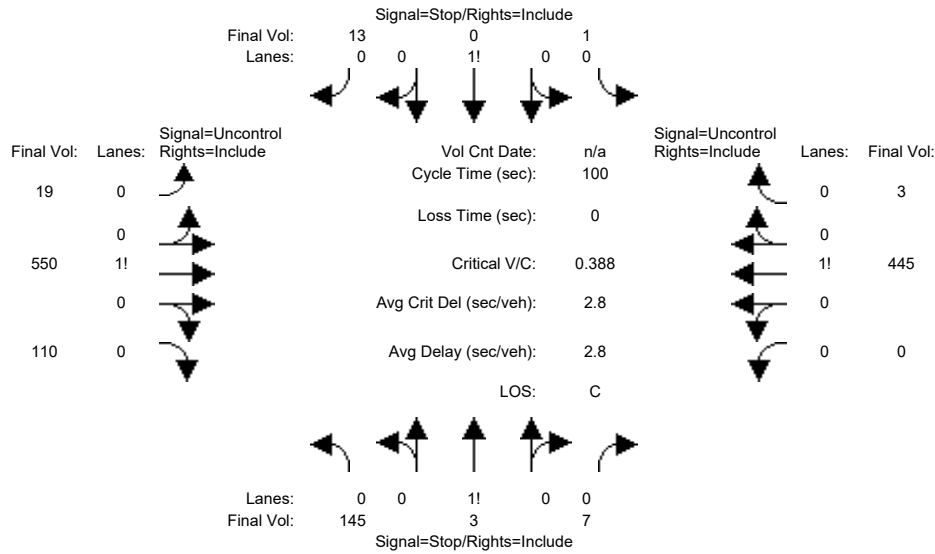
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Background+Project PM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name: Saratoga Avenue Newbridge Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 13 columns representing volume modules for Saratoga Avenue and Newbridge Street, including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 13 columns representing critical gap modules, including Critical Gap and FollowUpTime for each movement.

Table with 13 columns representing capacity modules, including Conflict Vol, Potent Cap., Move Cap., Total Cap., and Volume/Cap for each movement.

Table with 13 columns representing level of service modules, including 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	145 3 7	1 0 13	19 550 110	0 445 3
ApproachDel:	21.0	11.3	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.9]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=155]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1296]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.0]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=14]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1296]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #52 (52) Saratoga Avenue and Newbridge Street

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	145 3 7	1 0 13	19 550 110	0 445 3

Major Street Volume: 1127

Minor Approach Volume: 155

Minor Approach Volume Threshold: 188

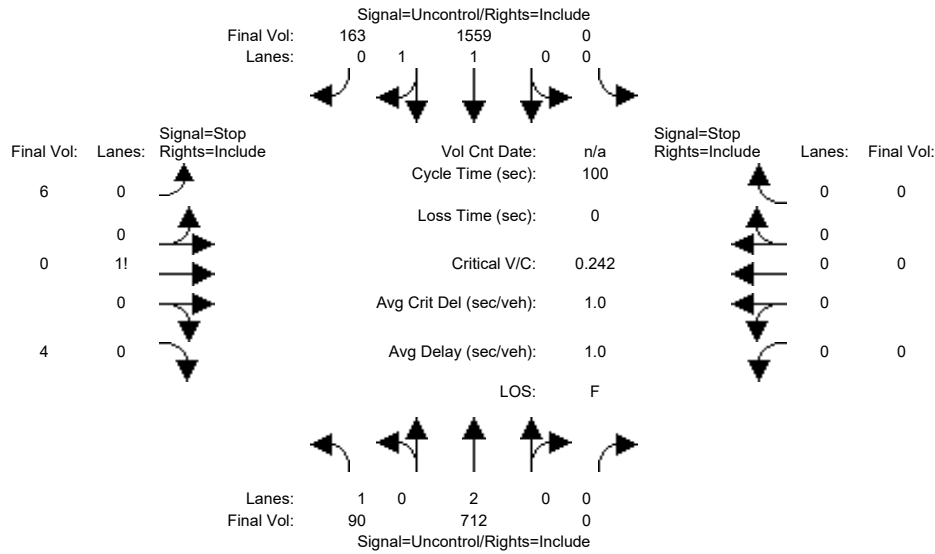
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Background AM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:	University Ave North Bound		University Ave South Bound		Adams Dr East Bound		Adams Dr West Bound					
	L	T	R	L	T	R	L	T	R			
Base Vol:	90	712	0	0	1559	163	6	0	4	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	90	712	0	0	1559	163	6	0	4	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	712	0	0	1559	163	6	0	4	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	712	0	0	1559	163	6	0	4	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Volume:	90	712	0	0	1559	163	6	0	4	0	0	0

Critical Gap Module:	University Ave North Bound		University Ave South Bound		Adams Dr East Bound		Adams Dr West Bound					
	L	T	R	L	T	R	L	T	R			
Critical Gp:	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	6.8	6.5	6.9	xxxxxx	xxxx	xxxxxx
FollowUpTim:	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	3.5	4.0	3.3	xxxxxx	xxxx	xxxxxx

Capacity Module:	University Ave North Bound		University Ave South Bound		Adams Dr East Bound		Adams Dr West Bound					
	L	T	R	L	T	R	L	T	R			
Cnflict Vol:	1722	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	2177	2533	861	xxxx	xxxx	xxxxxx
Potent Cap.:	372	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	41	28	303	xxxx	xxxx	xxxxxx
Move Cap.:	372	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	33	21	303	xxxx	xxxx	xxxxxx
Volume/Cap:	0.24	xxxx	xxxx	xxxx	xxxx	xxxx	0.18	0.00	0.01	xxxx	xxxx	xxxx

Level Of Service Module:	University Ave North Bound		University Ave South Bound		Adams Dr East Bound		Adams Dr West Bound					
	L	T	R	L	T	R	L	T	R			
2Way95thQ:	0.9	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	17.7	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	C	*	*	*	*	*	*	*	*	*	*	*
Shared Cap.:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	51	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	0.6	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	91.5	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxxx			xxxxxxx			91.5		xxxxxxx			
ApproachLOS:	*			*			F		*			*

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*  
 Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 712 0	0 1559 163	6 0 4	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	91.5	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.3]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=10]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=2534]  
 SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 712 0	0 1559 163	6 0 4	0 0 0 0

Major Street Volume: 2524  
 Minor Approach Volume: 10  
 Minor Approach Volume Threshold: -34 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

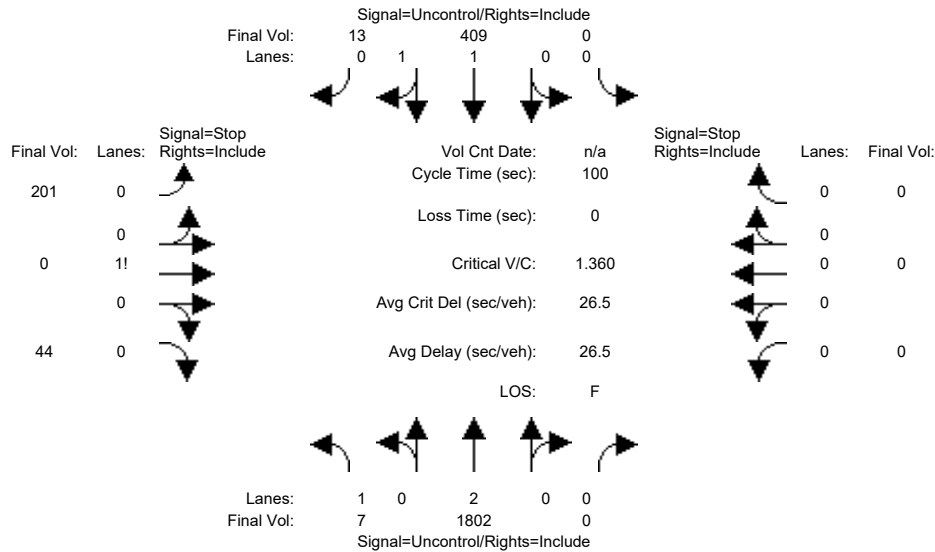
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Level Of Service Computation Report  
 2000 HCM Unsignalized (Future Volume Alternative)  
 Background PM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
Base Vol:	7	1802	0	0	409	13	201	0	44	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	1802	0	0	409	13	201	0	44	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	1802	0	0	409	13	201	0	44	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	7	1802	0	0	409	13	201	0	44	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Volume:	7	1802	0	0	409	13	201	0	44	0	0	0

Critical Gap Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
Critical Gp:	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	6.8	6.5	6.9	xxxxxx	xxxx	xxxxxx
FollowUpTim:	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	3.5	4.0	3.3	xxxxxx	xxxx	xxxxxx

Capacity Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
Cnflct Vol:	422	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	1331	2232	211	xxxx	xxxx	xxxxxx
Potent Cap.:	1148	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	149	43	801	xxxx	xxxx	xxxxxx
Move Cap.:	1148	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	148	43	801	xxxx	xxxx	xxxxxx
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	1.36	0.00	0.05	xxxx	xxxx	xxxx

Level Of Service Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
2Way95thQ:	0.0	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	8.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LTR - RT	RT	LT - LTR - RT	LTR - RT	RT	LT - LTR - RT	LTR - RT	RT	LT - LTR - RT	LTR - RT	
Shared Cap.:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	173	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	15.1	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	267	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxxx			xxxxxxx			267.2			xxxxxxx		
ApproachLOS:	*			*			F			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*  
 Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 409 13	201 0 44	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	267.2	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=18.2]  
 SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=245]  
 SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=2476]  
 SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 409 13	201 0 44	0 0 0 0

Major Street Volume: 2231  
 Minor Approach Volume: 245  
 Minor Approach Volume Threshold: 8 [less than minimum of 100]

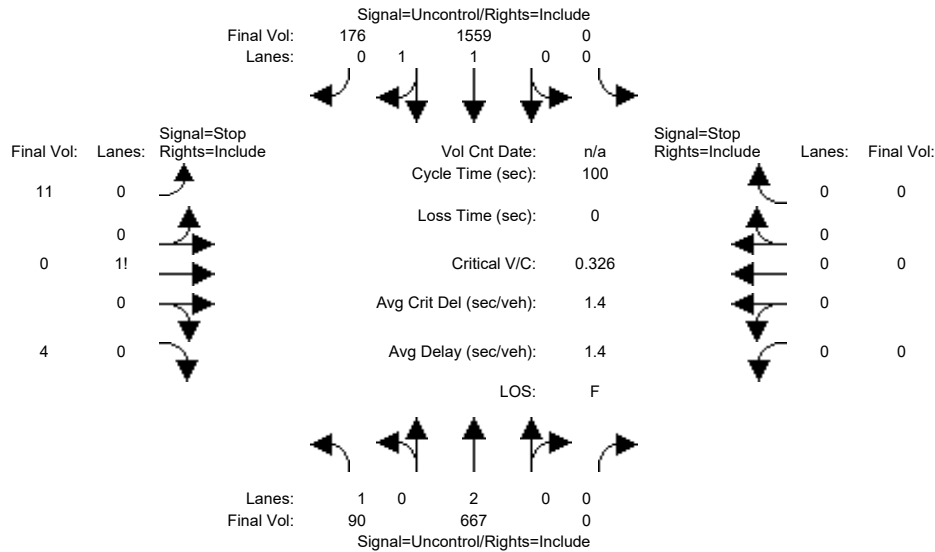
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Background+Project AM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:	90	667	0	0	1559	176	11	0	4	0	0	0
Base Vol:	90	667	0	0	1559	176	11	0	4	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	90	667	0	0	1559	176	11	0	4	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	667	0	0	1559	176	11	0	4	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	667	0	0	1559	176	11	0	4	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	90	667	0	0	1559	176	11	0	4	0	0	0

Critical Gap Module:	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	6.8	6.5	6.9	xxxxxx	xxxx	xxxxxx
Critical Gp:	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	6.8	6.5	6.9	xxxxxx	xxxx	xxxxxx
FollowUpTim:	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	3.5	4.0	3.3	xxxxxx	xxxx	xxxxxx

Capacity Module:	1735	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	2161	2494	868	xxxx	xxxx	xxxxxx
Cnflct Vol:	1735	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	2161	2494	868	xxxx	xxxx	xxxxxx
Potent Cap.:	368	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	42	29	300	xxxx	xxxx	xxxxxx
Move Cap.:	368	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	34	22	300	xxxx	xxxx	xxxxxx
Volume/Cap:	0.24	xxxx	xxxx	xxxx	xxxx	xxxx	0.33	0.00	0.01	xxxx	xxxx	xxxx

Level Of Service Module:	0.9	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
2Way95thQ:	0.9	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	17.9	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	C	*	*	*	*	*	*	*	*	*	*	*
Shared Cap.:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	44	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	1.2	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	124	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxxx			xxxxxxx			123.6		xxxxxxx			
ApproachLOS:	*			*			F		*			*

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*  
 Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 667 0	0 1559 176	11 0 4	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	123.6	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.5]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=15]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=2507]  
 SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 667 0	0 1559 176	11 0 4	0 0 0 0

Major Street Volume: 2492  
 Minor Approach Volume: 15  
 Minor Approach Volume Threshold: -30 [less than minimum of 100]

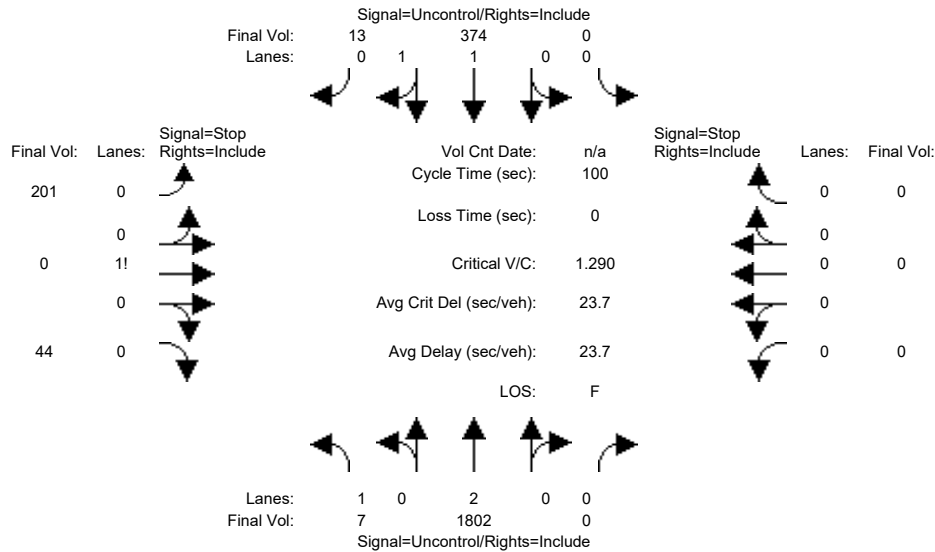
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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Background+Project PM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
Base Vol:	7	1802	0	0	0	374	13	201	0	44	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	1802	0	0	0	374	13	201	0	44	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	1802	0	0	0	374	13	201	0	44	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	7	1802	0	0	0	374	13	201	0	44	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	7	1802	0	0	0	374	13	201	0	44	0	0

Critical Gap Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
Critical Gp:	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	6.8	6.5	6.9	xxxxxx	xxxx	xxxxxx
FollowUpTim:	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	3.5	4.0	3.3	xxxxxx	xxxx	xxxxxx

Capacity Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
Cnflct Vol:	387	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	1296	2197	194	xxxx	xxxx	xxxxxx
Potent Cap.:	1183	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	157	46	822	xxxx	xxxx	xxxxxx
Move Cap.:	1183	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	156	45	822	xxxx	xxxx	xxxxxx
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	1.29	0.00	0.05	xxxx	xxxx	xxxx

Level Of Service Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
2Way95thQ:	0.0	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	8.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LTR - RT	RT	LT - LTR - RT	LTR - RT	RT	LT - LTR - RT	LTR - RT	RT	LT - LTR - RT	LTR - RT	RT
Shared Cap.:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	182	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	14.3	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	236	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxxx			xxxxxxx			235.8			xxxxxxx		
ApproachLOS:	*			*			F			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*  
 Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 13	201 0 44	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	235.8	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=16.0]  
SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=245]  
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=2441]  
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #300 (37) University Ave & Adams Dr  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 13	201 0 44	0 0 0 0

Major Street Volume: 2196  
Minor Approach Volume: 245  
Minor Approach Volume Threshold: 14 [less than minimum of 100]

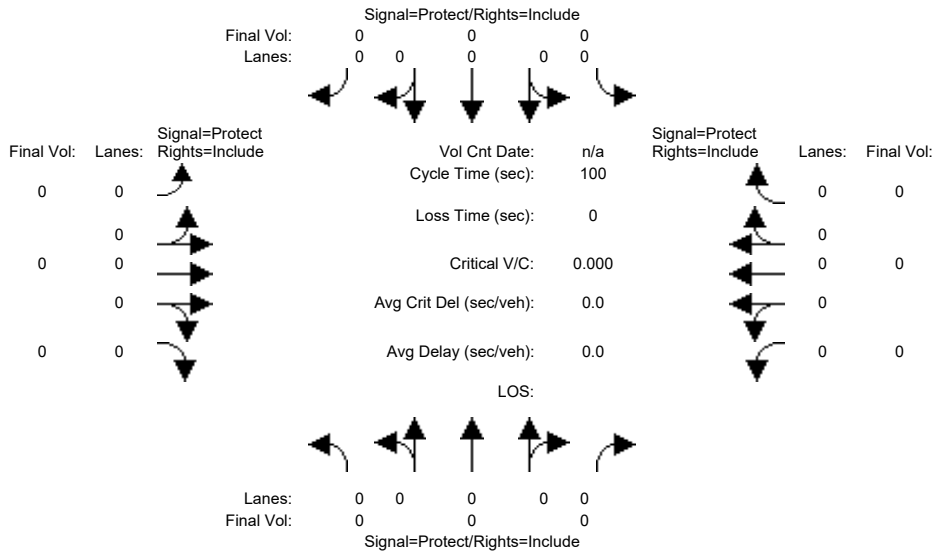
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Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background AM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0

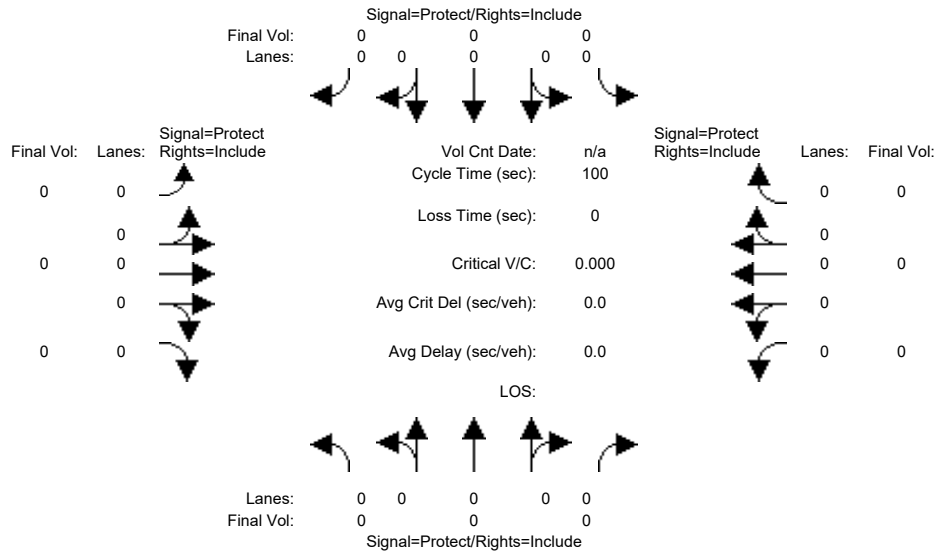
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												
Green Time:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Volume/Cap:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IncrcmntDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
HCM2kAvgQ:	0	0	0	0	0	0	0	0	0	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background PM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)

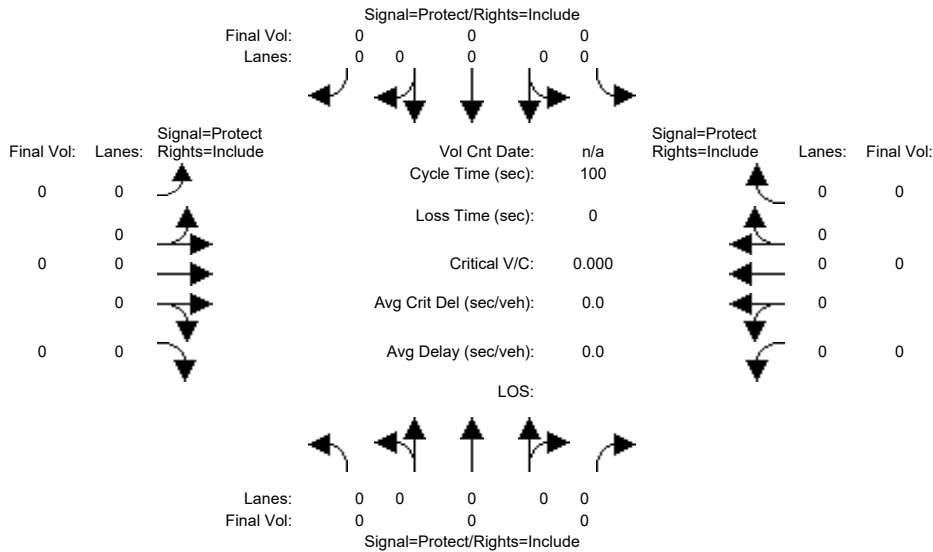


Street Name:	University Avenue						Purdue Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												
Green Time:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Volume/Cap:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IncrcmntDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
HCM2kAvgQ:	0	0	0	0	0	0	0	0	0	0	0	0



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project AM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0

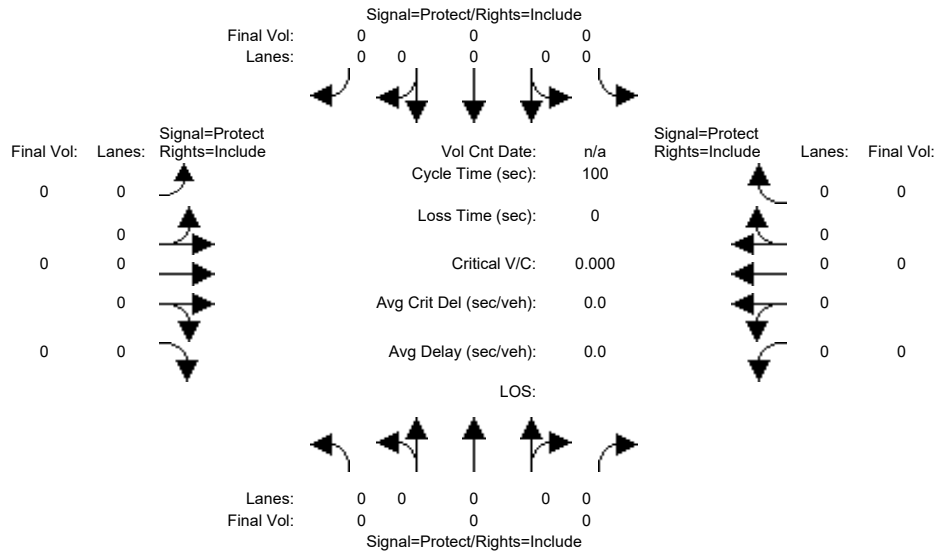
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												
Green Time:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Volume/Cap:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IncrementDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
HCM2kAvgQ:	0	0	0	0	0	0	0	0	0	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Background+Project PM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)

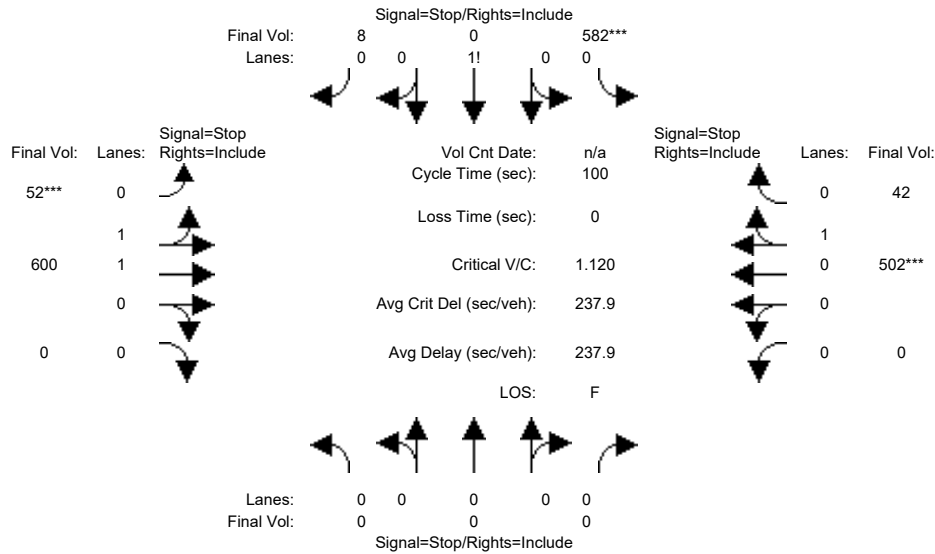


Street Name:	University Avenue						Purdue Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												
Green Time:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Volume/Cap:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IncrcmntDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
HCM2kAvgQ:	0	0	0	0	0	0	0	0	0	0	0	0



Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Cumulative AM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name: East Bayshore Road Euclid Avenue  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
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Volume Module:

Base Vol:	0	0	0	582	0	8	52	600	0	0	502	42
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	582	0	8	52	600	0	0	502	42
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	582	0	8	52	600	0	0	502	42
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	582	0	8	52	600	0	0	502	42
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	582	0	8	52	600	0	0	502	42
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	582	0	8	52	600	0	0	502	42

Saturation Flow Module:

Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.99	0.00	0.01	0.16	1.84	0.00	0.00	0.92	0.08
Final Sat.:	0	0	0	520	0	7	76	886	0	0	489	41

Capacity Analysis Module:

Vol/Sat:	xxxx	xxxx	xxxx	1.12	xxxx	1.12	0.68	0.68	xxxx	xxxx	1.03	1.03
Crit Moves:				****			****				****	
Delay/Veh:	0.0	0.0	0.0	101.3	0.0	101.3	24.8	24.5	0.0	0.0	71.9	71.9
Delay Adj:	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
AdjDel/Veh:	0.0	0.0	0.0	374.7	0.0	374.7	91.8	90.6	0.0	0.0	266	266.0
LOS by Move:	*	*	*	F	*	F	F	F	*	*	F	F
ApproachDel:	xxxxxx			101.3			24.5			71.9		
Delay Adj:	xxxxxx			3.70			3.70			3.70		
ApprAdjDel:	xxxxxx			374.7			90.7			266.0		
LOS by Appr:	*			F			F			F		
AllWayAvgQ:	0.0	0.0	0.0	13.4	13.4	13.4	1.9	1.9	0.0	9.1	9.1	9.1

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
 \*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0	0	582	0	8		52	600	0		0	502	42	
Major Street Volume:					1196											
Minor Approach Volume:					590											
Minor Approach Volume Threshold:					223											

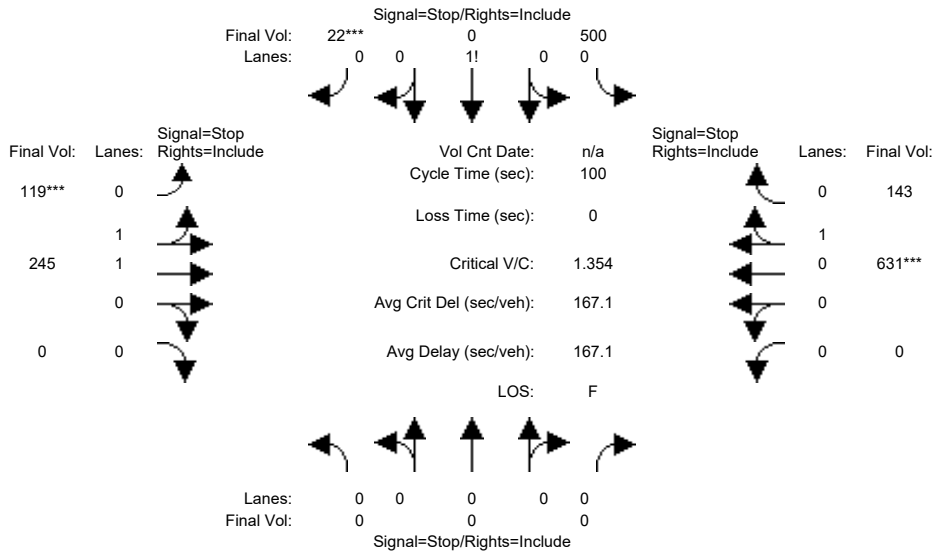
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Cumulative PM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	500	0	22	119	245	0	0	631	143
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	500	0	22	119	245	0	0	631	143
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	500	0	22	119	245	0	0	631	143
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	500	0	22	119	245	0	0	631	143
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	500	0	22	119	245	0	0	631	143
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	500	0	22	119	245	0	0	631	143
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.96	0.00	0.04	0.65	1.35	0.00	0.00	0.82	0.18
Final Sat.:	0	0	0	529	0	23	303	644	0	0	466	106
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.95	xxxx	0.95	0.39	0.38	xxxx	xxxx	1.35	1.35
Crit Moves:						****	****				****	
Delay/Veh:	0.0	0.0	0.0	51.0	0.0	51.0	15.0	14.4	0.0	0.0	190	189.9
Delay Adj:	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
AdjDel/Veh:	0.0	0.0	0.0	79.1	0.0	79.1	23.3	22.4	0.0	0.0	294	294.3
LOS by Move:	*	*	*	F	*	F	C	C	*	*	F	F
ApproachDel:	xxxxxx			51.0			14.6			189.9		
Delay Adj:	xxxxxx			1.55			1.55			1.55		
ApprAdjDel:	xxxxxx			79.1			22.7			294.3		
LOS by Appr:	*			F			C			F		
AllWayAvgQ:	0.0	0.0	0.0	6.4	6.4	6.4	0.6	0.6	0.0	28.7	28.7	28.7

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
 \*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0		500	0	22		119	245	0		0	631	143	
Major Street Volume:													1138			
Minor Approach Volume:													522			
Minor Approach Volume Threshold:													240			

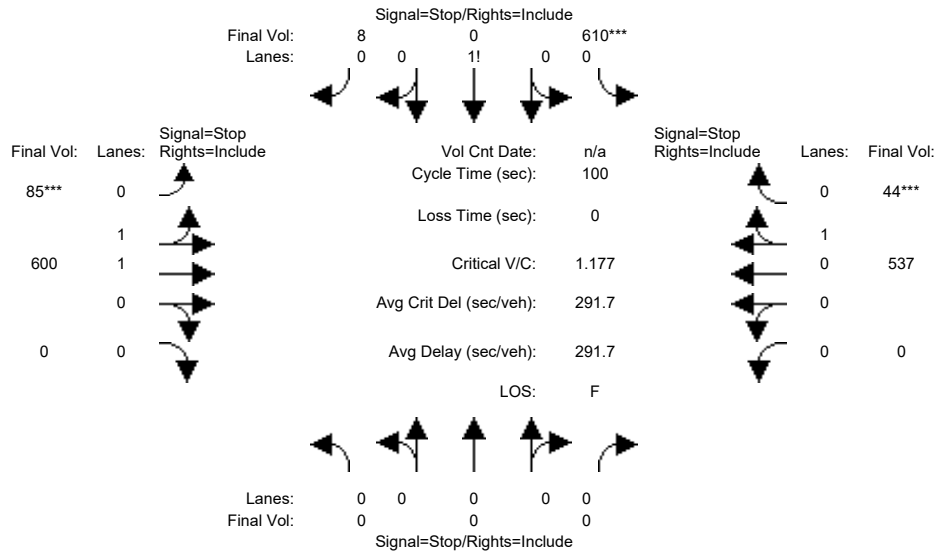
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	610	0	8	85	600	0	0	537	44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	610	0	8	85	600	0	0	537	44
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	610	0	8	85	600	0	0	537	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	610	0	8	85	600	0	0	537	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	610	0	8	85	600	0	0	537	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	610	0	8	85	600	0	0	537	44
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.99	0.00	0.01	0.25	1.75	0.00	0.00	0.92	0.08
Final Sat.:	0	0	0	518	0	7	118	841	0	0	488	40
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	1.18	xxxx	1.18	0.72	0.71	xxxx	xxxx	1.10	1.10
Crit Moves:				****			****					****
Delay/Veh:	0.0	0.0	0.0	121.8	0.0	121.8	27.4	26.7	0.0	0.0	94.5	94.5
Delay Adj:	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
AdjDel/Veh:	0.0	0.0	0.0	450.8	0.0	450.8	101.3	98.9	0.0	0.0	350	349.6
LOS by Move:	*	*	*	F	*	F	F	F	*	*	F	F
ApproachDel:	xxxxxx			121.8			26.8			94.5		
Delay Adj:	xxxxxx			3.70			3.70			3.70		
ApprAdjDel:	xxxxxx			450.8			99.2			349.6		
LOS by Appr:	*			F			F			F		
AllWayAvgQ:	0.0	0.0	0.0	16.3	16.3	16.3	2.3	2.2	0.0	12.4	12.4	12.4

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
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 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*



Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0		610	0	8		85	600	0		0	537	44	
Major Street Volume:					1266											
Minor Approach Volume:					618											
Minor Approach Volume Threshold:					204											

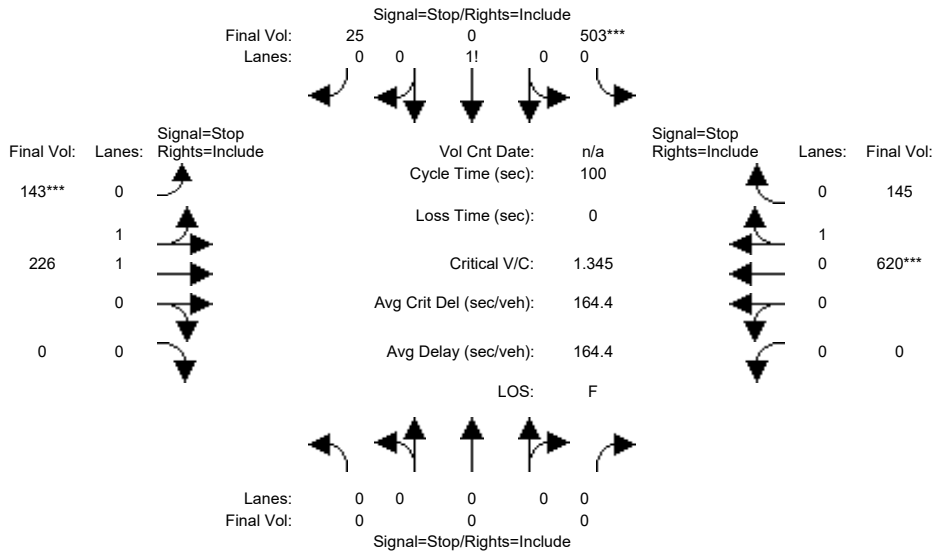
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	503	0	25	143	226	0	0	620	145
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	503	0	25	143	226	0	0	620	145
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	503	0	25	143	226	0	0	620	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	503	0	25	143	226	0	0	620	145
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	503	0	25	143	226	0	0	620	145
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	503	0	25	143	226	0	0	620	145
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.95	0.00	0.05	0.78	1.22	0.00	0.00	0.81	0.19
Final Sat.:	0	0	0	525	0	26	356	587	0	0	461	108
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.96	xxxx	0.96	0.40	0.38	xxxx	xxxx	1.35	1.35
Crit Moves:				****			****			****		
Delay/Veh:	0.0	0.0	0.0	53.5	0.0	53.5	15.4	14.6	0.0	0.0	186	186.3
Delay Adj:	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
AdjDel/Veh:	0.0	0.0	0.0	82.9	0.0	82.9	23.9	22.6	0.0	0.0	289	288.8
LOS by Move:	*	*	*	F	*	F	C	C	*	*	F	F
ApproachDel:	xxxxxx			53.5			14.9			186.3		
Delay Adj:	xxxxxx			1.55			1.55			1.55		
ApprAdjDel:	xxxxxx			82.9			23.1			288.8		
LOS by Appr:	*			F			C			F		
AllWayAvgQ:	0.0	0.0	0.0	6.7	6.7	6.7	0.6	0.6	0.0	28.0	28.0	28.0

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
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 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0		503	0	25		143	226	0		0	620	145	
Major Street Volume:	1134															
Minor Approach Volume:	528															
Minor Approach Volume Threshold:	242															

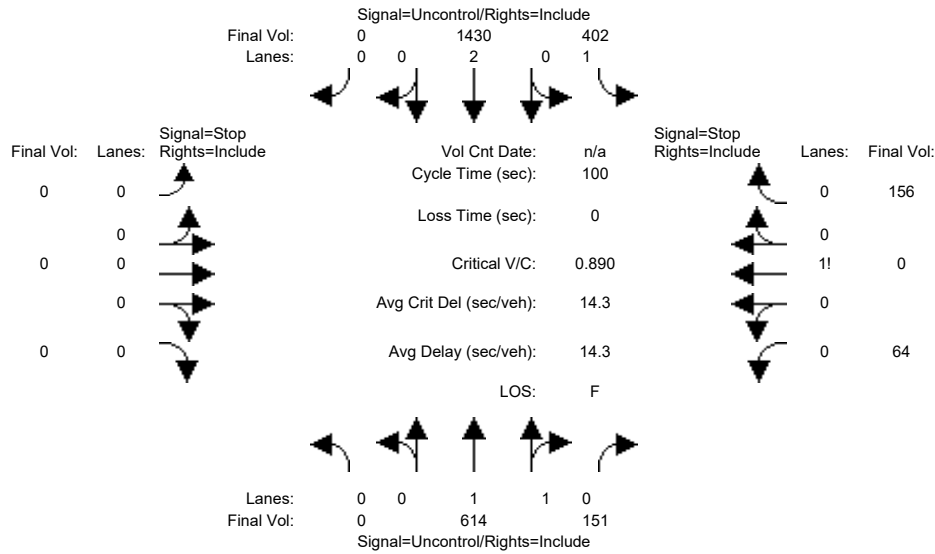
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative AM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume).

Table for Critical Gap Module with columns for movements and rows for Critical Gp and FollowUpTim.

Table for Capacity Module with columns for movements and rows for Cnflct Vol, Potent Cap., Move Cap., Total Cap., and Volume/Cap.

Table for Level Of Service Module with columns for movements and rows for 2Way95thQ, Control Del, LOS by Move, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

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Intersection #8 (36) University Avenue and Purdue Avenue
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 151	402 1430 0	0 0 0 0	64 0 156
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	159.2

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=9.7]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=220]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2817]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 151	402 1430 0	0 0 0 0	64 0 156

Major Street Volume: 2597

Minor Approach Volume: 220

Minor Approach Volume Threshold: -44 [less than minimum of 100]

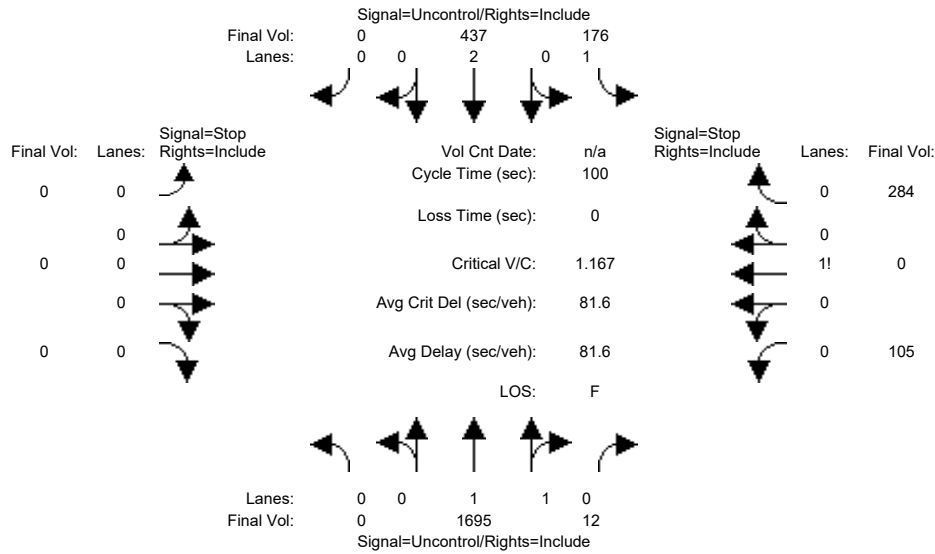
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative PM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module: Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Final Volume.

Table for Critical Gap Module: Critical Gp, FollowUpTim.

Table for Capacity Module: Cnflct Vol, Potent Cap., Move Cap., Total Cap., Volume/Cap.

Table for Level Of Service Module: 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #8 (36) University Avenue and Purdue Avenue
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 12	176 437 0	0 0 0 0	105 0 284
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	557.3

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=60.2]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=389]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2709]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 12	176 437 0	0 0 0 0	105 0 284

Major Street Volume: 2320

Minor Approach Volume: 389

Minor Approach Volume Threshold: -5 [less than minimum of 100]

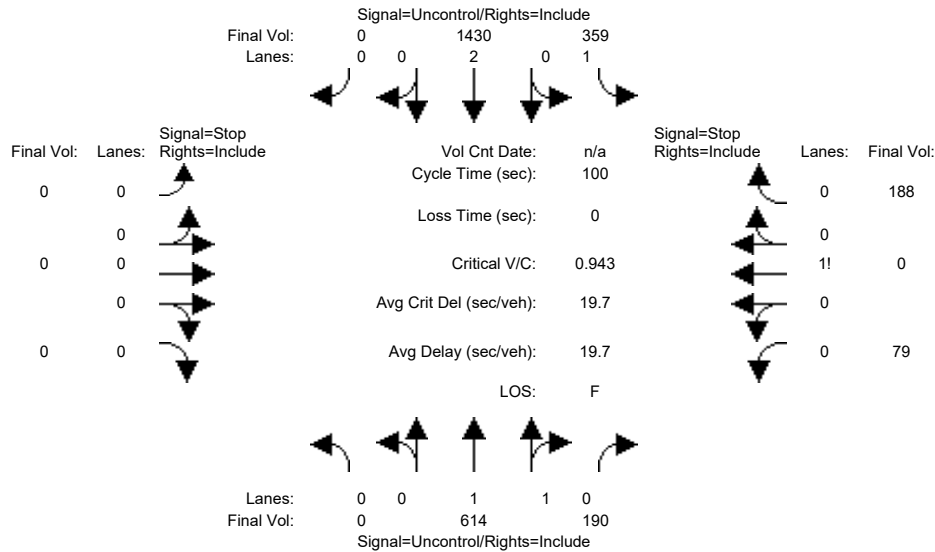
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Project AM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 12 columns representing movements and 2 rows of critical gap data including Critical Gp and FollowUpTim.

Table with 12 columns representing movements and 5 rows of capacity data including Cnflct Vol, Potent Cap., Move Cap., Total Cap., and Volume/Cap.

Table with 12 columns representing movements and 7 rows of level of service data including 2Way95thQ, Control Del, LOS by Move, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #8 (36) University Avenue and Purdue Avenue
\*\*\*\*\*



Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 190	359 1430 0	0 0 0 0	79 0 188
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	193.5

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=14.4]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=267]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2860]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 190	359 1430 0	0 0 0 0	79 0 188

Major Street Volume: 2593

Minor Approach Volume: 267

Minor Approach Volume Threshold: -43 [less than minimum of 100]

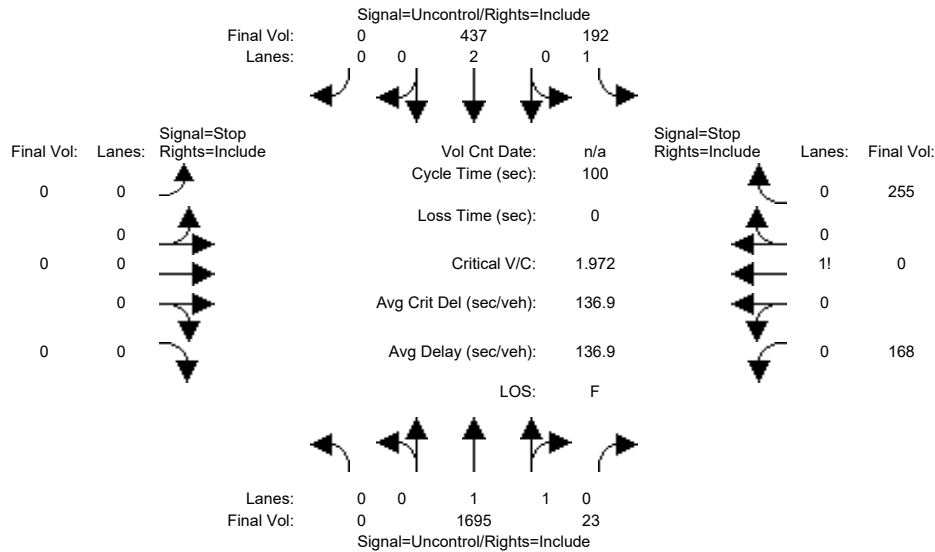
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Project PM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table for Critical Gap Module with 12 columns and 2 rows of data for Critical Gap and FollowUpTim.

Table for Capacity Module with 12 columns and 5 rows of data including Cnflct Vol, Potent Cap., Move Cap., Total Cap., and Volume/Cap.

Table for Level Of Service Module with 12 columns and 10 rows of data including 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

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Intersection #8 (36) University Avenue and Purdue Avenue
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 23	192 437 0	0 0 0 0	168 0 255
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	885.0

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=104.0]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=423]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2770]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 23	192 437 0	0 0 0 0	168 0 255

Major Street Volume: 2347

Minor Approach Volume: 423

Minor Approach Volume Threshold: -9 [less than minimum of 100]

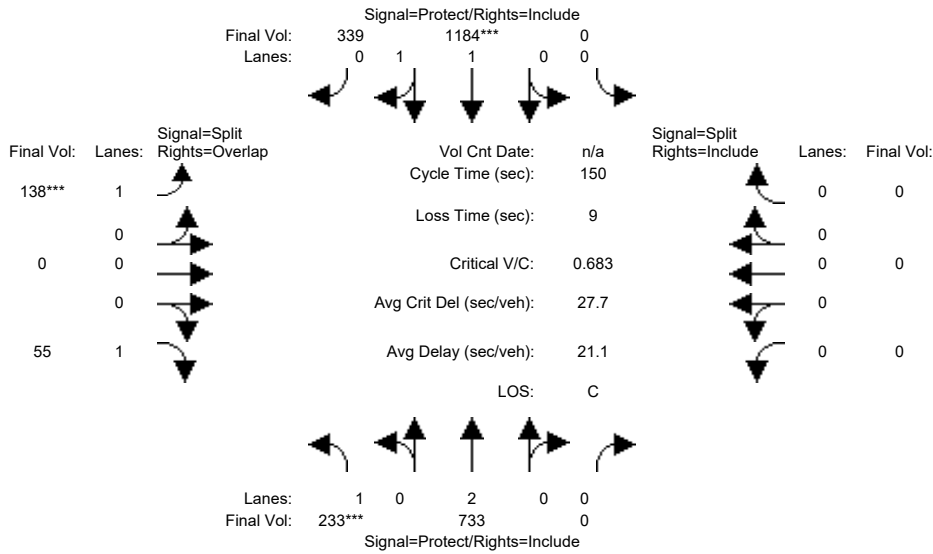
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	233	733	0	0	1184	339	138	0	55	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	233	733	0	0	1184	339	138	0	55	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	233	733	0	0	1184	339	138	0	55	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	233	733	0	0	1184	339	138	0	55	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	233	733	0	0	1184	339	138	0	55	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	233	733	0	0	1184	339	138	0	55	0	0	0

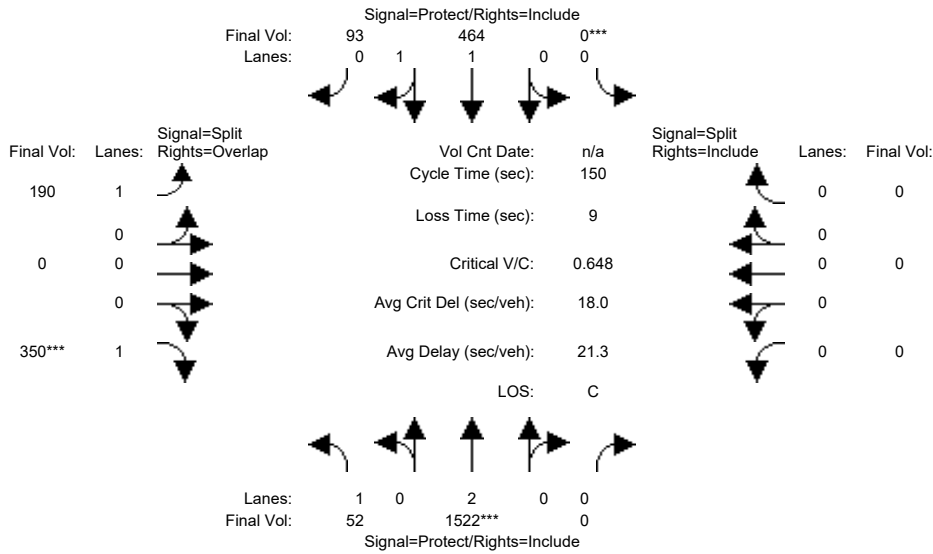
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.92	0.92	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.55	0.45	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2714	777	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.13	0.20	0.00	0.00	0.44	0.44	0.08	0.00	0.03	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	28.4	124	0.0	0.0	95.8	95.8	16.8	0.0	45.2	0.0	0.0	0.0
Volume/Cap:	0.68	0.25	0.00	0.00	0.68	0.68	0.68	0.00	0.11	0.00	0.00	0.00
Uniform Del:	56.6	2.8	0.0	0.0	17.3	17.3	64.0	0.0	37.9	0.0	0.0	0.0
IncrementDel:	5.6	0.0	0.0	0.0	0.9	0.9	9.2	0.0	0.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	62.2	2.8	0.0	0.0	18.2	18.2	73.3	0.0	38.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	62.2	2.8	0.0	0.0	18.2	18.2	73.3	0.0	38.0	0.0	0.0	0.0
LOS by Move:	E	A	A	A	B	B	E	A	D	A	A	A
HCM2kAvgQ:	11	4	0	0	23	23	7	0	2	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #9: (38) University Avenue and O'Brien Drive

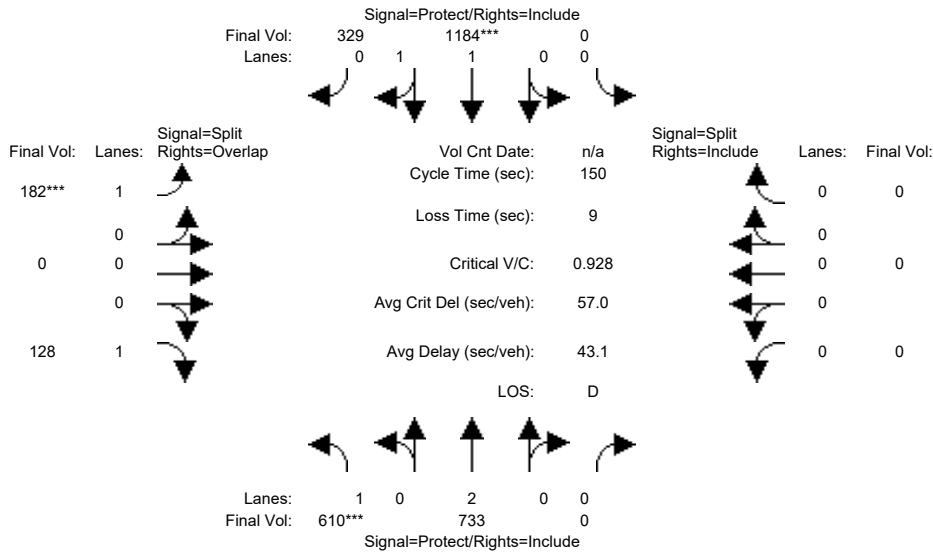


Street Name:	University Avenue						O'Brien Drive					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	52	1522	0	0	464	93	190	0	350	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	52	1522	0	0	464	93	190	0	350	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	1522	0	0	464	93	190	0	350	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	52	1522	0	0	464	93	190	0	350	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	1522	0	0	464	93	190	0	350	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	52	1522	0	0	464	93	190	0	350	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.67	0.33	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2932	588	1805	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.03	0.42	0.00	0.00	0.16	0.16	0.11	0.00	0.22	0.00	0.00	0.00
Crit Moves:	****			****					****			
Green Time:	22.9	100	0.0	0.0	77.6	77.6	40.5	0.0	63.4	0.0	0.0	0.0
Volume/Cap:	0.19	0.63	0.00	0.00	0.31	0.31	0.39	0.00	0.51	0.00	0.00	0.00
Uniform Del:	55.5	14.1	0.0	0.0	20.8	20.8	44.6	0.0	31.9	0.0	0.0	0.0
IncrementDel:	0.3	0.5	0.0	0.0	0.1	0.1	0.5	0.0	0.7	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	55.8	14.7	0.0	0.0	20.9	20.9	45.2	0.0	32.6	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	55.8	14.7	0.0	0.0	20.9	20.9	45.2	0.0	32.6	0.0	0.0	0.0
LOS by Move:	E	B	A	A	C	C	D	A	C	A	A	A
HCM2kAvgQ:	2	21	0	0	7	7	7	0	12	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	610	733	0	0	1184	329	182	0	128	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	610	733	0	0	1184	329	182	0	128	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	610	733	0	0	1184	329	182	0	128	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	610	733	0	0	1184	329	182	0	128	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	610	733	0	0	1184	329	182	0	128	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	610	733	0	0	1184	329	182	0	128	0	0	0

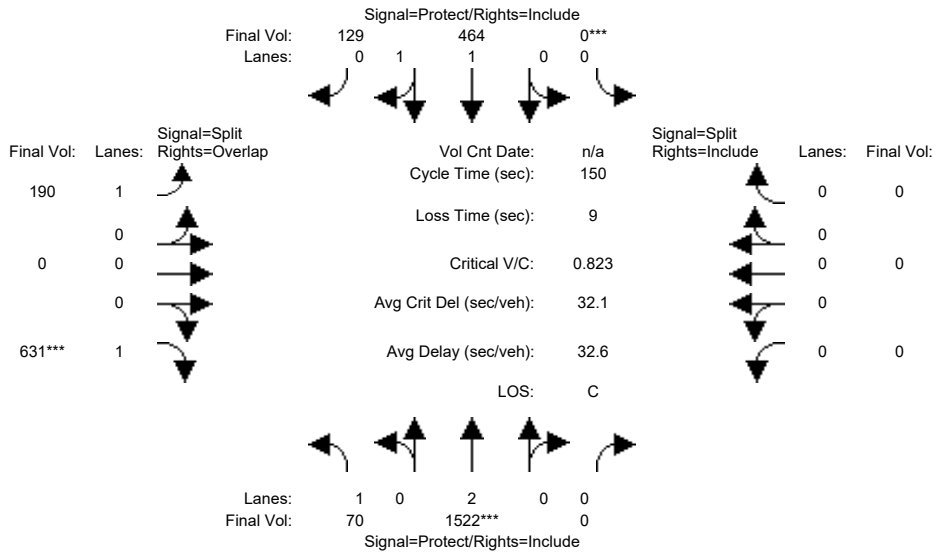
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.92	0.92	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.57	0.43	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2732	759	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.34	0.20	0.00	0.00	0.43	0.43	0.10	0.00	0.08	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	54.6	125	0.0	0.0	70.1	70.1	16.3	0.0	70.9	0.0	0.0	0.0
Volume/Cap:	0.93	0.24	0.00	0.00	0.93	0.93	0.93	0.00	0.17	0.00	0.00	0.00
Uniform Del:	45.8	2.7	0.0	0.0	37.6	37.6	66.3	0.0	22.6	0.0	0.0	0.0
IncrementDel:	19.5	0.0	0.0	0.0	9.7	9.7	44.2	0.0	0.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	65.3	2.7	0.0	0.0	47.3	47.3	110.5	0.0	22.7	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	65.3	2.7	0.0	0.0	47.3	47.3	110.5	0.0	22.7	0.0	0.0	0.0
LOS by Move:	E	A	A	A	D	D	F	A	C	A	A	A
HCM2kAvgQ:	31	4	0	0	38	38	11	0	3	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	North Bound			South Bound			East Bound			West Bound		
Base Vol:	70	1522	0	0	464	129	190	0	631	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	70	1522	0	0	464	129	190	0	631	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	70	1522	0	0	464	129	190	0	631	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	70	1522	0	0	464	129	190	0	631	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	70	1522	0	0	464	129	190	0	631	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	70	1522	0	0	464	129	190	0	631	0	0	0

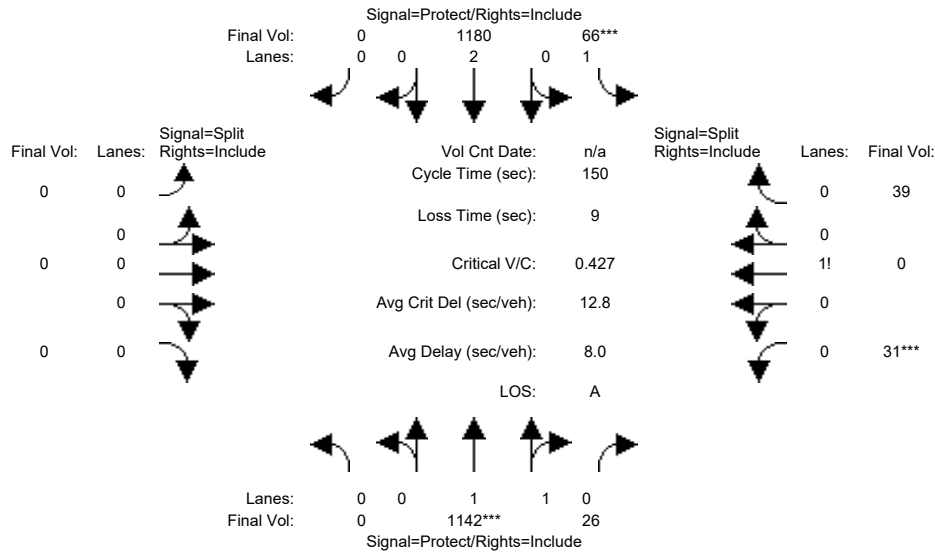
Saturation Flow Module:	North Bound			South Bound			East Bound			West Bound		
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.92	0.92	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.56	0.44	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2731	759	1805	0	1615	0	0	0

Capacity Analysis Module:	North Bound			South Bound			East Bound			West Bound		
Vol/Sat:	0.04	0.42	0.00	0.00	0.17	0.17	0.11	0.00	0.39	0.00	0.00	0.00
Crit Moves:	****			****			****			****		
Green Time:	16.7	77.6	0.0	0.0	60.9	60.9	63.4	0.0	80.1	0.0	0.0	0.0
Volume/Cap:	0.35	0.81	0.00	0.00	0.42	0.42	0.25	0.00	0.73	0.00	0.00	0.00
Uniform Del:	61.6	30.2	0.0	0.0	31.9	31.9	28.0	0.0	26.7	0.0	0.0	0.0
IncrementDel:	1.0	2.9	0.0	0.0	0.2	0.2	0.2	0.0	3.2	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	62.6	33.0	0.0	0.0	32.1	32.1	28.1	0.0	30.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	62.6	33.0	0.0	0.0	32.1	32.1	28.1	0.0	30.0	0.0	0.0	0.0
LOS by Move:	E	C	A	A	C	C	C	A	C	A	A	A
HCM2kAvgQ:	3	32	0	0	10	10	5	0	23	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	University Avenue North			University Avenue South			Notre Dame East			Notre Dame West		
Base Vol:	0	1142	26	66	1180	0	0	0	0	31	0	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1142	26	66	1180	0	0	0	0	31	0	39
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1142	26	66	1180	0	0	0	0	31	0	39
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1142	26	66	1180	0	0	0	0	31	0	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1142	26	66	1180	0	0	0	0	31	0	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1142	26	66	1180	0	0	0	0	31	0	39

Saturation Flow Module:	University Avenue North			University Avenue South			Notre Dame East			Notre Dame West		
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.90	1.00	0.90
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.44	0.00	0.56
Final Sat.:	0	3519	80	1805	3610	0	0	0	0	761	0	958

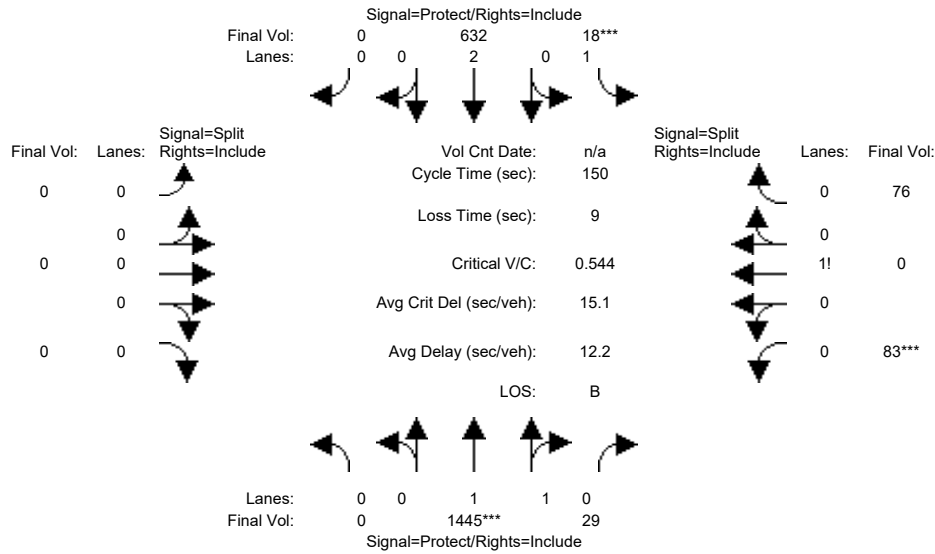
Capacity Analysis Module:	University Avenue North			University Avenue South			Notre Dame East			Notre Dame West		
Vol/Sat:	0.00	0.32	0.32	0.04	0.33	0.00	0.00	0.00	0.00	0.04	0.00	0.04
Crit Moves:	****			****						****		
Green Time:	0.0	114	113.9	12.8	127	0.0	0.0	0.0	0.0	14.3	0.0	14.3
Volume/Cap:	0.00	0.43	0.43	0.43	0.39	0.00	0.00	0.00	0.00	0.43	0.00	0.43
Uniform Del:	0.0	6.4	6.4	65.1	2.7	0.0	0.0	0.0	0.0	64.0	0.0	64.0
IncrementDel:	0.0	0.1	0.1	1.9	0.1	0.0	0.0	0.0	0.0	1.8	0.0	1.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	6.5	6.5	67.0	2.8	0.0	0.0	0.0	0.0	65.8	0.0	65.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	6.5	6.5	67.0	2.8	0.0	0.0	0.0	0.0	65.8	0.0	65.8
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	10	10	3	7	0	0	0	0	3	0	3

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	University Avenue						Notre Dame Avenue					
Base Vol:	0	1445	29	18	632	0	0	0	0	83	0	76
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1445	29	18	632	0	0	0	0	83	0	76
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1445	29	18	632	0	0	0	0	83	0	76
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1445	29	18	632	0	0	0	0	83	0	76
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1445	29	18	632	0	0	0	0	83	0	76
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1445	29	18	632	0	0	0	0	83	0	76

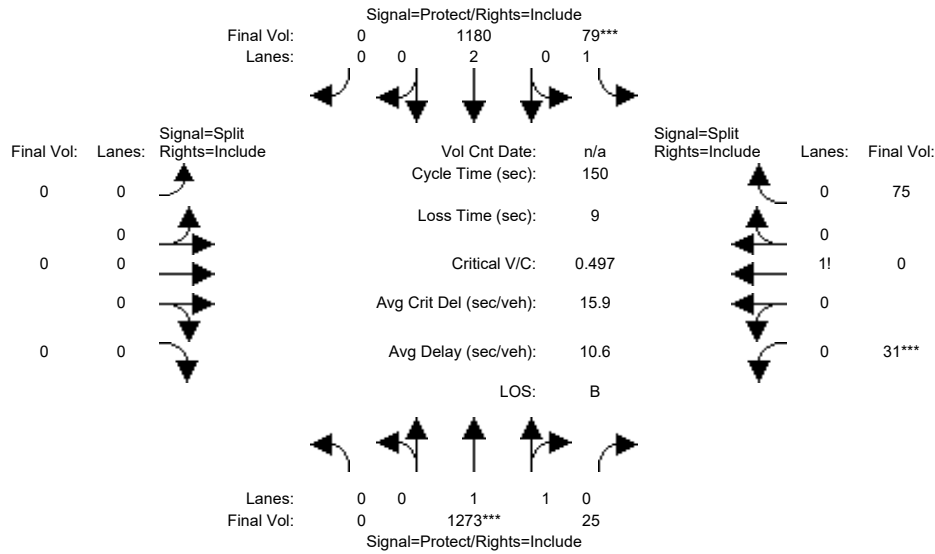
Saturation Flow Module:	University Avenue						Notre Dame Avenue					
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.91	1.00	0.91
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.52	0.00	0.48
Final Sat.:	0	3528	71	1805	3610	0	0	0	0	904	0	828

Capacity Analysis Module:	University Avenue						Notre Dame Avenue					
Vol/Sat:	0.00	0.41	0.41	0.01	0.18	0.00	0.00	0.00	0.00	0.09	0.00	0.09
Crit Moves:	****			****						****		
Green Time:	0.0	109	109.5	7.0	116	0.0	0.0	0.0	0.0	24.5	0.0	24.5
Volume/Cap:	0.00	0.56	0.56	0.21	0.23	0.00	0.00	0.00	0.00	0.56	0.00	0.56
Uniform Del:	0.0	9.3	9.3	68.8	4.5	0.0	0.0	0.0	0.0	57.8	0.0	57.8
IncrementDel:	0.0	0.3	0.3	1.3	0.0	0.0	0.0	0.0	0.0	2.6	0.0	2.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	9.6	9.6	70.1	4.6	0.0	0.0	0.0	0.0	60.3	0.0	60.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	9.6	9.6	70.1	4.6	0.0	0.0	0.0	0.0	60.3	0.0	60.3
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	16	16	1	4	0	0	0	0	7	0	7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1273	25	79	1180	0	0	0	0	31	0	75
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1273	25	79	1180	0	0	0	0	31	0	75
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1273	25	79	1180	0	0	0	0	31	0	75
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1273	25	79	1180	0	0	0	0	31	0	75
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1273	25	79	1180	0	0	0	0	31	0	75
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1273	25	79	1180	0	0	0	0	31	0	75

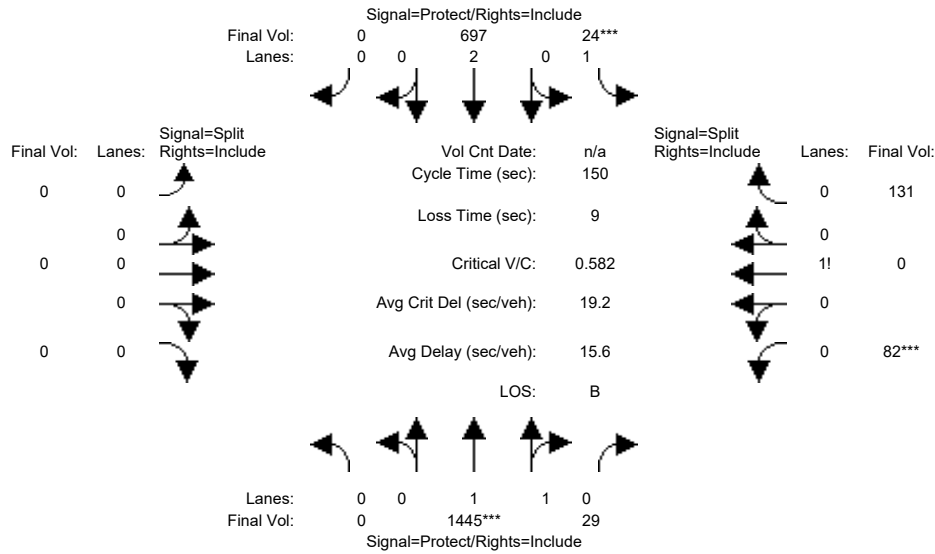
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.29	0.00	0.71
Final Sat.:	0	3530	69	1805	3610	0	0	0	0	495	0	1198

Capacity Analysis Module:												
Vol/Sat:	0.00	0.36	0.36	0.04	0.33	0.00	0.00	0.00	0.00	0.06	0.00	0.06
Crit Moves:	****			****						****		
Green Time:	0.0	109	108.9	13.2	122	0.0	0.0	0.0	0.0	18.9	0.0	18.9
Volume/Cap:	0.00	0.50	0.50	0.50	0.40	0.00	0.00	0.00	0.00	0.50	0.00	0.50
Uniform Del:	0.0	8.8	8.8	65.2	3.9	0.0	0.0	0.0	0.0	61.1	0.0	61.1
IncrementDel:	0.0	0.1	0.1	2.4	0.1	0.0	0.0	0.0	0.0	1.8	0.0	1.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	9.0	9.0	67.7	3.9	0.0	0.0	0.0	0.0	62.9	0.0	62.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	9.0	9.0	67.7	3.9	0.0	0.0	0.0	0.0	62.9	0.0	62.9
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	13	13	4	8	0	0	0	0	5	0	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1445	29	24	697	0	0	0	0	82	0	131
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1445	29	24	697	0	0	0	0	82	0	131
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1445	29	24	697	0	0	0	0	82	0	131
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1445	29	24	697	0	0	0	0	82	0	131
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1445	29	24	697	0	0	0	0	82	0	131
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1445	29	24	697	0	0	0	0	82	0	131

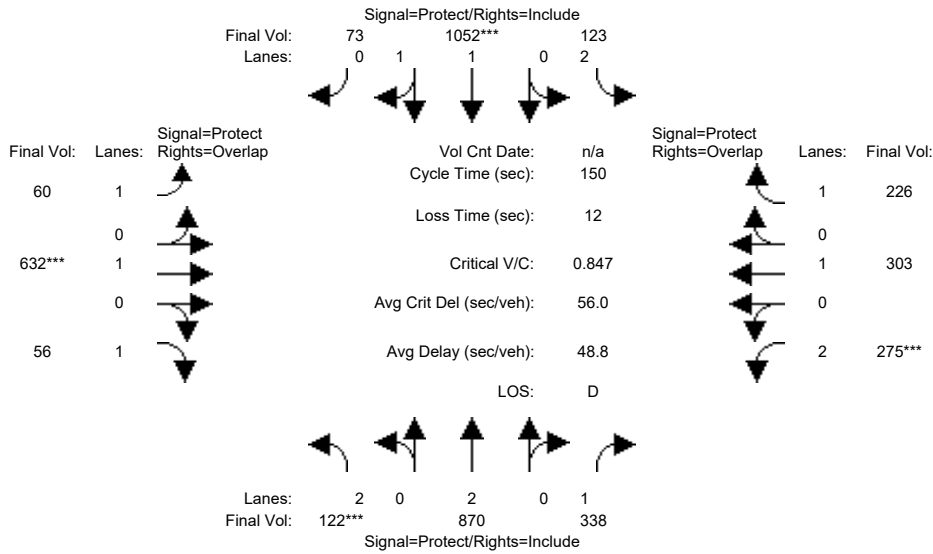
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.90	1.00	0.90
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.38	0.00	0.62
Final Sat.:	0	3528	71	1805	3610	0	0	0	0	658	0	1051

Capacity Analysis Module:												
Vol/Sat:	0.00	0.41	0.41	0.01	0.19	0.00	0.00	0.00	0.00	0.12	0.00	0.12
Crit Moves:	****			****						****		
Green Time:	0.0	103	102.7	7.0	110	0.0	0.0	0.0	0.0	31.3	0.0	31.3
Volume/Cap:	0.00	0.60	0.60	0.28	0.26	0.00	0.00	0.00	0.00	0.60	0.00	0.60
Uniform Del:	0.0	12.6	12.6	69.1	6.7	0.0	0.0	0.0	0.0	53.7	0.0	53.7
IncrementDel:	0.0	0.4	0.4	1.9	0.1	0.0	0.0	0.0	0.0	2.8	0.0	2.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	13.0	13.0	70.9	6.8	0.0	0.0	0.0	0.0	56.5	0.0	56.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	13.0	13.0	70.9	6.8	0.0	0.0	0.0	0.0	56.5	0.0	56.5
LOS by Move:	A	B	B	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	19	19	1	5	0	0	0	0	9	0	9

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	122	870	338	123	1052	73	60	632	56	275	303	226
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	122	870	338	123	1052	73	60	632	56	275	303	226
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	122	870	338	123	1052	73	60	632	56	275	303	226
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	122	870	338	123	1052	73	60	632	56	275	303	226
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	122	870	338	123	1052	73	60	632	56	275	303	226
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	122	870	338	123	1052	73	60	632	56	275	303	226

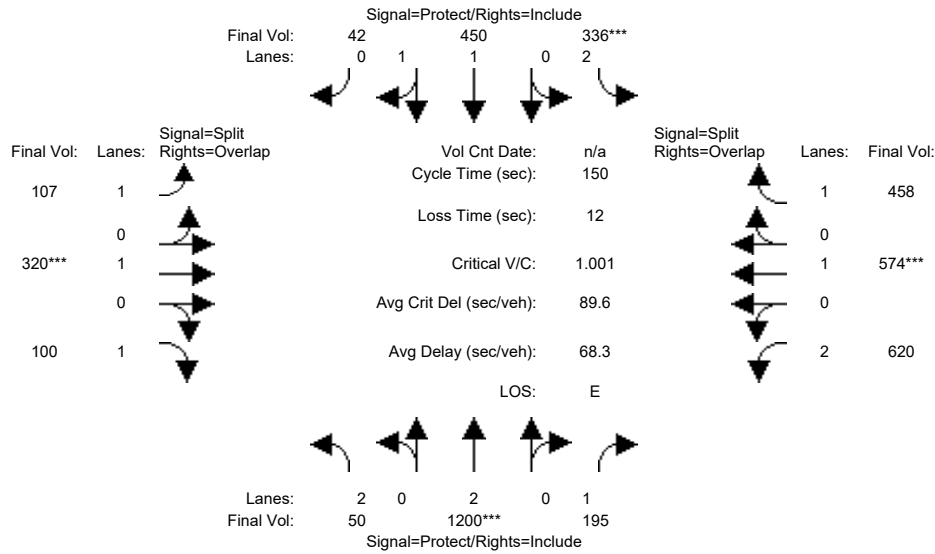
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.92	0.83	0.89	0.91	0.91	0.93	0.98	0.83	0.90	0.98	0.83
Lanes:	2.00	2.00	1.00	2.00	1.87	0.13	1.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3400	3505	1568	3400	3245	225	1769	1862	1583	3432	1862	1583

Capacity Analysis Module:												
Vol/Sat:	0.04	0.25	0.22	0.04	0.32	0.32	0.03	0.34	0.04	0.08	0.16	0.14
Crit Moves:	***			****			****			****		
Green Time:	7.0	54.0	54.0	10.1	57.1	57.1	16.5	59.8	66.8	14.1	57.4	67.6
Volume/Cap:	0.77	0.69	0.60	0.53	0.85	0.85	0.31	0.85	0.08	0.85	0.43	0.32
Uniform Del:	70.7	40.9	39.2	67.6	42.6	42.6	61.5	41.1	23.9	66.9	34.1	26.4
IncrementDel:	20.1	1.6	1.8	2.5	5.5	5.5	0.9	9.3	0.0	19.0	0.4	0.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	90.8	42.5	41.0	70.1	48.1	48.1	62.4	50.4	24.0	85.9	34.5	26.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	90.8	42.5	41.0	70.1	48.1	48.1	62.4	50.4	24.0	85.9	34.5	26.7
LOS by Move:	F	D	D	E	D	D	E	D	C	F	C	C
HCM2kAvgQ:	4	18	13	4	27	27	3	28	1	9	10	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	50	1200	195	336	450	42	107	320	100	620	574	458
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	1200	195	336	450	42	107	320	100	620	574	458
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	50	1200	195	336	450	42	107	320	100	620	574	458
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	50	1200	195	336	450	42	107	320	100	620	574	458
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	1200	195	336	450	42	107	320	100	620	574	458
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	50	1200	195	336	450	42	107	320	100	620	574	458

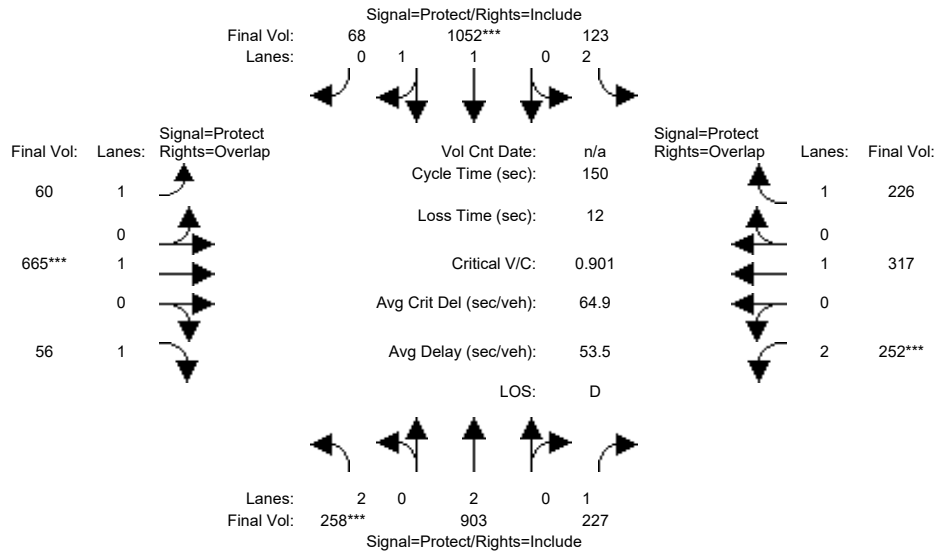
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.92	0.83	0.89	0.91	0.91	0.93	0.98	0.83	0.90	0.98	0.83
Lanes:	2.00	2.00	1.00	2.00	1.83	0.17	1.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3400	3505	1568	3400	3164	295	1769	1862	1583	3432	1862	1583

Capacity Analysis Module:												
Vol/Sat:	0.01	0.34	0.12	0.10	0.14	0.14	0.06	0.17	0.06	0.18	0.31	0.29
Crit Moves:	****			****			****			****		
Green Time:	16.3	51.3	51.3	14.8	49.8	49.8	25.7	25.7	42.1	46.2	46.2	61.0
Volume/Cap:	0.14	1.00	0.36	1.00	0.43	0.43	0.35	1.00	0.23	0.59	1.00	0.71
Uniform Del:	60.5	49.4	37.1	67.6	39.1	39.1	54.8	62.1	41.4	43.9	51.9	37.2
IncrementDel:	0.2	26.3	0.4	49.5	0.3	0.3	0.7	50.7	0.3	0.9	37.9	3.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	60.6	75.7	37.5	117.1	39.3	39.3	55.5	113	41.7	44.7	89.8	40.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	60.6	75.7	37.5	117.1	39.3	39.3	55.5	113	41.7	44.7	89.8	40.9
LOS by Move:	E	E	D	F	D	D	E	F	D	D	F	D
HCM2kAvgQ:	1	35	7	12	9	9	4	20	3	13	32	18

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	258	903	227	123	1052	68	60	665	56	252	317	226
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	258	903	227	123	1052	68	60	665	56	252	317	226
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	258	903	227	123	1052	68	60	665	56	252	317	226
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	258	903	227	123	1052	68	60	665	56	252	317	226
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	258	903	227	123	1052	68	60	665	56	252	317	226
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	258	903	227	123	1052	68	60	665	56	252	317	226

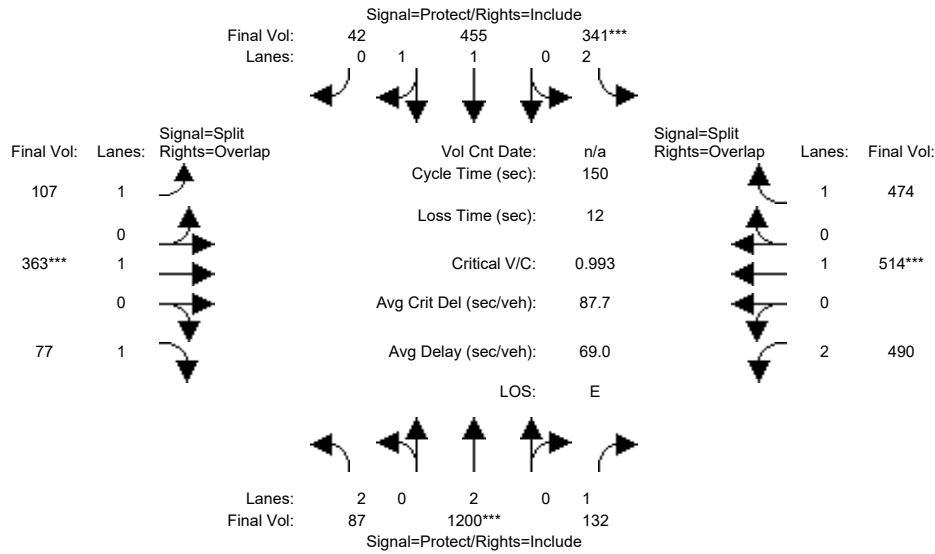
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.92	0.83	0.89	0.91	0.91	0.93	0.98	0.83	0.90	0.98	0.83
Lanes:	2.00	2.00	1.00	2.00	1.88	0.12	1.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3400	3505	1568	3400	3263	211	1769	1862	1583	3432	1862	1583

Capacity Analysis Module:												
Vol/Sat:	0.08	0.26	0.14	0.04	0.32	0.32	0.03	0.36	0.04	0.07	0.17	0.14
Crit Moves:	***			****			****			****		
Green Time:	12.6	56.1	56.1	10.2	53.7	53.7	15.4	59.5	72.1	12.2	56.3	66.4
Volume/Cap:	0.90	0.69	0.39	0.53	0.90	0.90	0.33	0.90	0.07	0.90	0.45	0.32
Uniform Del:	68.1	39.6	34.3	67.6	45.6	45.6	62.5	42.5	21.0	68.3	35.3	27.2
IncrementDel:	29.1	1.6	0.4	2.4	9.2	9.2	1.1	14.2	0.0	29.6	0.5	0.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	97.2	41.1	34.8	70.0	54.8	54.8	63.6	56.7	21.0	97.9	35.8	27.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	97.2	41.1	34.8	70.0	54.8	54.8	63.6	56.7	21.0	97.9	35.8	27.4
LOS by Move:	F	D	C	E	D	D	E	E	C	F	D	C
HCM2kAvgQ:	9	19	8	4	29	29	3	32	1	9	11	7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	87	1200	132	341	455	42	107	363	77	490	514	474
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	1200	132	341	455	42	107	363	77	490	514	474
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	1200	132	341	455	42	107	363	77	490	514	474
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	87	1200	132	341	455	42	107	363	77	490	514	474
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	87	1200	132	341	455	42	107	363	77	490	514	474
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	87	1200	132	341	455	42	107	363	77	490	514	474

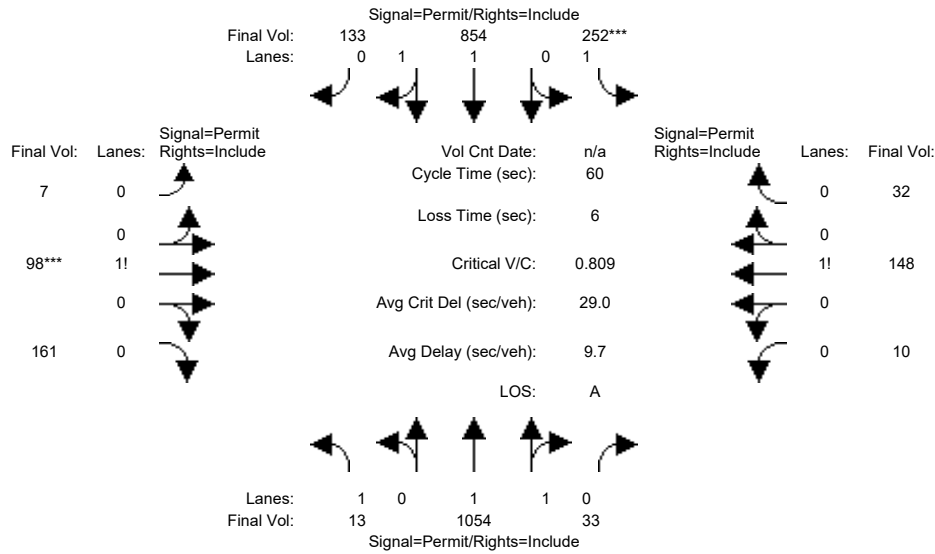
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.92	0.83	0.89	0.91	0.91	0.93	0.98	0.83	0.90	0.98	0.83
Lanes:	2.00	2.00	1.00	2.00	1.83	0.17	1.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3400	3505	1568	3400	3167	292	1769	1862	1583	3432	1862	1583

Capacity Analysis Module:												
Vol/Sat:	0.03	0.34	0.08	0.10	0.14	0.14	0.06	0.19	0.05	0.14	0.28	0.30
Crit Moves:	****			****			****			****		
Green Time:	16.4	51.7	51.7	15.1	50.5	50.5	29.4	29.4	45.8	41.7	41.7	56.8
Volume/Cap:	0.23	0.99	0.24	0.99	0.43	0.43	0.31	0.99	0.16	0.51	0.99	0.79
Uniform Del:	61.1	49.0	35.2	67.4	38.6	38.6	51.6	60.2	38.0	45.6	54.0	41.3
IncrementDel:	0.3	24.1	0.2	46.6	0.3	0.3	0.5	45.1	0.2	0.5	37.7	7.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	61.4	73.1	35.4	114.0	38.8	38.8	52.1	105	38.2	46.1	91.7	48.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	61.4	73.1	35.4	114.0	38.8	38.8	52.1	105	38.2	46.1	91.7	48.3
LOS by Move:	E	E	D	F	D	D	D	F	D	D	F	D
HCM2kAvgQ:	2	35	4	12	9	9	4	22	3	10	29	21

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	13	1054	33	252	854	133	7	98	161	10	148	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	13	1054	33	252	854	133	7	98	161	10	148	32
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	13	1054	33	252	854	133	7	98	161	10	148	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	13	1054	33	252	854	133	7	98	161	10	148	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	13	1054	33	252	854	133	7	98	161	10	148	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	13	1054	33	252	854	133	7	98	161	10	148	32

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.26	0.95	0.95	0.23	0.93	0.93	0.91	0.91	0.91	0.95	0.95	0.95
Lanes:	1.00	1.94	0.06	1.00	1.73	0.27	0.03	0.37	0.60	0.05	0.78	0.17
Final Sat.:	500	3486	109	439	3061	477	46	637	1047	95	1403	303

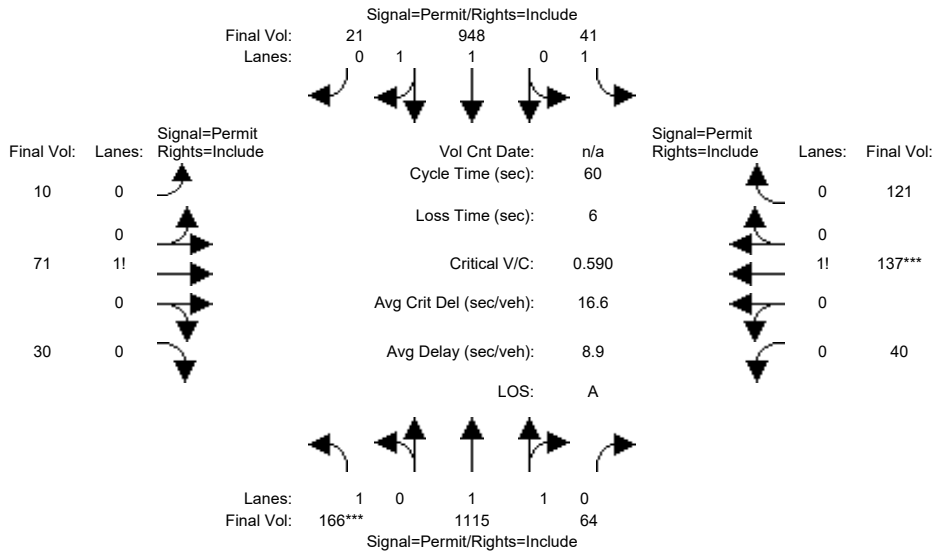
Capacity Analysis Module:												
Vol/Sat:	0.03	0.30	0.30	0.57	0.28	0.28	0.15	0.15	0.15	0.11	0.11	0.11
Crit Moves:				****			****					
Green Time:	42.6	42.6	42.6	42.6	42.6	42.6	11.4	11.4	11.4	11.4	11.4	11.4
Volume/Cap:	0.04	0.43	0.43	0.81	0.39	0.39	0.81	0.81	0.81	0.56	0.56	0.56
Uniform Del:	2.6	3.6	3.6	5.9	3.5	3.5	23.3	23.3	23.3	22.0	22.0	22.0
IncrementDel:	0.0	0.1	0.1	14.5	0.1	0.1	13.8	13.8	13.8	2.0	2.0	2.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	2.6	3.7	3.7	20.4	3.6	3.6	37.1	37.1	37.1	24.0	24.0	24.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	2.6	3.7	3.7	20.4	3.6	3.6	37.1	37.1	37.1	24.0	24.0	24.0
LOS by Move:	A	A	A	C	A	A	D	D	D	C	C	C
HCM2kAvgQ:	0	5	5	6	4	4	7	7	7	4	4	4

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	166	1115	64	41	948	21	10	71	30	40	137	121
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	166	1115	64	41	948	21	10	71	30	40	137	121
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	166	1115	64	41	948	21	10	71	30	40	137	121
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	166	1115	64	41	948	21	10	71	30	40	137	121
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	166	1115	64	41	948	21	10	71	30	40	137	121
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	166	1115	64	41	948	21	10	71	30	40	137	121

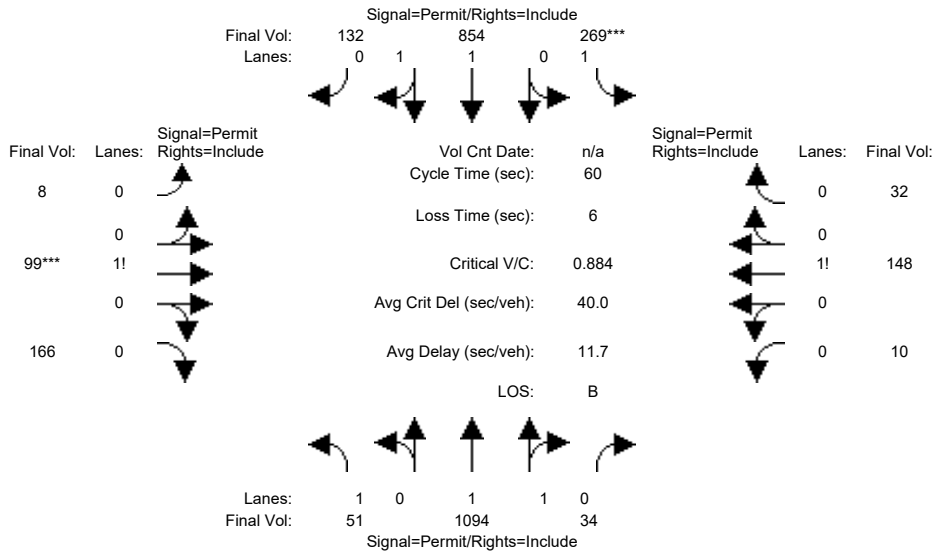
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.25	0.94	0.94	0.18	0.95	0.95	0.93	0.93	0.93	0.90	0.90	0.90
Lanes:	1.00	1.89	0.11	1.00	1.96	0.04	0.09	0.64	0.27	0.13	0.46	0.41
Final Sat.:	466	3387	194	336	3521	78	159	1132	478	229	786	694

Capacity Analysis Module:												
Vol/Sat:	0.36	0.33	0.33	0.12	0.27	0.27	0.06	0.06	0.06	0.17	0.17	0.17
Crit Moves:	***									****		
Green Time:	36.3	36.3	36.3	36.3	36.3	36.3	17.7	17.7	17.7	17.7	17.7	17.7
Volume/Cap:	0.59	0.54	0.54	0.20	0.45	0.45	0.21	0.21	0.21	0.59	0.59	0.59
Uniform Del:	7.3	7.0	7.0	5.3	6.4	6.4	15.9	15.9	15.9	18.0	18.0	18.0
IncrementDel:	3.3	0.3	0.3	0.5	0.1	0.1	0.2	0.2	0.2	1.8	1.8	1.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	10.6	7.3	7.3	5.8	6.6	6.6	16.1	16.1	16.1	19.9	19.9	19.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.6	7.3	7.3	5.8	6.6	6.6	16.1	16.1	16.1	19.9	19.9	19.9
LOS by Move:	B	A	A	A	A	A	B	B	B	B	B	B
HCM2kAvgQ:	3	7	7	1	5	5	2	2	2	6	6	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	51	1094	34	269	854	132	8	99	166	10	148	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	1094	34	269	854	132	8	99	166	10	148	32
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	51	1094	34	269	854	132	8	99	166	10	148	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	51	1094	34	269	854	132	8	99	166	10	148	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	51	1094	34	269	854	132	8	99	166	10	148	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	51	1094	34	269	854	132	8	99	166	10	148	32

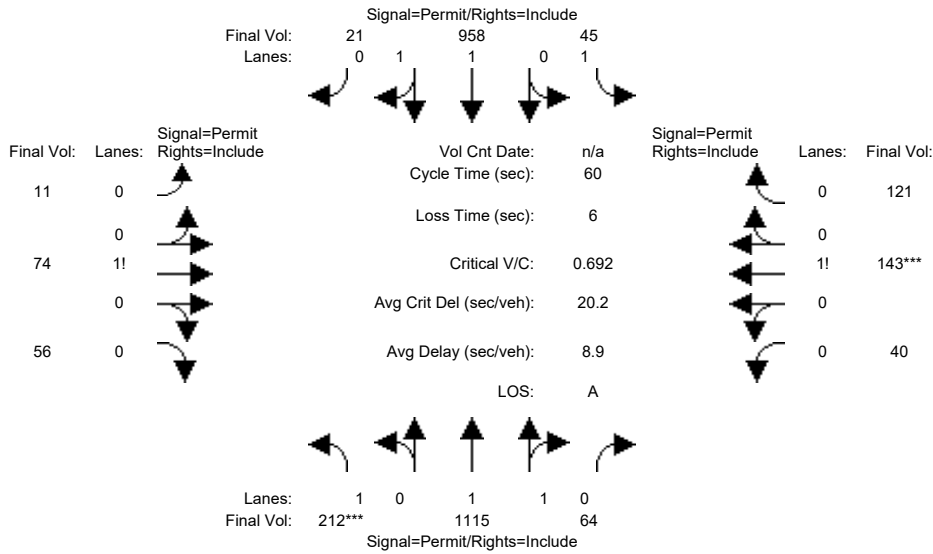
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.27	0.95	0.95	0.22	0.93	0.93	0.91	0.91	0.91	0.93	0.93	0.93
Lanes:	1.00	1.94	0.06	1.00	1.73	0.27	0.03	0.36	0.61	0.05	0.78	0.17
Final Sat.:	505	3487	108	422	3064	474	51	628	1053	93	1382	299

Capacity Analysis Module:												
Vol/Sat:	0.10	0.31	0.31	0.64	0.28	0.28	0.16	0.16	0.16	0.11	0.11	0.11
Crit Moves:				****			****					
Green Time:	43.3	43.3	43.3	43.3	43.3	43.3	10.7	10.7	10.7	10.7	10.7	10.7
Volume/Cap:	0.14	0.43	0.43	0.88	0.39	0.39	0.88	0.88	0.88	0.60	0.60	0.60
Uniform Del:	2.6	3.4	3.4	6.4	3.2	3.2	24.0	24.0	24.0	22.7	22.7	22.7
IncrementDel:	0.2	0.1	0.1	24.8	0.1	0.1	24.5	24.5	24.5	3.2	3.2	3.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	2.8	3.5	3.5	31.2	3.3	3.3	48.6	48.6	48.6	25.9	25.9	25.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	2.8	3.5	3.5	31.2	3.3	3.3	48.6	48.6	48.6	25.9	25.9	25.9
LOS by Move:	A	A	A	C	A	A	D	D	D	C	C	C
HCM2kAvgQ:	0	5	5	7	4	4	8	8	8	4	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	212	1115	64	45	958	21	11	74	56	40	143	121
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	212	1115	64	45	958	21	11	74	56	40	143	121
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	212	1115	64	45	958	21	11	74	56	40	143	121
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	212	1115	64	45	958	21	11	74	56	40	143	121
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	212	1115	64	45	958	21	11	74	56	40	143	121
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	212	1115	64	45	958	21	11	74	56	40	143	121

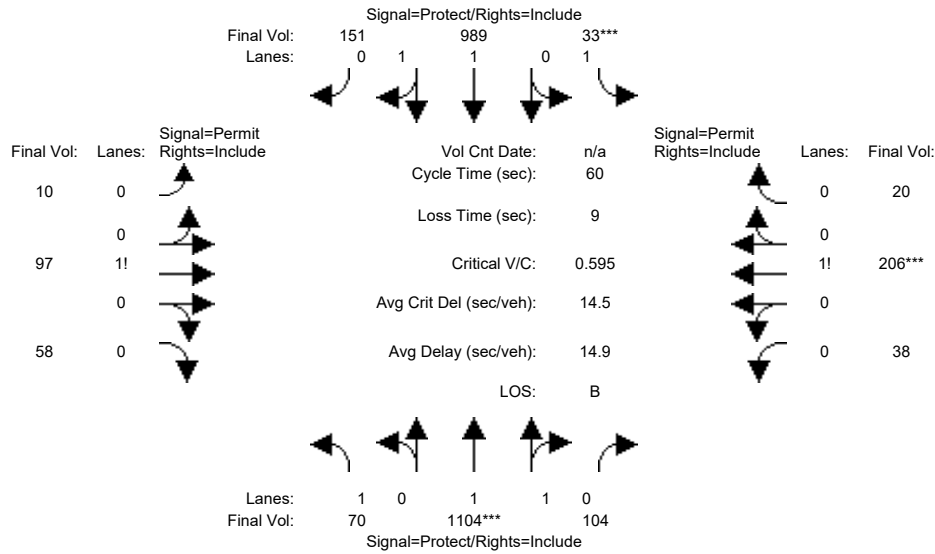
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.25	0.94	0.94	0.19	0.95	0.95	0.92	0.92	0.92	0.90	0.90	0.90
Lanes:	1.00	1.89	0.11	1.00	1.96	0.04	0.08	0.52	0.40	0.13	0.47	0.40
Final Sat.:	477	3387	194	357	3522	77	137	919	695	224	801	677

Capacity Analysis Module:												
Vol/Sat:	0.44	0.33	0.33	0.13	0.27	0.27	0.08	0.08	0.08	0.18	0.18	0.18
Crit Moves:	***									****		
Green Time:	38.5	38.5	38.5	38.5	38.5	38.5	15.5	15.5	15.5	15.5	15.5	15.5
Volume/Cap:	0.69	0.51	0.51	0.20	0.42	0.42	0.31	0.31	0.31	0.69	0.69	0.69
Uniform Del:	6.9	5.7	5.7	4.4	5.3	5.3	18.0	18.0	18.0	20.1	20.1	20.1
IncrcmntDel:	6.7	0.2	0.2	0.4	0.1	0.1	0.4	0.4	0.4	4.7	4.7	4.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	13.6	5.9	5.9	4.8	5.4	5.4	18.4	18.4	18.4	24.8	24.8	24.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.6	5.9	5.9	4.8	5.4	5.4	18.4	18.4	18.4	24.8	24.8	24.8
LOS by Move:	B	A	A	A	A	A	B	B	B	C	C	C
HCM2kAvgQ:	4	7	7	1	5	5	2	2	2	7	7	7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	70	1104	104	33	989	151	10	97	58	38	206	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	70	1104	104	33	989	151	10	97	58	38	206	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	70	1104	104	33	989	151	10	97	58	38	206	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	70	1104	104	33	989	151	10	97	58	38	206	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	70	1104	104	33	989	151	10	97	58	38	206	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	70	1104	104	33	989	151	10	97	58	38	206	20

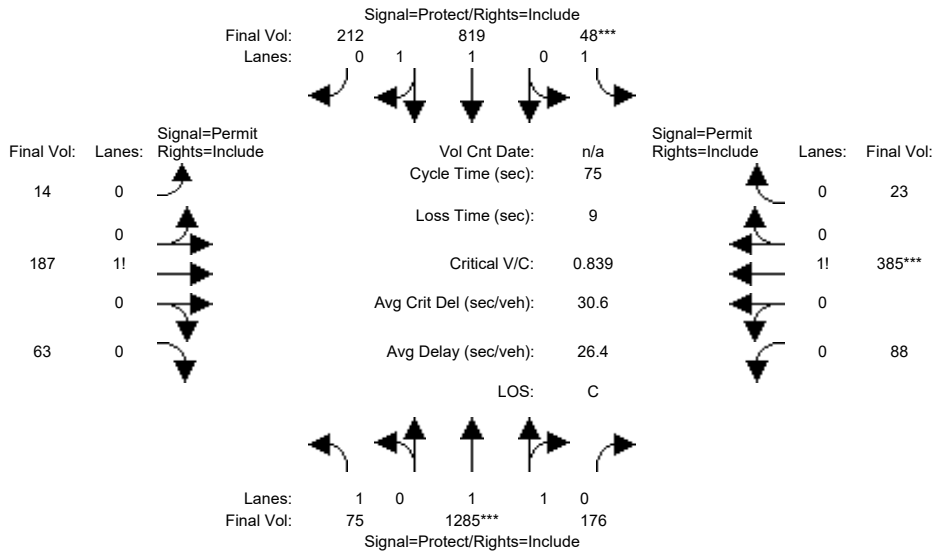
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.94	0.94	0.95	0.93	0.93	0.93	0.93	0.93	0.94	0.94	0.94
Lanes:	1.00	1.83	0.17	1.00	1.74	0.26	0.06	0.59	0.35	0.14	0.78	0.08
Final Sat.:	1805	3256	307	1805	3069	469	108	1044	624	257	1391	135

Capacity Analysis Module:												
Vol/Sat:	0.04	0.34	0.34	0.02	0.32	0.32	0.09	0.09	0.09	0.15	0.15	0.15
Crit Moves:	****			****						****		
Green Time:	10.0	30.6	30.6	7.0	27.6	27.6	13.4	13.4	13.4	13.4	13.4	13.4
Volume/Cap:	0.23	0.66	0.66	0.16	0.70	0.70	0.42	0.42	0.42	0.66	0.66	0.66
Uniform Del:	21.7	10.9	10.9	23.8	12.9	12.9	20.0	20.0	20.0	21.3	21.3	21.3
IncrementDel:	0.4	0.9	0.9	0.3	1.4	1.4	0.7	0.7	0.7	4.2	4.2	4.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	22.1	11.8	11.8	24.2	14.3	14.3	20.7	20.7	20.7	25.5	25.5	25.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.1	11.8	11.8	24.2	14.3	14.3	20.7	20.7	20.7	25.5	25.5	25.5
LOS by Move:	C	B	B	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	1	10	10	1	10	10	3	3	3	6	6	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	75	1285	176	48	819	212	14	187	63	88	385	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1285	176	48	819	212	14	187	63	88	385	23
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	1285	176	48	819	212	14	187	63	88	385	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1285	176	48	819	212	14	187	63	88	385	23
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1285	176	48	819	212	14	187	63	88	385	23
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	75	1285	176	48	819	212	14	187	63	88	385	23

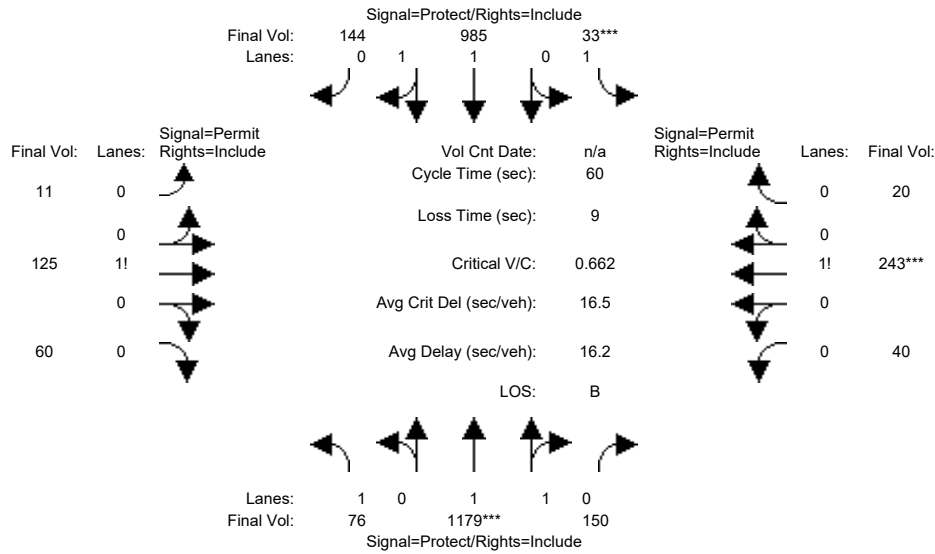
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	0.92	0.92	0.94	0.94	0.94	0.87	0.87	0.87
Lanes:	1.00	1.76	0.24	1.00	1.59	0.41	0.05	0.71	0.24	0.18	0.77	0.05
Final Sat.:	1805	3118	427	1805	2779	719	95	1270	428	294	1286	77

Capacity Analysis Module:												
Vol/Sat:	0.04	0.41	0.41	0.03	0.29	0.29	0.15	0.15	0.15	0.30	0.30	0.30
Crit Moves:	****			****						****		
Green Time:	9.9	34.2	34.2	7.0	31.3	31.3	24.8	24.8	24.8	24.8	24.8	24.8
Volume/Cap:	0.31	0.90	0.90	0.28	0.71	0.71	0.44	0.44	0.44	0.90	0.90	0.90
Uniform Del:	29.5	18.9	18.9	31.7	18.1	18.1	19.7	19.7	19.7	24.0	24.0	24.0
IncrementDel:	0.8	7.6	7.6	0.9	1.6	1.6	0.5	0.5	0.5	18.4	18.4	18.4
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	30.2	26.5	26.5	32.6	19.7	19.7	20.2	20.2	20.2	42.4	42.4	42.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.2	26.5	26.5	32.6	19.7	19.7	20.2	20.2	20.2	42.4	42.4	42.4
LOS by Move:	C	C	C	C	B	B	C	C	C	D	D	D
HCM2kAvgQ:	2	21	21	1	12	12	5	5	5	15	15	15

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	76	1179	150	33	985	144	11	125	60	40	243	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	76	1179	150	33	985	144	11	125	60	40	243	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	76	1179	150	33	985	144	11	125	60	40	243	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	76	1179	150	33	985	144	11	125	60	40	243	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	76	1179	150	33	985	144	11	125	60	40	243	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	76	1179	150	33	985	144	11	125	60	40	243	20

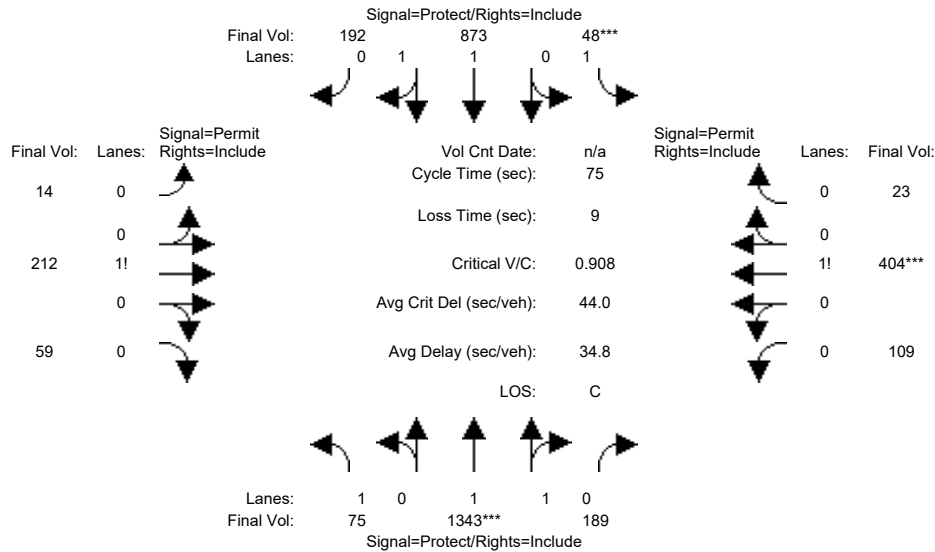
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	0.93	0.93	0.94	0.94	0.94	0.94	0.94	0.94
Lanes:	1.00	1.77	0.23	1.00	1.74	0.26	0.06	0.64	0.30	0.13	0.80	0.07
Final Sat.:	1805	3148	401	1805	3090	452	100	1137	546	235	1428	118

Capacity Analysis Module:												
Vol/Sat:	0.04	0.37	0.37	0.02	0.32	0.32	0.11	0.11	0.11	0.17	0.17	0.17
Crit Moves:	****			****						****		
Green Time:	10.0	30.3	30.3	7.0	27.3	27.3	13.7	13.7	13.7	13.7	13.7	13.7
Volume/Cap:	0.25	0.74	0.74	0.16	0.70	0.70	0.48	0.48	0.48	0.74	0.74	0.74
Uniform Del:	21.8	11.8	11.8	23.8	13.1	13.1	20.0	20.0	20.0	21.5	21.5	21.5
IncrementDel:	0.4	1.7	1.7	0.3	1.4	1.4	0.9	0.9	0.9	7.2	7.2	7.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	22.2	13.5	13.5	24.2	14.5	14.5	20.9	20.9	20.9	28.7	28.7	28.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.2	13.5	13.5	24.2	14.5	14.5	20.9	20.9	20.9	28.7	28.7	28.7
LOS by Move:	C	B	B	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	1	12	12	1	10	10	4	4	4	7	7	7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	75	1343	189	48	873	192	14	212	59	109	404	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1343	189	48	873	192	14	212	59	109	404	23
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	1343	189	48	873	192	14	212	59	109	404	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1343	189	48	873	192	14	212	59	109	404	23
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1343	189	48	873	192	14	212	59	109	404	23
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	75	1343	189	48	873	192	14	212	59	109	404	23

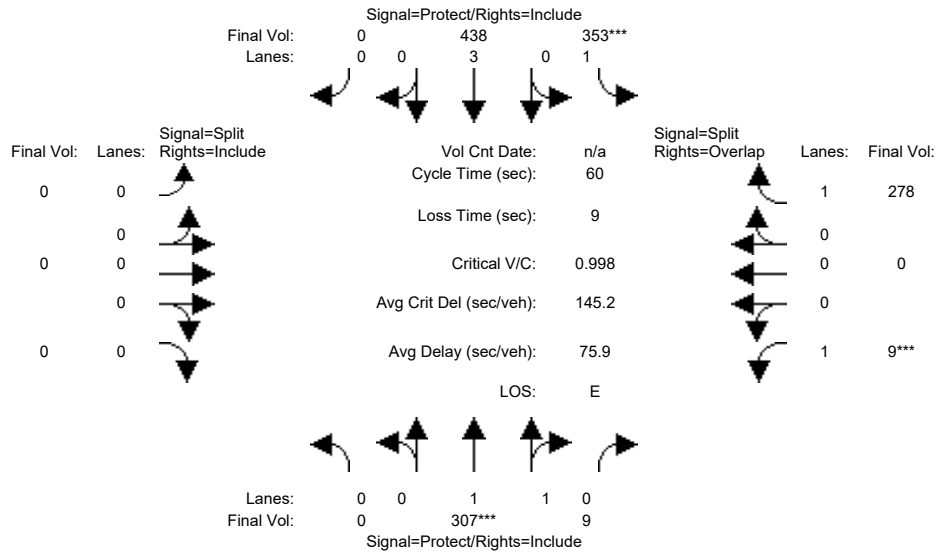
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	0.92	0.92	0.95	0.95	0.95	0.83	0.83	0.83
Lanes:	1.00	1.75	0.25	1.00	1.64	0.36	0.05	0.74	0.21	0.20	0.76	0.04
Final Sat.:	1805	3108	437	1805	2879	633	88	1339	373	320	1186	68

Capacity Analysis Module:												
Vol/Sat:	0.04	0.43	0.43	0.03	0.30	0.30	0.16	0.16	0.16	0.34	0.34	0.34
Crit Moves:	****			****						****		
Green Time:	9.4	33.0	33.0	7.0	30.6	30.6	26.0	26.0	26.0	26.0	26.0	26.0
Volume/Cap:	0.33	0.98	0.98	0.28	0.74	0.74	0.46	0.46	0.46	0.98	0.98	0.98
Uniform Del:	29.9	20.7	20.7	31.7	18.9	18.9	19.0	19.0	19.0	24.3	24.3	24.3
IncrementDel:	0.9	18.7	18.7	0.9	2.2	2.2	0.5	0.5	0.5	33.9	33.9	33.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	30.8	39.4	39.4	32.6	21.0	21.0	19.5	19.5	19.5	58.2	58.2	58.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.8	39.4	39.4	32.6	21.0	21.0	19.5	19.5	19.5	58.2	58.2	58.2
LOS by Move:	C	D	D	C	C	C	B	B	B	E	E	E
HCM2kAvgQ:	2	26	26	1	13	13	5	5	5	19	19	19

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #20: (50) East Bayshore Road and Donohoe Street



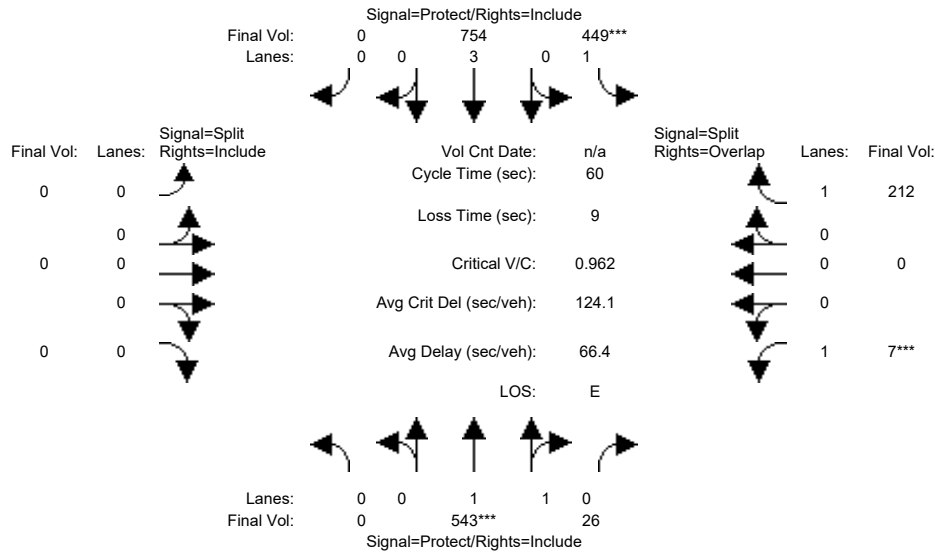
Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	307	9	353	438	0	0	0	0	9	0	278
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	307	9	353	438	0	0	0	0	9	0	278
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	307	9	353	438	0	0	0	0	9	0	278
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	307	9	353	438	0	0	0	0	9	0	278
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	307	9	353	438	0	0	0	0	9	0	278
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	307	9	353	438	0	0	0	0	9	0	278
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.34	0.32	0.32	0.32	0.31	0.34	0.34	0.34	0.34	0.32	0.34	0.29
Lanes:	0.00	1.94	0.06	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1188	35	614	1764	0	0	0	0	614	0	549
Capacity Analysis Module:												
Vol/Sat:	0.00	0.26	0.26	0.58	0.25	0.00	0.00	0.00	0.00	0.01	0.00	0.51
Crit Moves:	****			****						****		
Green Time:	0.0	12.7	12.7	28.3	41.0	0.0	0.0	0.0	0.0	10.0	0.0	38.3
Volume/Cap:	0.00	1.22	1.22	1.22	0.36	0.00	0.00	0.00	0.00	0.09	0.00	0.79
Uniform Del:	0.0	23.6	23.6	15.9	4.0	0.0	0.0	0.0	0.0	21.1	0.0	8.0
IncrementDel:	0.0	129	128.7	126.1	0.2	0.0	0.0	0.0	0.0	0.4	0.0	11.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	152	152.3	142.0	4.2	0.0	0.0	0.0	0.0	21.5	0.0	19.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	152	152.3	142.0	4.2	0.0	0.0	0.0	0.0	21.5	0.0	19.7
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	B
HCM2kAvgQ:	0	10	10	18	2	0	0	0	0	0	0	6

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	543	26	449	754	0	0	0	0	7	0	212
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	543	26	449	754	0	0	0	0	7	0	212
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	543	26	449	754	0	0	0	0	7	0	212
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	543	26	449	754	0	0	0	0	7	0	212
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	543	26	449	754	0	0	0	0	7	0	212
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	543	26	449	754	0	0	0	0	7	0	212

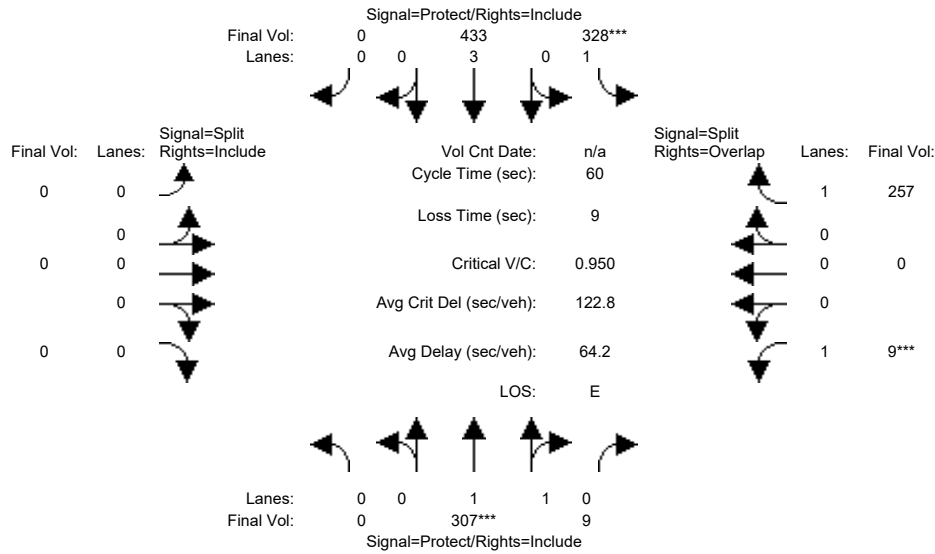
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.50	0.47	0.47	0.48	0.46	0.50	0.50	0.50	0.50	0.48	0.50	0.43
Lanes:	0.00	1.91	0.09	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1721	82	908	2609	0	0	0	0	908	0	812

Capacity Analysis Module:												
Vol/Sat:	0.00	0.32	0.32	0.49	0.29	0.00	0.00	0.00	0.00	0.01	0.00	0.26
Crit Moves:	****			****						****		
Green Time:	0.0	16.0	16.0	25.0	41.0	0.0	0.0	0.0	0.0	10.0	0.0	35.0
Volume/Cap:	0.00	1.19	1.19	1.19	0.42	0.00	0.00	0.00	0.00	0.05	0.00	0.45
Uniform Del:	0.0	22.0	22.0	17.5	4.2	0.0	0.0	0.0	0.0	21.0	0.0	7.0
IncrementDel:	0.0	103	102.9	107.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	125	124.9	124.6	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	125	124.9	124.6	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.7
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	A
HCM2kAvgQ:	0	15	15	21	3	0	0	0	0	0	0	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	307	9	328	433	0	0	0	0	9	0	257
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	307	9	328	433	0	0	0	0	9	0	257
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	307	9	328	433	0	0	0	0	9	0	257
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	307	9	328	433	0	0	0	0	9	0	257
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	307	9	328	433	0	0	0	0	9	0	257
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	307	9	328	433	0	0	0	0	9	0	257

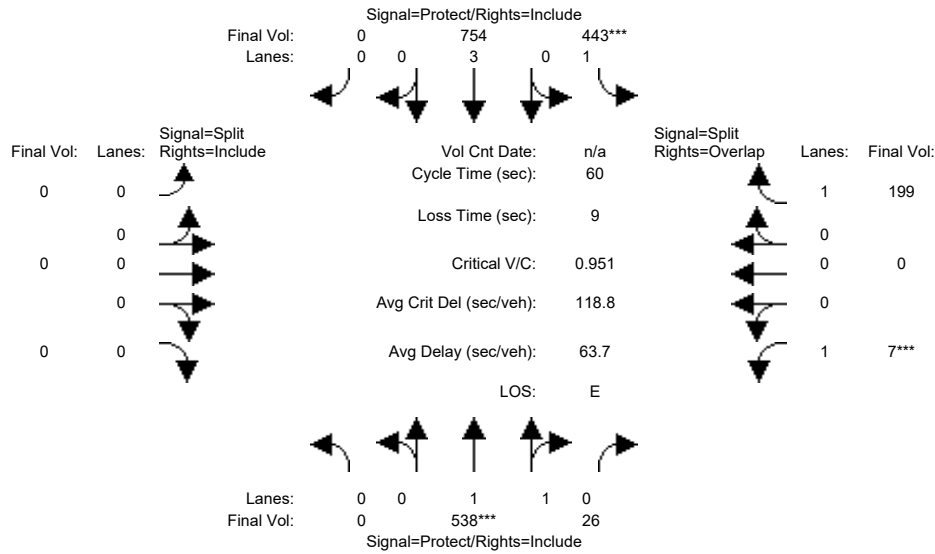
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.34	0.32	0.32	0.32	0.31	0.34	0.34	0.34	0.34	0.32	0.34	0.29
Lanes:	0.00	1.94	0.06	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1188	35	614	1764	0	0	0	0	614	0	549

Capacity Analysis Module:												
Vol/Sat:	0.00	0.26	0.26	0.53	0.25	0.00	0.00	0.00	0.00	0.01	0.00	0.47
Crit Moves:	****			****						****		
Green Time:	0.0	13.4	13.4	27.6	41.0	0.0	0.0	0.0	0.0	10.0	0.0	37.6
Volume/Cap:	0.00	1.16	1.16	1.16	0.36	0.00	0.00	0.00	0.00	0.09	0.00	0.75
Uniform Del:	0.0	23.3	23.3	16.2	4.0	0.0	0.0	0.0	0.0	21.1	0.0	7.8
IncemntDel:	0.0	105	105.0	104.1	0.2	0.0	0.0	0.0	0.0	0.4	0.0	8.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	128	128.4	120.3	4.2	0.0	0.0	0.0	0.0	21.5	0.0	16.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	128	128.4	120.3	4.2	0.0	0.0	0.0	0.0	21.5	0.0	16.5
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	B
HCM2kAvgQ:	0	9	9	15	2	0	0	0	0	0	0	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	538	26	443	754	0	0	0	0	7	0	199
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	538	26	443	754	0	0	0	0	7	0	199
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	538	26	443	754	0	0	0	0	7	0	199
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	538	26	443	754	0	0	0	0	7	0	199
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	538	26	443	754	0	0	0	0	7	0	199
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	538	26	443	754	0	0	0	0	7	0	199

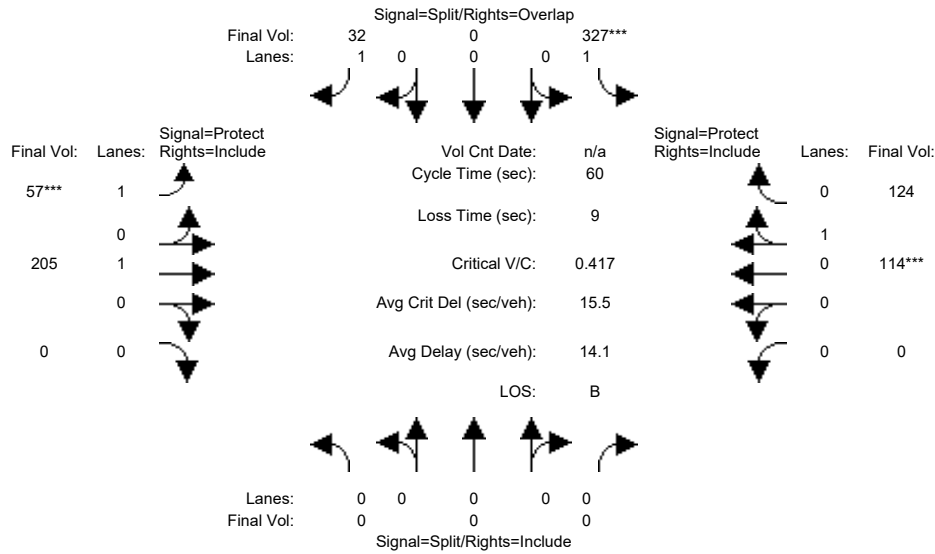
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.50	0.47	0.47	0.48	0.46	0.50	0.50	0.50	0.50	0.48	0.50	0.43
Lanes:	0.00	1.91	0.09	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1720	83	908	2609	0	0	0	0	908	0	812

Capacity Analysis Module:												
Vol/Sat:	0.00	0.31	0.31	0.49	0.29	0.00	0.00	0.00	0.00	0.01	0.00	0.24
Crit Moves:	****			****						****		
Green Time:	0.0	16.0	16.0	25.0	41.0	0.0	0.0	0.0	0.0	10.0	0.0	35.0
Volume/Cap:	0.00	1.17	1.17	1.17	0.42	0.00	0.00	0.00	0.00	0.05	0.00	0.42
Uniform Del:	0.0	22.0	22.0	17.5	4.2	0.0	0.0	0.0	0.0	21.0	0.0	6.9
IncrementDel:	0.0	97.5	97.5	101.9	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	120	119.5	119.4	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	120	119.5	119.4	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.5
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	A
HCM2kAvgQ:	0	14	14	20	3	0	0	0	0	0	0	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #25: (54) East Bayshore Road and Clarke Avenue

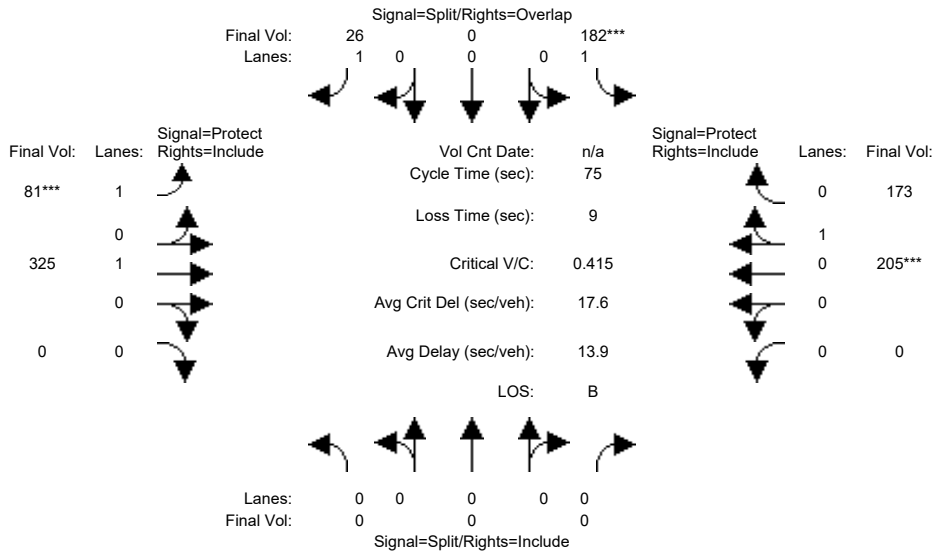


Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	0	0	327	0	32	57	205	0	0	114	124
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	327	0	32	57	205	0	0	114	124
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	327	0	32	57	205	0	0	114	124
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	327	0	32	57	205	0	0	114	124
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	327	0	32	57	205	0	0	114	124
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	327	0	32	57	205	0	0	114	124
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.91	0.91
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.48	0.52
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	829	902
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.18	0.00	0.02	0.03	0.11	0.00	0.00	0.14	0.14
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	25.2	0.0	32.2	7.0	25.8	0.0	0.0	18.8	18.8
Volume/Cap:	0.00	0.00	0.00	0.44	0.00	0.04	0.28	0.26	0.00	0.00	0.44	0.44
Uniform Del:	0.0	0.0	0.0	12.4	0.0	6.6	24.2	11.0	0.0	0.0	16.4	16.4
IncrementDel:	0.0	0.0	0.0	0.4	0.0	0.0	0.7	0.2	0.0	0.0	0.6	0.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	12.8	0.0	6.6	24.9	11.1	0.0	0.0	17.0	17.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	12.8	0.0	6.6	24.9	11.1	0.0	0.0	17.0	17.0
LOS by Move:	A	A	A	B	A	A	C	B	A	A	B	B
HCM2kAvgQ:	0	0	0	5	0	0	1	3	0	0	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #25: (54) East Bayshore Road and Clarke Avenue

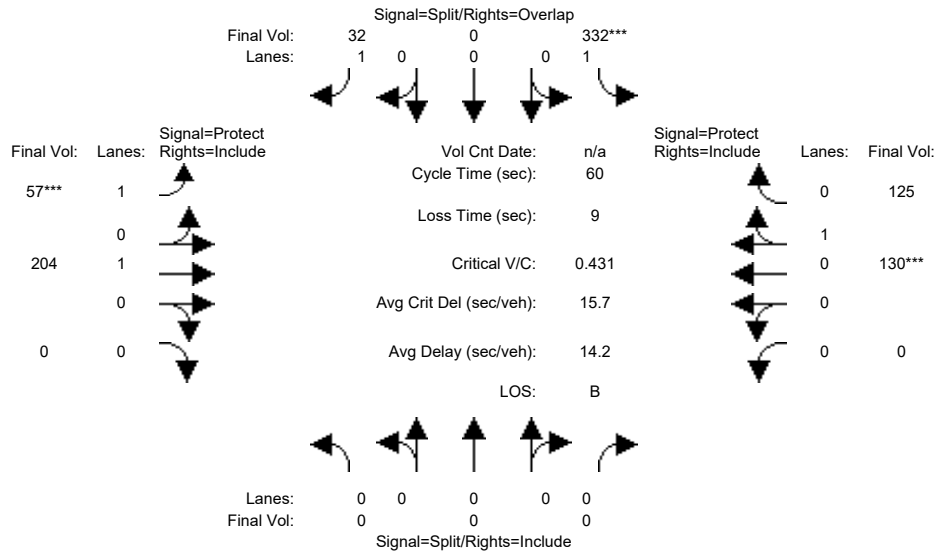


Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	0	0	182	0	26	81	325	0	0	205	173
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	182	0	26	81	325	0	0	205	173
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	182	0	26	81	325	0	0	205	173
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	182	0	26	81	325	0	0	205	173
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	182	0	26	81	325	0	0	205	173
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	182	0	26	81	325	0	0	205	173
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.54	0.46
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	947	799
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.02	0.05	0.17	0.00	0.00	0.22	0.22
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	18.6	0.0	26.9	8.3	47.4	0.0	0.0	39.1	39.1
Volume/Cap:	0.00	0.00	0.00	0.41	0.00	0.05	0.41	0.28	0.00	0.00	0.41	0.41
Uniform Del:	0.0	0.0	0.0	23.6	0.0	15.7	31.1	6.2	0.0	0.0	11.0	11.0
IncrementDel:	0.0	0.0	0.0	0.6	0.0	0.0	1.4	0.1	0.0	0.0	0.3	0.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	24.3	0.0	15.7	32.5	6.3	0.0	0.0	11.3	11.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	24.3	0.0	15.7	32.5	6.3	0.0	0.0	11.3	11.3
LOS by Move:	A	A	A	C	A	B	C	A	A	A	B	B
HCM2kAvgQ:	0	0	0	4	0	0	2	3	0	0	6	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #25: (54) East Bayshore Road and Clarke Avenue

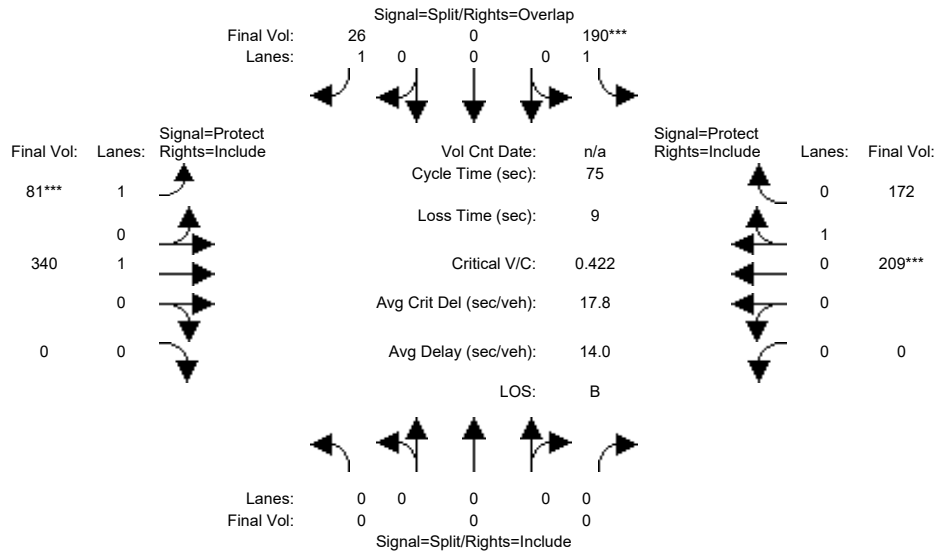


Street Name:	East Bayshore Road						Clarke Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	0	0	332	0	32	57	204	0	0	130	125
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	332	0	32	57	204	0	0	130	125
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	332	0	32	57	204	0	0	130	125
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	332	0	32	57	204	0	0	130	125
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	332	0	32	57	204	0	0	130	125
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	332	0	32	57	204	0	0	130	125
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.51	0.49
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	887	853
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.19	0.00	0.02	0.03	0.11	0.00	0.00	0.15	0.15
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	24.7	0.0	31.7	7.0	26.3	0.0	0.0	19.3	19.3
Volume/Cap:	0.00	0.00	0.00	0.46	0.00	0.04	0.28	0.25	0.00	0.00	0.46	0.46
Uniform Del:	0.0	0.0	0.0	12.8	0.0	6.8	24.2	10.6	0.0	0.0	16.2	16.2
IncrementDel:	0.0	0.0	0.0	0.5	0.0	0.0	0.7	0.2	0.0	0.0	0.6	0.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	13.2	0.0	6.8	24.9	10.8	0.0	0.0	16.8	16.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	13.2	0.0	6.8	24.9	10.8	0.0	0.0	16.8	16.8
LOS by Move:	A	A	A	B	A	A	C	B	A	A	B	B
HCM2kAvgQ:	0	0	0	5	0	0	1	2	0	0	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	190	0	26	81	340	0	0	209	172
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	190	0	26	81	340	0	0	209	172
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	190	0	26	81	340	0	0	209	172
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	190	0	26	81	340	0	0	209	172
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	190	0	26	81	340	0	0	209	172
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	190	0	26	81	340	0	0	209	172

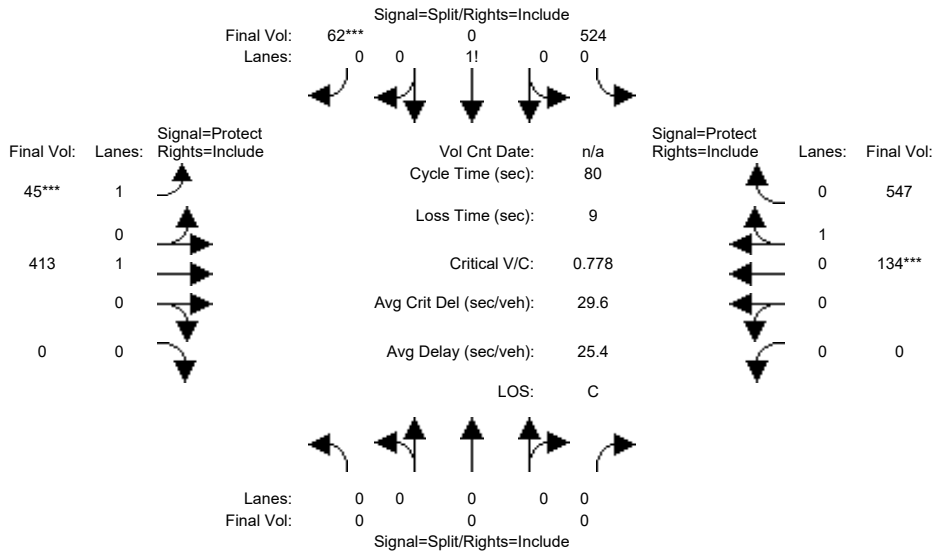
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.55	0.45
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	959	789

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.11	0.00	0.02	0.05	0.18	0.00	0.00	0.22	0.22
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	19.1	0.0	27.2	8.1	46.9	0.0	0.0	38.8	38.8
Volume/Cap:	0.00	0.00	0.00	0.42	0.00	0.05	0.42	0.29	0.00	0.00	0.42	0.42
Uniform Del:	0.0	0.0	0.0	23.3	0.0	15.5	31.2	6.4	0.0	0.0	11.2	11.2
IncrementDel:	0.0	0.0	0.0	0.6	0.0	0.0	1.5	0.1	0.0	0.0	0.3	0.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	24.0	0.0	15.5	32.7	6.6	0.0	0.0	11.5	11.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	24.0	0.0	15.5	32.7	6.6	0.0	0.0	11.5	11.5
LOS by Move:	A	A	A	C	A	B	C	A	A	A	B	B
HCM2kAvgQ:	0	0	0	4	0	0	2	4	0	0	6	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	524	0	62	45	413	0	0	134	547
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	524	0	62	45	413	0	0	134	547
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	524	0	62	45	413	0	0	134	547
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	524	0	62	45	413	0	0	134	547
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	524	0	62	45	413	0	0	134	547
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	524	0	62	45	413	0	0	134	547

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.89	0.00	0.11	1.00	1.00	0.00	0.00	0.20	0.80
Final Sat.:	0	0	0	1699	0	201	1900	1900	0	0	374	1526

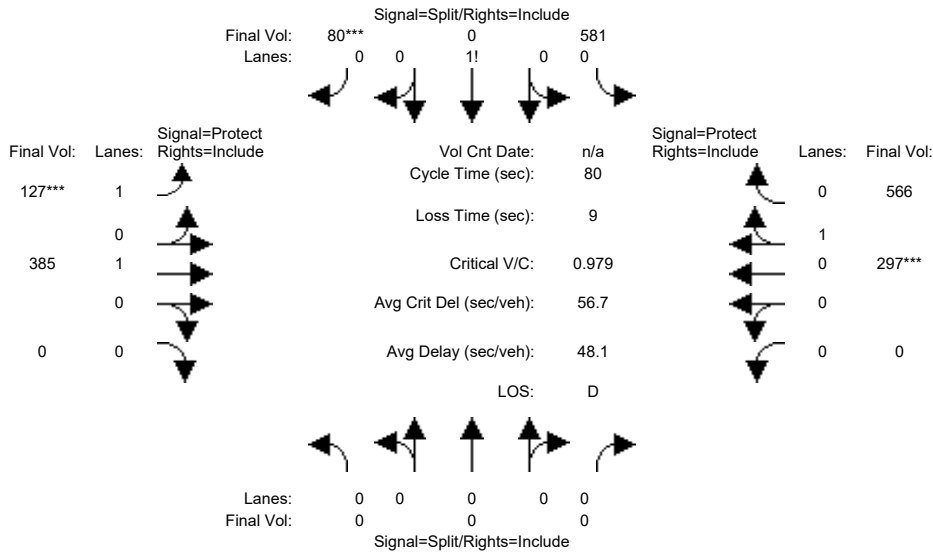
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.31	0.00	0.31	0.02	0.22	0.00	0.00	0.36	0.36
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	29.6	0.0	29.6	7.0	41.4	0.0	0.0	34.4	34.4
Volume/Cap:	0.00	0.00	0.00	0.83	0.00	0.83	0.27	0.42	0.00	0.00	0.83	0.83
Uniform Del:	0.0	0.0	0.0	23.0	0.0	23.0	34.1	11.9	0.0	0.0	20.3	20.3
IncrementDel:	0.0	0.0	0.0	8.5	0.0	8.5	0.9	0.3	0.0	0.0	7.4	7.4
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	31.4	0.0	31.4	35.0	12.2	0.0	0.0	27.6	27.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	31.4	0.0	31.4	35.0	12.2	0.0	0.0	27.6	27.6
LOS by Move:	A	A	A	C	A	C	C	B	A	A	C	C
HCM2kAvgQ:	0	0	0	16	0	16	1	6	0	0	17	17

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	581	0	80	127	385	0	0	297	566
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	581	0	80	127	385	0	0	297	566
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	581	0	80	127	385	0	0	297	566
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	581	0	80	127	385	0	0	297	566
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	581	0	80	127	385	0	0	297	566
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	581	0	80	127	385	0	0	297	566

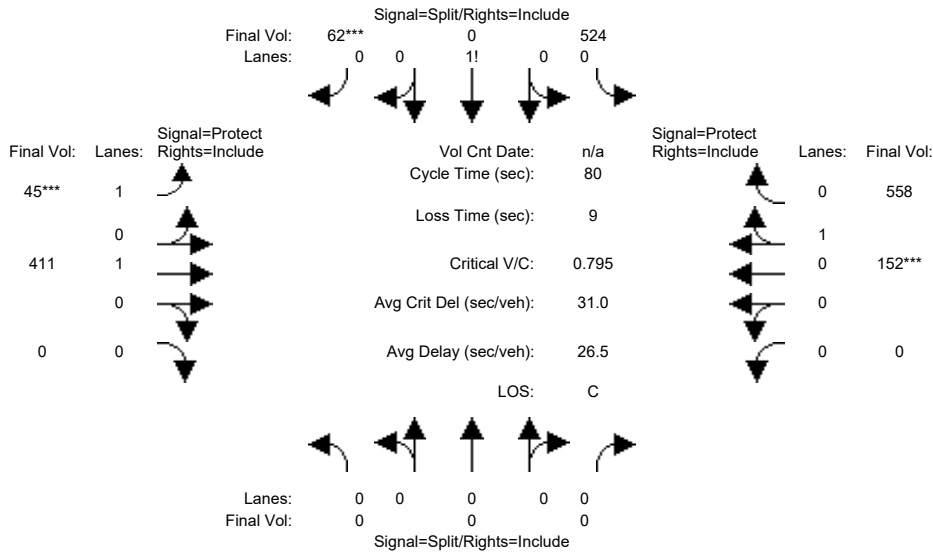
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.88	0.00	0.12	1.00	1.00	0.00	0.00	0.34	0.66
Final Sat.:	0	0	0	1670	0	230	1900	1900	0	0	654	1246

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.35	0.00	0.35	0.07	0.20	0.00	0.00	0.45	0.45
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	27.8	0.0	27.8	7.0	43.2	0.0	0.0	36.2	36.2
Volume/Cap:	0.00	0.00	0.00	1.00	0.00	1.00	0.76	0.37	0.00	0.00	1.00	1.00
Uniform Del:	0.0	0.0	0.0	26.1	0.0	26.1	35.7	10.6	0.0	0.0	21.9	21.9
IncrementDel:	0.0	0.0	0.0	35.7	0.0	35.7	18.7	0.2	0.0	0.0	31.3	31.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	61.8	0.0	61.8	54.4	10.8	0.0	0.0	53.2	53.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	61.8	0.0	61.8	54.4	10.8	0.0	0.0	53.2	53.2
LOS by Move:	A	A	A	E	A	E	D	B	A	A	D	D
HCM2kAvgQ:	0	0	0	24	0	24	5	6	0	0	30	30

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Puglas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	524	0	62	45	411	0	0	152	558
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	524	0	62	45	411	0	0	152	558
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	524	0	62	45	411	0	0	152	558
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	524	0	62	45	411	0	0	152	558
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	524	0	62	45	411	0	0	152	558
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	524	0	62	45	411	0	0	152	558

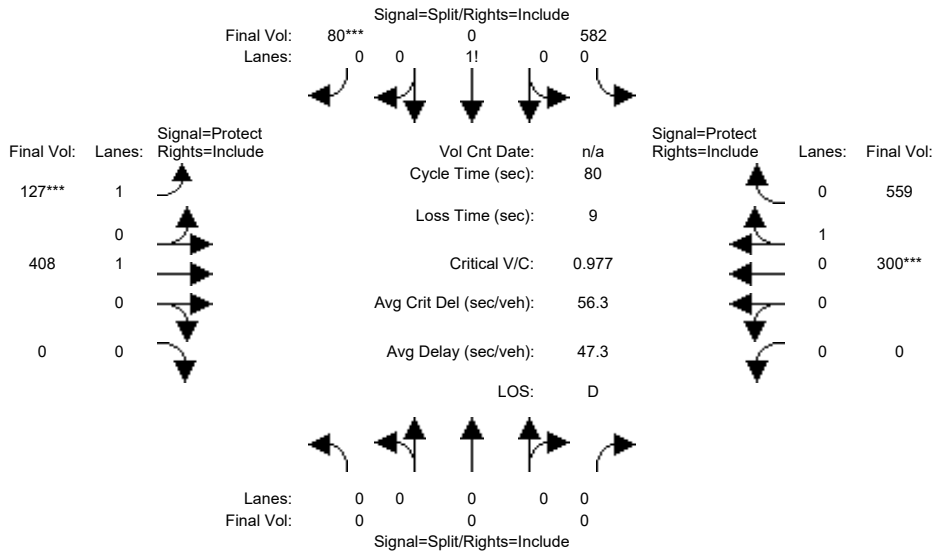
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.89	0.00	0.11	1.00	1.00	0.00	0.00	0.21	0.79
Final Sat.:	0	0	0	1699	0	201	1900	1900	0	0	407	1493

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.31	0.00	0.31	0.02	0.22	0.00	0.00	0.37	0.37
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	28.9	0.0	28.9	7.0	42.1	0.0	0.0	35.1	35.1
Volume/Cap:	0.00	0.00	0.00	0.85	0.00	0.85	0.27	0.41	0.00	0.00	0.85	0.85
Uniform Del:	0.0	0.0	0.0	23.6	0.0	23.6	34.1	11.5	0.0	0.0	20.2	20.2
IncrementDel:	0.0	0.0	0.0	10.1	0.0	10.1	0.9	0.3	0.0	0.0	8.5	8.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	33.6	0.0	33.6	35.0	11.8	0.0	0.0	28.6	28.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.6	0.0	33.6	35.0	11.8	0.0	0.0	28.6	28.6
LOS by Move:	A	A	A	C	A	C	C	B	A	A	C	C
HCM2kAvgQ:	0	0	0	16	0	16	1	6	0	0	19	19

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Puglas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	582	0	80	127	408	0	0	300	559
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	582	0	80	127	408	0	0	300	559
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	582	0	80	127	408	0	0	300	559
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	582	0	80	127	408	0	0	300	559
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	582	0	80	127	408	0	0	300	559
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	582	0	80	127	408	0	0	300	559

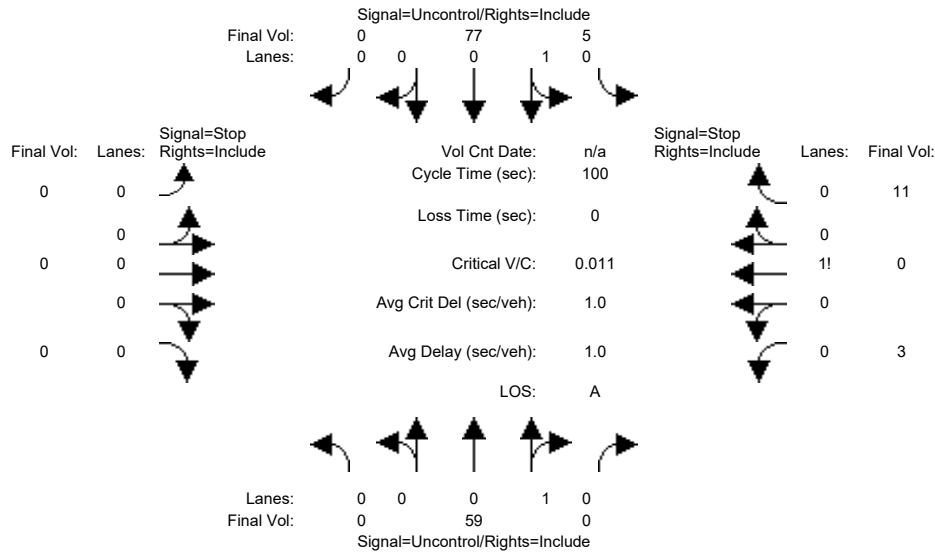
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.88	0.00	0.12	1.00	1.00	0.00	0.00	0.35	0.65
Final Sat.:	0	0	0	1670	0	230	1900	1900	0	0	664	1236

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.35	0.00	0.35	0.07	0.21	0.00	0.00	0.45	0.45
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	27.9	0.0	27.9	7.0	43.1	0.0	0.0	36.1	36.1
Volume/Cap:	0.00	0.00	0.00	1.00	0.00	1.00	0.76	0.40	0.00	0.00	1.00	1.00
Uniform Del:	0.0	0.0	0.0	26.1	0.0	26.1	35.7	10.8	0.0	0.0	21.9	21.9
IncrementDel:	0.0	0.0	0.0	35.2	0.0	35.2	18.7	0.3	0.0	0.0	30.9	30.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	61.2	0.0	61.2	54.4	11.1	0.0	0.0	52.8	52.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	61.2	0.0	61.2	54.4	11.1	0.0	0.0	52.8	52.8
LOS by Move:	A	A	A	E	A	E	D	B	A	A	D	D
HCM2kAvgQ:	0	0	0	24	0	24	5	6	0	0	29	29

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Unsignalized (Future Volume Alternative)  
 Cumulative AM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:												
Base Vol:	0	59	0	5	77	0	0	0	0	3	0	11
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	59	0	5	77	0	0	0	0	3	0	11
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	59	0	5	77	0	0	0	0	3	0	11
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	59	0	5	77	0	0	0	0	3	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	59	0	5	77	0	0	0	0	3	0	11

Critical Gap Module:												
Critical Gp:	xxxxxx	xxxx	xxxxxx	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxxx	xxxx	xxxxxx	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	3.5	4.0	3.3

Capacity Module:												
Cnflct Vol:	xxxx	xxxx	xxxxxx	59	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	146	146	59
Potent Cap.:	xxxx	xxxx	xxxxxx	1558	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	851	749	1012
Move Cap.:	xxxx	xxxx	xxxxxx	1558	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	849	747	1012
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.00	0.00	0.01

Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxxx	0.0	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	xxxxxx	xxxx	xxxxxx	7.3	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT
Shared Cap.:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	972	xxxxxx
SharedQueue:	xxxxxx	xxxx	xxxxxx	0.0	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	0.0	xxxxxx
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	7.3	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	8.8	xxxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	A	*
ApproachDel:	xxxxxxx		xxxxxxx		xxxxxxx		xxxxxxx		xxxxxxx		8.8	
ApproachLOS:	*		*		*		*		*		A	

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	8.8

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=14]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=155]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11

Major Street Volume: 141  
 Minor Approach Volume: 14  
 Minor Approach Volume Threshold: 742

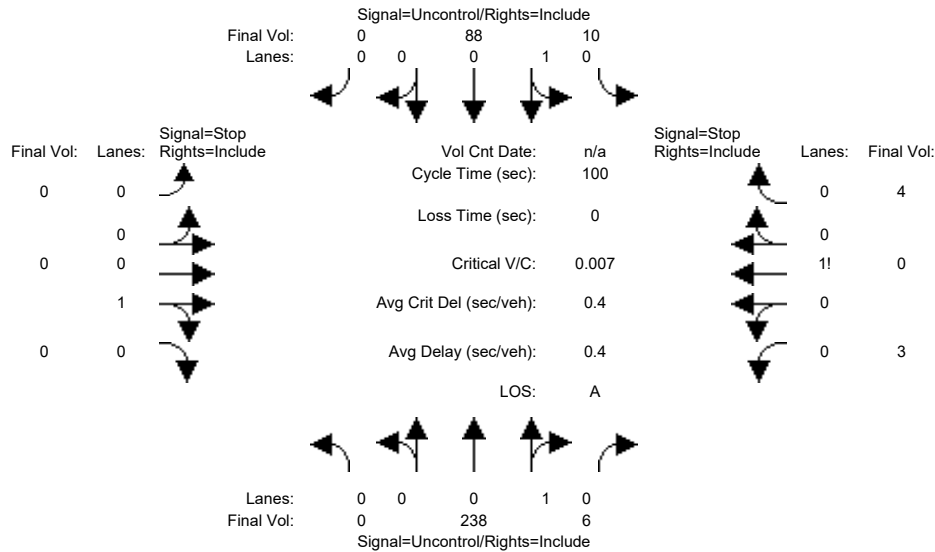
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative PM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume).

Table for Critical Gap Module with 12 columns and 2 rows (Critical Gp, FollowUpTim).

Table for Capacity Module with 12 columns and 4 rows (Cnflct Vol, Potent Cap., Move Cap., Volume/Cap.).

Table for Level Of Service Module with 12 columns and 10 rows (2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS).

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	10.0

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=7]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=349]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4

Major Street Volume: 342  
 Minor Approach Volume: 7  
 Minor Approach Volume Threshold: 506

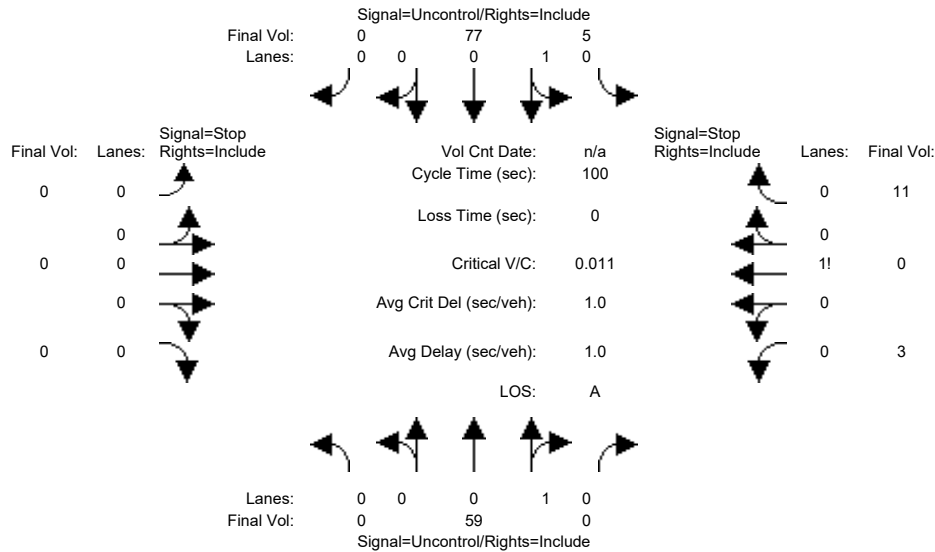
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Project AM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module: Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume.

Table for Critical Gap Module: Critical Gp, FollowUpTim.

Table for Capacity Module: Cnflct Vol, Potent Cap., Move Cap., Volume/Cap.

Table for Level Of Service Module: 2Way95thQ, Control Del, LOS by Move, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met



Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	8.8

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=14]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=155]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11

Major Street Volume: 141  
 Minor Approach Volume: 14  
 Minor Approach Volume Threshold: 742

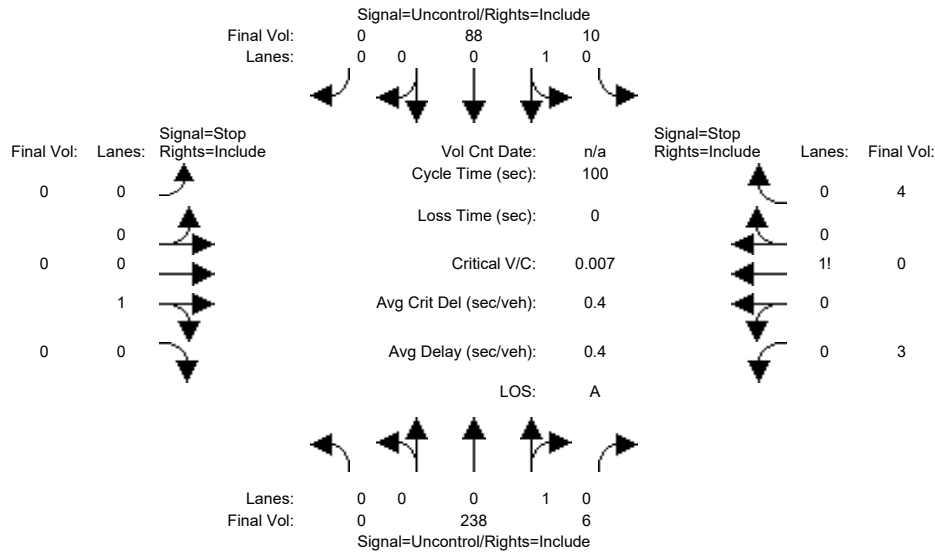
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Project PM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume).

Table for Critical Gap Module with 12 columns and 2 rows (Critical Gp, FollowUpTim).

Table for Capacity Module with 12 columns and 4 rows (Cnflct Vol, Potent Cap., Move Cap., Volume/Cap.).

Table for Level Of Service Module with 12 columns and 10 rows (2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS).

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	10.0

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=7]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=349]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4

Major Street Volume: 342  
 Minor Approach Volume: 7  
 Minor Approach Volume Threshold: 506

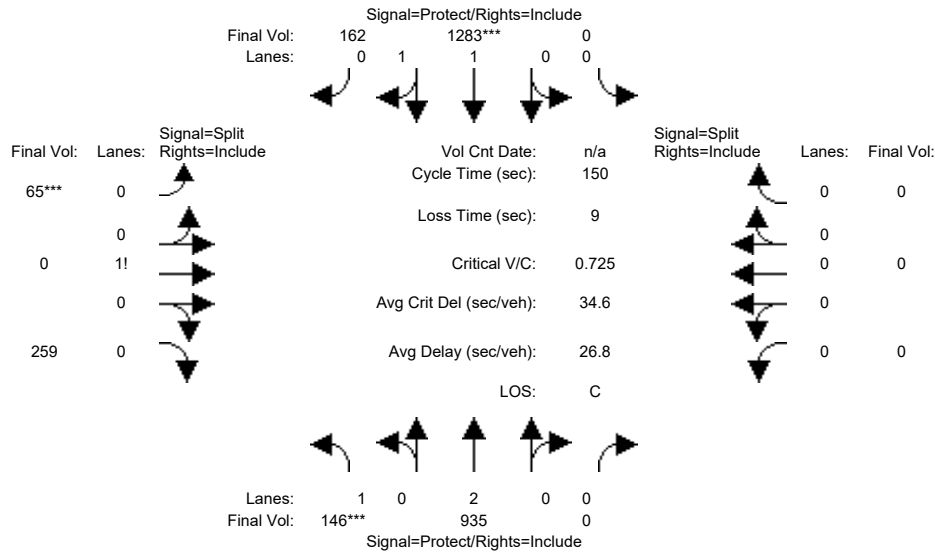
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	146	935	0	0	1283	162	65	0	259	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	146	935	0	0	1283	162	65	0	259	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	146	935	0	0	1283	162	65	0	259	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	146	935	0	0	1283	162	65	0	259	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	146	935	0	0	1283	162	65	0	259	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	146	935	0	0	1283	162	65	0	259	0	0	0

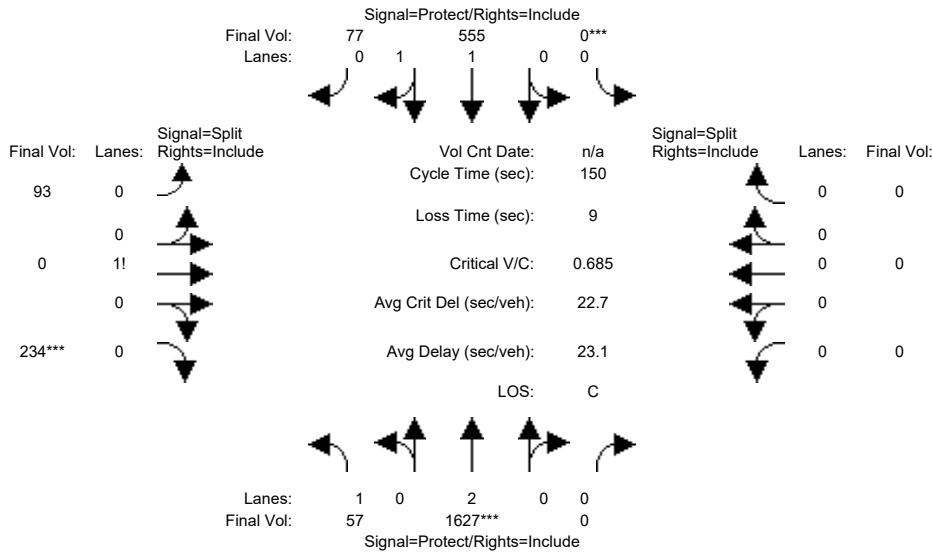
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.88	1.00	0.88	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.78	0.22	0.20	0.00	0.80	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3151	398	337	0	1341	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.08	0.26	0.00	0.00	0.41	0.41	0.19	0.00	0.19	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	16.7	101	0.0	0.0	84.3	84.3	40.0	0.0	40.0	0.0	0.0	0.0
Volume/Cap:	0.72	0.38	0.00	0.00	0.72	0.72	0.72	0.00	0.72	0.00	0.00	0.00
Uniform Del:	64.4	10.8	0.0	0.0	24.3	24.3	50.0	0.0	50.0	0.0	0.0	0.0
IncrementDel:	12.3	0.1	0.0	0.0	1.4	1.4	5.8	0.0	5.8	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	76.7	10.9	0.0	0.0	25.6	25.6	55.8	0.0	55.8	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	76.7	10.9	0.0	0.0	25.6	25.6	55.8	0.0	55.8	0.0	0.0	0.0
LOS by Move:	E	B	A	A	C	C	E	A	E	A	A	A
HCM2kAvgQ:	8	10	0	0	26	26	15	0	15	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Movement:												
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	57	1627	0	0	555	77	93	0	234	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	57	1627	0	0	555	77	93	0	234	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	57	1627	0	0	555	77	93	0	234	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	57	1627	0	0	555	77	93	0	234	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	57	1627	0	0	555	77	93	0	234	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	57	1627	0	0	555	77	93	0	234	0	0	0

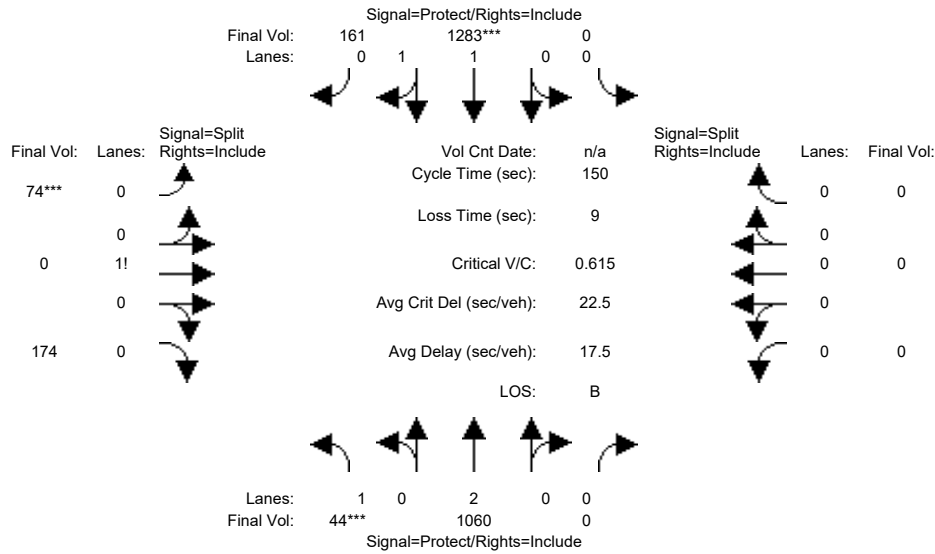
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.89	1.00	0.89	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.76	0.24	0.28	0.00	0.72	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3113	432	481	0	1211	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.03	0.45	0.00	0.00	0.18	0.18	0.19	0.00	0.19	0.00	0.00	0.00
Crit Moves:	****			****			****			****		
Green Time:	20.5	98.7	0.0	0.0	78.2	78.2	42.3	0.0	42.3	0.0	0.0	0.0
Volume/Cap:	0.23	0.69	0.00	0.00	0.34	0.34	0.69	0.00	0.69	0.00	0.00	0.00
Uniform Del:	57.7	16.0	0.0	0.0	20.9	20.9	47.9	0.0	47.9	0.0	0.0	0.0
IncrementDel:	0.5	0.8	0.0	0.0	0.1	0.1	4.1	0.0	4.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	58.2	16.8	0.0	0.0	21.0	21.0	52.0	0.0	52.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	58.2	16.8	0.0	0.0	21.0	21.0	52.0	0.0	52.0	0.0	0.0	0.0
LOS by Move:	E	B	A	A	C	C	D	A	D	A	A	A
HCM2kAvgQ:	2	24	0	0	9	9	14	0	14	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	44	1060	0	0	1283	161	74	0	174	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	44	1060	0	0	1283	161	74	0	174	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	44	1060	0	0	1283	161	74	0	174	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	44	1060	0	0	1283	161	74	0	174	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	44	1060	0	0	1283	161	74	0	174	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	44	1060	0	0	1283	161	74	0	174	0	0	0

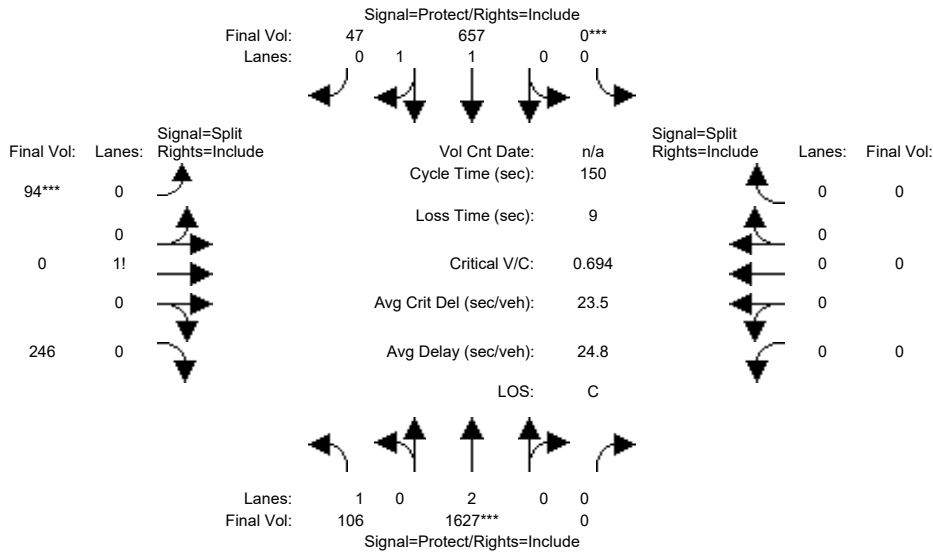
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.89	1.00	0.89	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.78	0.22	0.30	0.00	0.70	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3153	396	505	0	1188	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.02	0.29	0.00	0.00	0.41	0.41	0.15	0.00	0.15	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	7.0	106	0.0	0.0	98.5	98.5	35.5	0.0	35.5	0.0	0.0	0.0
Volume/Cap:	0.52	0.42	0.00	0.00	0.62	0.62	0.62	0.00	0.62	0.00	0.00	0.00
Uniform Del:	69.9	9.3	0.0	0.0	14.9	14.9	51.2	0.0	51.2	0.0	0.0	0.0
IncrementDel:	5.8	0.1	0.0	0.0	0.5	0.5	3.0	0.0	3.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	75.7	9.4	0.0	0.0	15.4	15.4	54.2	0.0	54.2	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	75.7	9.4	0.0	0.0	15.4	15.4	54.2	0.0	54.2	0.0	0.0	0.0
LOS by Move:	E	A	A	A	B	B	D	A	D	A	A	A
HCM2kAvgQ:	3	10	0	0	20	20	11	0	11	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	106	1627	0	0	657	47	94	0	246	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	106	1627	0	0	657	47	94	0	246	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	106	1627	0	0	657	47	94	0	246	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	106	1627	0	0	657	47	94	0	246	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	106	1627	0	0	657	47	94	0	246	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	106	1627	0	0	657	47	94	0	246	0	0	0

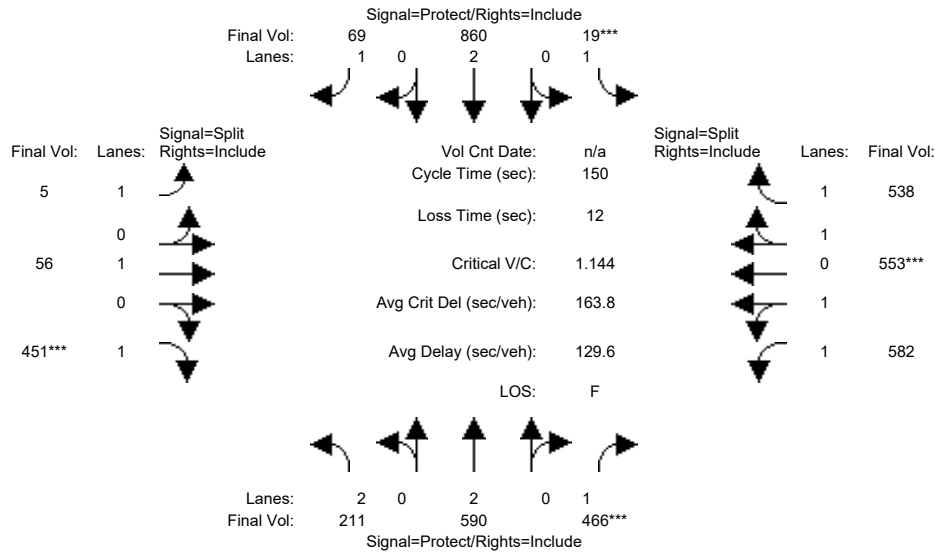
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.94	0.94	0.89	1.00	0.89	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.87	0.13	0.28	0.00	0.72	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3335	239	467	0	1223	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.06	0.45	0.00	0.00	0.20	0.20	0.20	0.00	0.20	0.00	0.00	0.00
Crit Moves:	****			****			****					
Green Time:	22.4	97.5	0.0	0.0	75.1	75.1	43.5	0.0	43.5	0.0	0.0	0.0
Volume/Cap:	0.39	0.69	0.00	0.00	0.39	0.39	0.69	0.00	0.69	0.00	0.00	0.00
Uniform Del:	57.7	16.7	0.0	0.0	23.3	23.3	47.3	0.0	47.3	0.0	0.0	0.0
IncrementDel:	1.0	0.9	0.0	0.0	0.1	0.1	4.3	0.0	4.3	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	58.6	17.7	0.0	0.0	23.4	23.4	51.6	0.0	51.6	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	58.6	17.7	0.0	0.0	23.4	23.4	51.6	0.0	51.6	0.0	0.0	0.0
LOS by Move:	E	B	A	A	C	C	D	A	D	A	A	A
HCM2kAvgQ:	5	25	0	0	10	10	15	0	15	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:												
Base Vol:	211	590	466	19	860	69	5	56	451	582	553	538
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	211	590	466	19	860	69	5	56	451	582	553	538
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	211	590	466	19	860	69	5	56	451	582	553	538
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	211	590	466	19	860	69	5	56	451	582	553	538
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	211	590	466	19	860	69	5	56	451	582	553	538
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	211	590	466	19	860	69	5	56	451	582	553	538

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.75	0.67	0.75	0.75	0.67	0.75	0.79	0.67	0.70	0.70	0.70
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.39	1.32	1.29
Final Sat.:	2749	2834	1268	1417	2834	1268	1417	1492	1268	1845	1753	1706

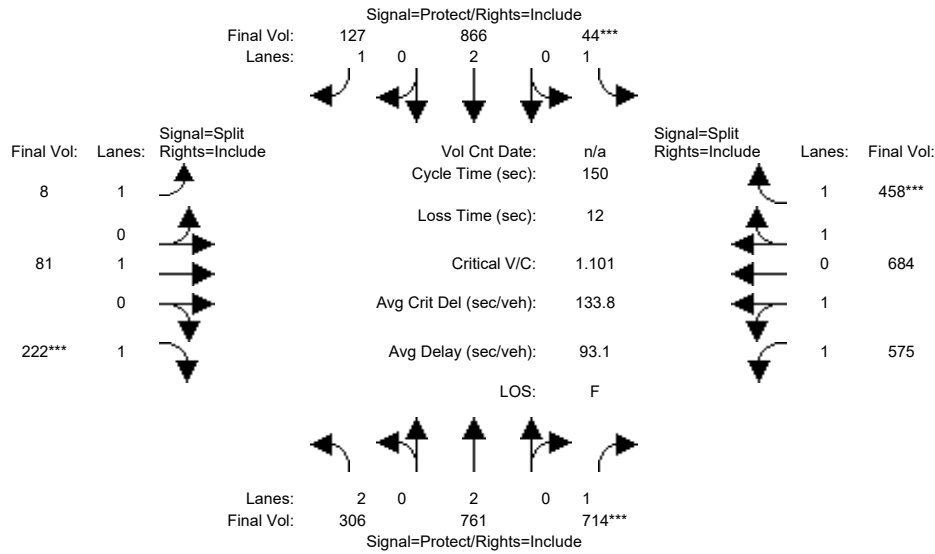
Capacity Analysis Module:												
Vol/Sat:	0.08	0.21	0.37	0.01	0.30	0.05	0.00	0.04	0.36	0.32	0.32	0.32
Crit Moves:			****	****					****	****	****	****
Green Time:	11.2	45.3	45.3	10.0	44.1	44.1	43.8	43.8	43.8	38.9	38.9	38.9
Volume/Cap:	1.03	0.69	1.22	0.20	1.03	0.18	0.01	0.13	1.22	1.22	1.22	1.22
Uniform Del:	69.4	46.2	52.4	66.2	52.9	39.5	37.7	39.0	53.1	55.6	55.6	55.6
IncrementDel:	71.4	2.4	119.4	1.1	39.5	0.2	0.0	0.1	120.0	104.6	105	104.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	140.8	48.6	171.7	67.3	92.5	39.8	37.7	39.2	173.0	160.2	160	160.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	140.8	48.6	171.7	67.3	92.5	39.8	37.7	39.2	173.0	160.2	160	160.2
LOS by Move:	F	D	F	E	F	D	D	D	F	F	F	F
HCM2kAvgQ:	8	13	34	1	27	2	0	2	33	32	32	32

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	11	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:												
Base Vol:	306	761	714	44	866	127	8	81	222	575	684	458
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	306	761	714	44	866	127	8	81	222	575	684	458
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	306	761	714	44	866	127	8	81	222	575	684	458
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	306	761	714	44	866	127	8	81	222	575	684	458
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	306	761	714	44	866	127	8	81	222	575	684	458
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	306	761	714	44	866	127	8	81	222	575	684	458

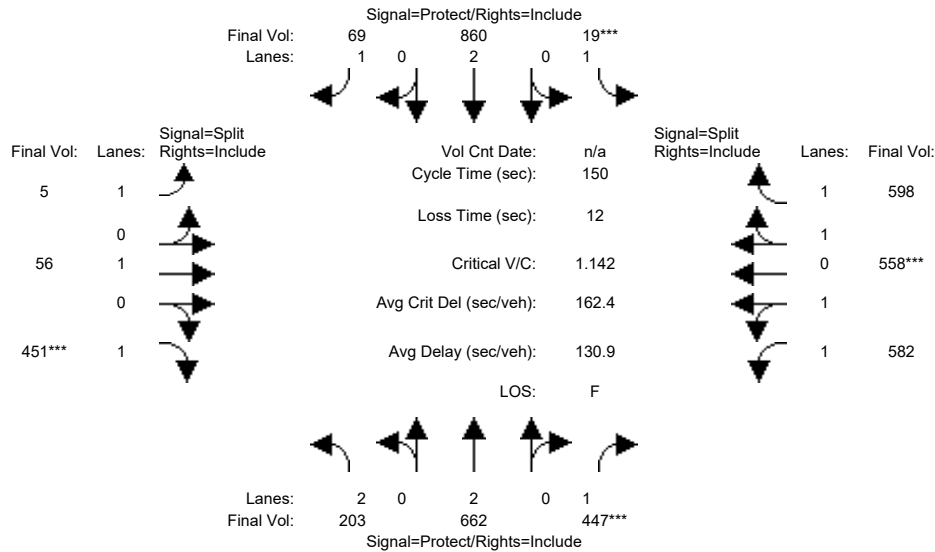
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.78	0.80	0.72	0.80	0.80	0.72	0.80	0.85	0.72	0.76	0.76	0.76
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.34	1.59	1.07
Final Sat.:	2959	3050	1365	1525	3050	1365	1525	1606	1365	1930	2296	1537

Capacity Analysis Module:												
Vol/Sat:	0.10	0.25	0.52	0.03	0.28	0.09	0.01	0.05	0.16	0.30	0.30	0.30
Crit Moves:			****	****					****			****
Green Time:	20.8	68.1	68.1	10.0	57.2	57.2	21.2	21.2	21.2	38.8	38.8	38.8
Volume/Cap:	0.74	0.55	1.15	0.43	0.74	0.24	0.04	0.36	1.15	1.15	1.15	1.15
Uniform Del:	62.0	29.8	41.0	67.3	40.1	31.6	55.6	58.3	64.4	55.6	55.6	55.6
IncrementDel:	7.2	0.5	86.3	2.9	2.6	0.2	0.1	1.0	112.1	77.0	77.0	77.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	69.2	30.3	127.2	70.2	42.7	31.9	55.7	59.2	176.5	132.6	133	132.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	69.2	30.3	127.2	70.2	42.7	31.9	55.7	59.2	176.5	132.6	133	132.6
LOS by Move:	E	C	F	E	D	C	E	E	F	F	F	F
HCM2kAvgQ:	9	13	47	2	19	4	0	4	17	31	31	31

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:												
Base Vol:	203	662	447	19	860	69	5	56	451	582	558	598
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	203	662	447	19	860	69	5	56	451	582	558	598
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	203	662	447	19	860	69	5	56	451	582	558	598
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	203	662	447	19	860	69	5	56	451	582	558	598
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	203	662	447	19	860	69	5	56	451	582	558	598
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	203	662	447	19	860	69	5	56	451	582	558	598

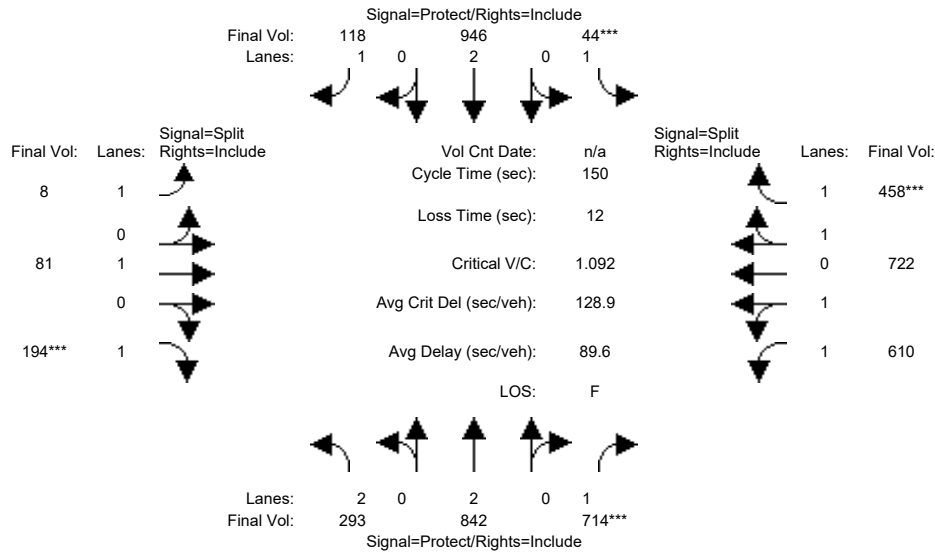
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.75	0.67	0.75	0.75	0.67	0.75	0.79	0.67	0.70	0.70	0.70
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.34	1.28	1.38
Final Sat.:	2749	2834	1268	1417	2834	1268	1417	1492	1268	1770	1697	1819

Capacity Analysis Module:												
Vol/Sat:	0.07	0.23	0.35	0.01	0.30	0.05	0.00	0.04	0.36	0.33	0.33	0.33
Crit Moves:			****	****					****	****	****	****
Green Time:	10.5	43.5	43.5	10.0	43.0	43.0	43.9	43.9	43.9	40.6	40.6	40.6
Volume/Cap:	1.06	0.81	1.22	0.20	1.06	0.19	0.01	0.13	1.22	1.22	1.22	1.22
Uniform Del:	69.8	49.3	53.2	66.2	53.5	40.3	37.7	39.0	53.0	54.7	54.7	54.7
IncrcmntDel:	81.0	5.8	119.3	1.1	47.9	0.3	0.0	0.1	119.1	103.5	104	103.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	150.8	55.2	172.6	67.3	101	40.6	37.7	39.1	172.2	158.2	158	158.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	150.8	55.2	172.6	67.3	101	40.6	37.7	39.1	172.2	158.2	158	158.2
LOS by Move:	F	E	F	E	F	D	D	D	F	F	F	F
HCM2kAvgQ:	8	17	33	1	28	2	0	2	33	33	33	33

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #45: (43) University/Donohoe

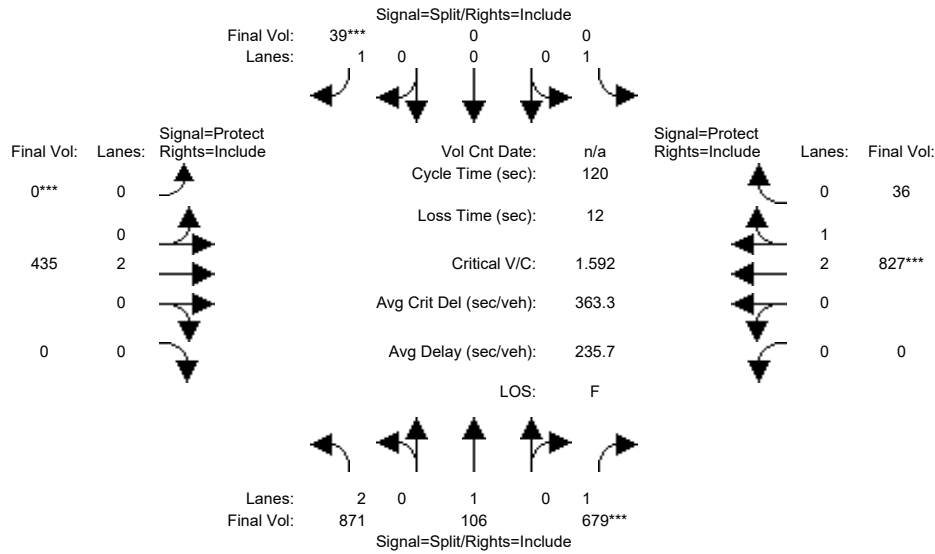


Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	11	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6
Volume Module:												
Base Vol:	293	842	714	44	946	118	8	81	194	610	722	458
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	293	842	714	44	946	118	8	81	194	610	722	458
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	293	842	714	44	946	118	8	81	194	610	722	458
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	293	842	714	44	946	118	8	81	194	610	722	458
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	293	842	714	44	946	118	8	81	194	610	722	458
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	293	842	714	44	946	118	8	81	194	610	722	458
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.78	0.80	0.72	0.80	0.80	0.72	0.80	0.85	0.72	0.76	0.76	0.76
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.36	1.62	1.02
Final Sat.:	2959	3050	1365	1525	3050	1365	1525	1606	1365	1966	2327	1476
Capacity Analysis Module:												
Vol/Sat:	0.10	0.28	0.52	0.03	0.31	0.09	0.01	0.05	0.14	0.31	0.31	0.31
Crit Moves:			****	****					****			****
Green Time:	19.0	68.6	68.6	10.0	59.6	59.6	18.7	18.7	18.7	40.7	40.7	40.7
Volume/Cap:	0.78	0.60	1.14	0.43	0.78	0.22	0.04	0.41	1.14	1.14	1.14	1.14
Uniform Del:	63.5	30.5	40.7	67.3	39.5	29.8	57.8	60.6	65.7	54.6	54.6	54.6
IncrcmntDel:	10.1	0.8	82.5	2.9	3.3	0.2	0.1	1.3	112.9	72.6	72.6	72.6
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	73.5	31.2	123.1	70.2	42.8	30.0	57.9	61.9	178.5	127.3	127	127.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	73.5	31.2	123.1	70.2	42.8	30.0	57.9	61.9	178.5	127.3	127	127.3
LOS by Move:	E	C	F	E	D	C	E	E	F	F	F	F
HCM2kAvgQ:	9	15	46	2	21	4	0	4	15	32	32	32

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	8	8	8	12	12	12	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:

Base Vol:	871	106	679	0	0	39	0	435	0	0	827	36
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	871	106	679	0	0	39	0	435	0	0	827	36
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	871	106	679	0	0	39	0	435	0	0	827	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	871	106	679	0	0	39	0	435	0	0	827	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	871	106	679	0	0	39	0	435	0	0	827	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	871	106	679	0	0	39	0	435	0	0	827	36

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.39	0.43	0.36	0.43	0.43	0.36	0.43	0.41	0.43	0.43	0.39	0.39
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.87	0.13
Final Sat.:	1495	811	690	811	0	690	0	1541	0	0	2110	92

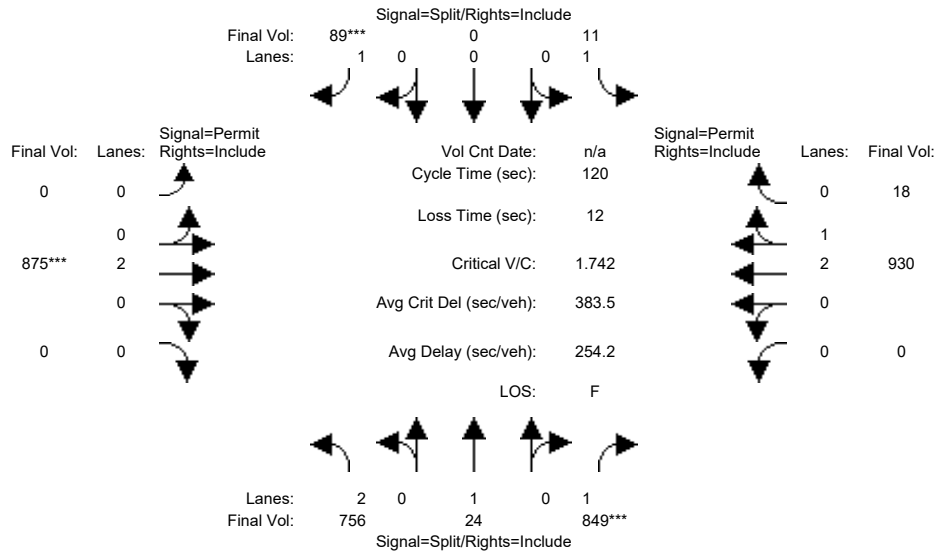
Capacity Analysis Module:

Vol/Sat:	0.58	0.13	0.98	0.00	0.00	0.06	0.00	0.28	0.00	0.00	0.39	0.39
Crit Moves:			****			****	****				****	
Green Time:	68.7	68.7	68.7	0.0	0.0	12.0	0.0	27.3	0.0	0.0	27.3	27.3
Volume/Cap:	1.02	0.23	1.72	0.00	0.00	0.57	0.00	1.24	0.00	0.00	1.72	1.72
Uniform Del:	25.7	12.6	25.7	0.0	0.0	51.5	0.0	46.3	0.0	0.0	46.3	46.3
IncrcmntDel:	35.4	0.3	334.9	0.0	0.0	10.5	0.0	130	0.0	0.0	333	332.7
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	61.0	12.9	360.6	0.0	0.0	62.0	0.0	176	0.0	0.0	379	379.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	61.0	12.9	360.6	0.0	0.0	62.0	0.0	176	0.0	0.0	379	379.0
LOS by Move:	E	B	F	A	A	E	A	F	A	A	F	F
HCM2kAvgQ:	23	2	60	0	0	2	0	16	0	0	29	29

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	8	8	8	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	3.6	3.6	3.6	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:

Base Vol:	756	24	849	11	0	89	0	875	0	0	930	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	756	24	849	11	0	89	0	875	0	0	930	18
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	756	24	849	11	0	89	0	875	0	0	930	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	756	24	849	11	0	89	0	875	0	0	930	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	756	24	849	11	0	89	0	875	0	0	930	18
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	756	24	849	11	0	89	0	875	0	0	930	18

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.48	0.53	0.45	0.50	0.53	0.45	0.53	0.50	0.53	0.53	0.48	0.48
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.94	0.06
Final Sat.:	1838	998	848	948	0	848	0	1895	0	0	2663	52

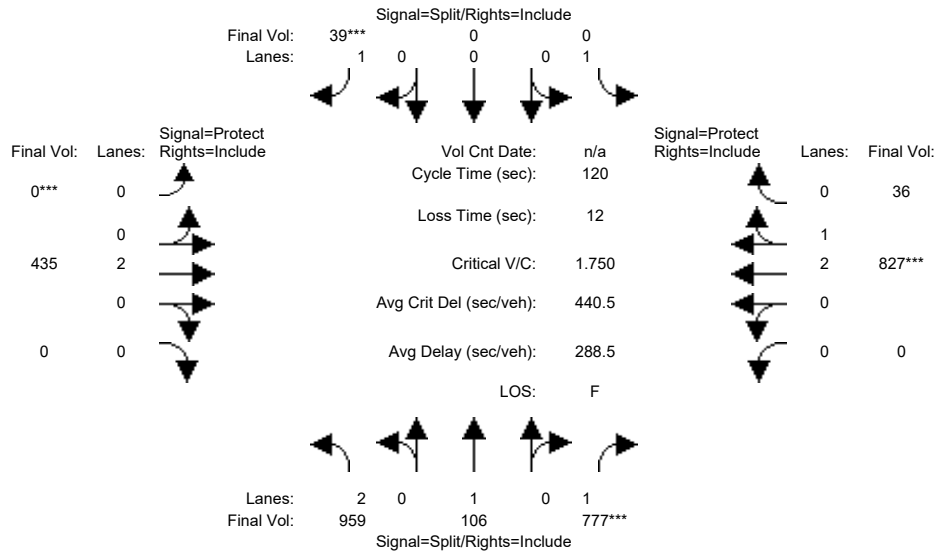
Capacity Analysis Module:

Vol/Sat:	0.41	0.02	1.00	0.01	0.00	0.10	0.00	0.46	0.00	0.00	0.35	0.35
Crit Moves:			****			****		****				
Green Time:	68.4	68.4	68.4	8.0	0.0	8.0	0.0	31.6	0.0	0.0	31.6	31.6
Volume/Cap:	0.72	0.04	1.76	0.17	0.00	1.57	0.00	1.76	0.00	0.00	1.33	1.33
Uniform Del:	18.8	11.3	25.8	52.9	0.0	56.0	0.0	44.2	0.0	0.0	44.2	44.2
IncrcmntDel:	2.5	0.0	348.5	1.3	0.0	327.4	0.0	348	0.0	0.0	157	157.1
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	21.3	11.4	374.2	54.2	0.0	383.4	0.0	392	0.0	0.0	201	201.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.3	11.4	374.2	54.2	0.0	383.4	0.0	392	0.0	0.0	201	201.3
LOS by Move:	C	B	F	D	A	F	A	F	A	A	F	F
HCM2kAvgQ:	12	0	76	1	0	9	0	42	0	0	25	25

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	8	8	8	12	12	12	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:												
Base Vol:	959	106	777	0	0	39	0	435	0	0	827	36
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	959	106	777	0	0	39	0	435	0	0	827	36
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	959	106	777	0	0	39	0	435	0	0	827	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	959	106	777	0	0	39	0	435	0	0	827	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	959	106	777	0	0	39	0	435	0	0	827	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	959	106	777	0	0	39	0	435	0	0	827	36

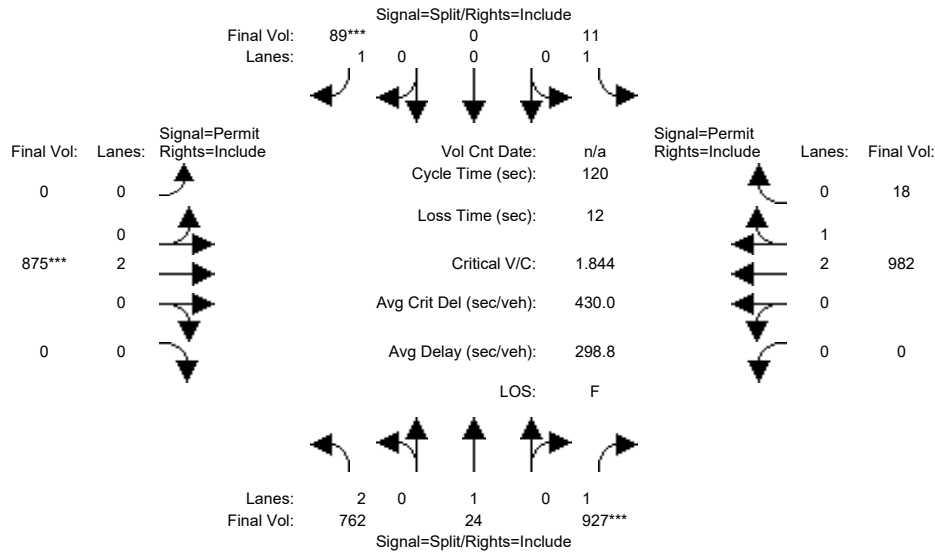
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.39	0.43	0.36	0.43	0.43	0.36	0.43	0.41	0.43	0.43	0.39	0.39
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.87	0.13
Final Sat.:	1495	811	690	811	0	690	0	1541	0	0	2110	92

Capacity Analysis Module:												
Vol/Sat:	0.64	0.13	1.13	0.00	0.00	0.06	0.00	0.28	0.00	0.00	0.39	0.39
Crit Moves:			****			****	****				****	
Green Time:	71.2	71.2	71.2	0.0	0.0	12.0	0.0	24.8	0.0	0.0	24.8	24.8
Volume/Cap:	1.08	0.22	1.90	0.00	0.00	0.57	0.00	1.37	0.00	0.00	1.90	1.90
Uniform Del:	24.4	11.4	24.4	0.0	0.0	51.5	0.0	47.6	0.0	0.0	47.6	47.6
IncrcmntDel:	54.4	0.2	413.4	0.0	0.0	10.5	0.0	184	0.0	0.0	412	412.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	78.8	11.6	437.8	0.0	0.0	62.0	0.0	232	0.0	0.0	460	460.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	78.8	11.6	437.8	0.0	0.0	62.0	0.0	232	0.0	0.0	460	460.1
LOS by Move:	E	B	F	A	A	E	A	F	A	A	F	F
HCM2kAvgQ:	27	2	74	0	0	2	0	18	0	0	31	31

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	8	8	8	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	3.6	3.6	3.6	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:

Base Vol:	762	24	927	11	0	89	0	875	0	0	982	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	762	24	927	11	0	89	0	875	0	0	982	18
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	762	24	927	11	0	89	0	875	0	0	982	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	762	24	927	11	0	89	0	875	0	0	982	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	762	24	927	11	0	89	0	875	0	0	982	18
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	762	24	927	11	0	89	0	875	0	0	982	18

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.48	0.53	0.45	0.50	0.53	0.45	0.53	0.50	0.53	0.53	0.48	0.48
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.95	0.05
Final Sat.:	1838	998	848	948	0	848	0	1895	0	0	2666	49

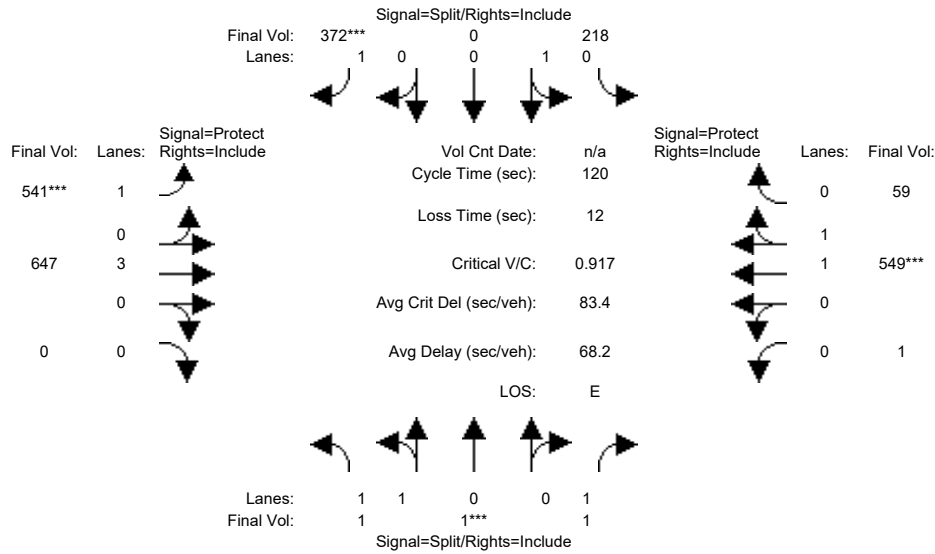
Capacity Analysis Module:

Vol/Sat:	0.41	0.02	1.09	0.01	0.00	0.10	0.00	0.46	0.00	0.00	0.37	0.37
Crit Moves:			****			****		****				
Green Time:	70.3	70.3	70.3	8.0	0.0	8.0	0.0	29.7	0.0	0.0	29.7	29.7
Volume/Cap:	0.71	0.04	1.87	0.17	0.00	1.57	0.00	1.87	0.00	0.00	1.49	1.49
Uniform Del:	17.6	10.5	24.8	52.9	0.0	56.0	0.0	45.2	0.0	0.0	45.2	45.2
IncrcmntDel:	2.2	0.0	397.4	1.3	0.0	327.4	0.0	398	0.0	0.0	228	227.8
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	19.8	10.6	422.2	54.2	0.0	383.4	0.0	443	0.0	0.0	273	272.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.8	10.6	422.2	54.2	0.0	383.4	0.0	443	0.0	0.0	273	272.9
LOS by Move:	B	B	F	D	A	F	A	F	A	A	F	F
HCM2kAvgQ:	11	0	87	1	0	9	0	44	0	0	30	30

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #47: (45) Cooley/Donohoe



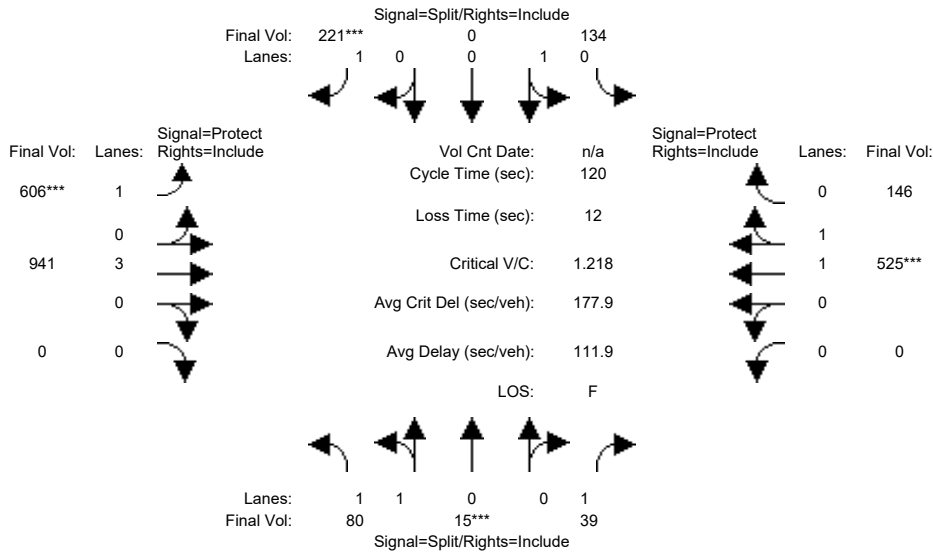
Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	10	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0
Volume Module:												
Base Vol:	1	1	1	218	0	372	541	647	0	1	549	59
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	1	218	0	372	541	647	0	1	549	59
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	1	1	218	0	372	541	647	0	1	549	59
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	1	1	218	0	372	541	647	0	1	549	59
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	1	1	218	0	372	541	647	0	1	549	59
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	1	1	218	0	372	541	647	0	1	549	59
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	0.83	0.72	0.81	0.85	0.72	0.81	0.77	0.85	0.80	0.80	0.80
Lanes:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.01	1.80	0.19
Final Sat.:	1576	1576	1373	1537	0	1373	1534	4409	0	5	2725	293
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.14	0.00	0.27	0.35	0.15	0.00	0.20	0.20	0.20
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	32.5	0.0	32.5	42.3	28.0	0.0	38.5	24.2	24.2
Volume/Cap:	0.01	0.01	0.01	0.52	0.00	1.00	1.00	0.63	0.00	0.63	1.00	1.00
Uniform Del:	51.4	51.4	51.4	37.2	0.0	43.7	38.8	41.3	0.0	34.7	47.9	47.9
IncrcmntDel:	0.0	0.0	0.0	1.2	0.0	46.7	38.7	1.3	0.0	1.3	36.5	36.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Delay/Veh:	51.4	51.4	51.4	38.4	0.0	90.4	77.6	42.6	0.0	36.0	84.4	84.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.4	51.4	51.4	38.4	0.0	90.4	77.6	42.6	0.0	36.0	84.4	84.4
LOS by Move:	D	D	D	D	A	F	E	D	A	D	F	F
HCM2kAvgQ:	0	0	0	7	0	19	26	9	0	11	17	17

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	7	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:

Base Vol:	80	15	39	134	0	221	606	941	0	0	525	146
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	80	15	39	134	0	221	606	941	0	0	525	146
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	15	39	134	0	221	606	941	0	0	525	146
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	80	15	39	134	0	221	606	941	0	0	525	146
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	80	15	39	134	0	221	606	941	0	0	525	146
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	80	15	39	134	0	221	606	941	0	0	525	146

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.60	0.60	0.54	0.60	0.63	0.54	0.60	0.57	0.63	0.63	0.58	0.58
Lanes:	1.68	0.32	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.56	0.44
Final Sat.:	1935	363	1017	1140	0	1017	1137	3268	0	0	1721	479

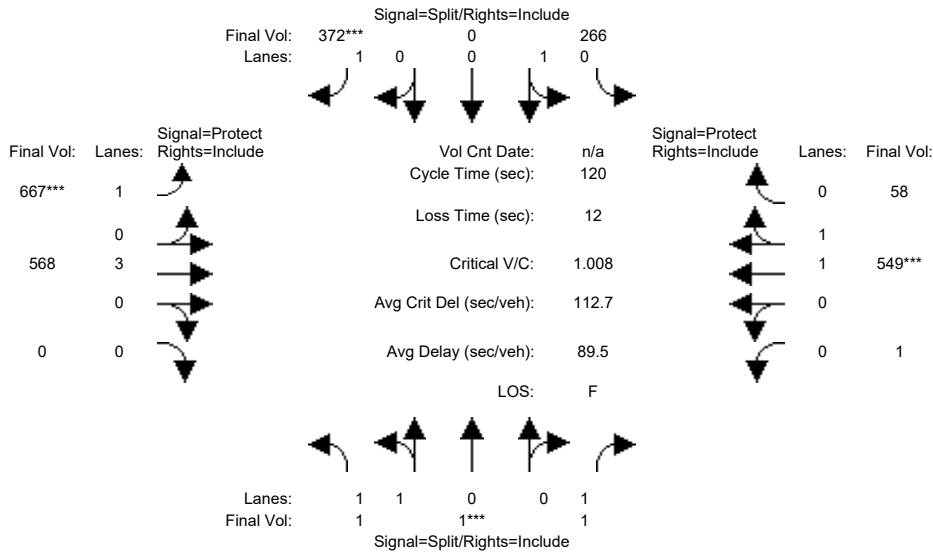
Capacity Analysis Module:

Vol/Sat:	0.04	0.04	0.04	0.12	0.00	0.22	0.53	0.29	0.00	0.00	0.31	0.31
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	20.4	0.0	20.4	50.0	78.6	0.0	0.0	28.6	28.6
Volume/Cap:	0.55	0.55	0.51	0.69	0.00	1.28	1.28	0.44	0.00	0.00	1.28	1.28
Uniform Del:	53.6	53.6	53.4	46.9	0.0	49.8	35.0	10.0	0.0	0.0	45.7	45.7
IncrementDel:	3.8	3.8	5.7	10.3	0.0	162.5	141.1	0.1	0.0	0.0	140	139.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	57.3	57.3	59.1	57.2	0.0	212.3	176.1	10.2	0.0	0.0	185	185.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	57.3	59.1	57.2	0.0	212.3	176.1	10.2	0.0	0.0	185	185.4
LOS by Move:	E	E	E	E	A	F	F	B	A	A	F	F
HCM2kAvgQ:	3	3	2	6	0	16	40	6	0	0	25	25

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	10	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:												
Base Vol:	1	1	1	266	0	372	667	568	0	1	549	58
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	1	266	0	372	667	568	0	1	549	58
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	1	1	266	0	372	667	568	0	1	549	58
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	1	1	266	0	372	667	568	0	1	549	58
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	1	1	266	0	372	667	568	0	1	549	58
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	1	1	266	0	372	667	568	0	1	549	58

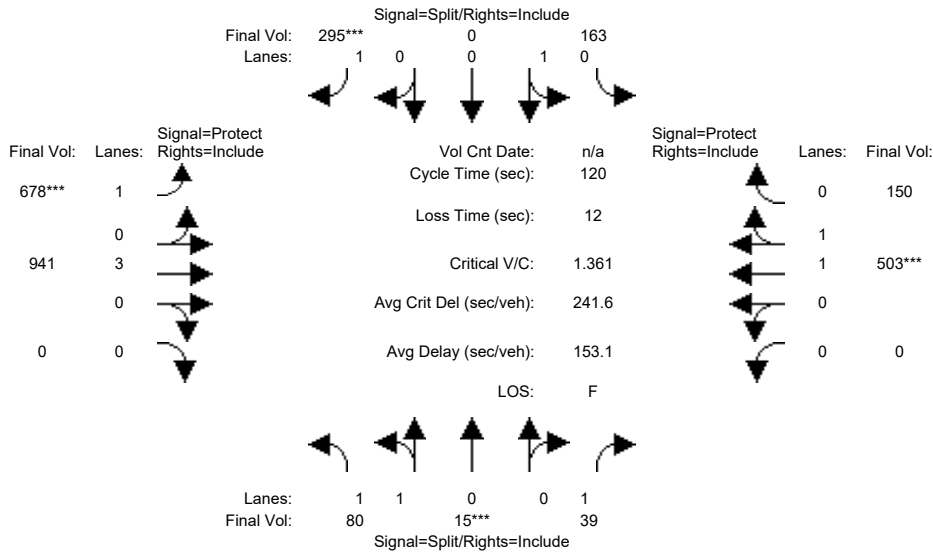
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	0.83	0.72	0.81	0.85	0.72	0.81	0.77	0.85	0.80	0.80	0.80
Lanes:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.01	1.80	0.19
Final Sat.:	1576	1576	1373	1537	0	1373	1534	4409	0	5	2732	289

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.17	0.00	0.27	0.43	0.13	0.00	0.20	0.20	0.20
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	29.6	0.0	29.6	47.5	27.1	0.0	42.3	21.9	21.9
Volume/Cap:	0.01	0.01	0.01	0.70	0.00	1.10	1.10	0.57	0.00	0.57	1.10	1.10
Uniform Del:	51.4	51.4	51.4	41.2	0.0	45.2	36.3	41.3	0.0	31.5	49.0	49.0
IncrcmntDel:	0.0	0.0	0.0	5.8	0.0	78.2	66.6	0.8	0.0	0.7	68.2	68.2
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Delay/Veh:	51.4	51.4	51.4	47.0	0.0	123.4	102.8	42.1	0.0	32.2	117	117.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.4	51.4	51.4	47.0	0.0	123.4	102.8	42.1	0.0	32.2	117	117.2
LOS by Move:	D	D	D	D	A	F	F	D	A	C	F	F
HCM2kAvgQ:	0	0	0	10	0	22	36	7	0	10	19	19

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #47: (45) Cooley/Donohoe

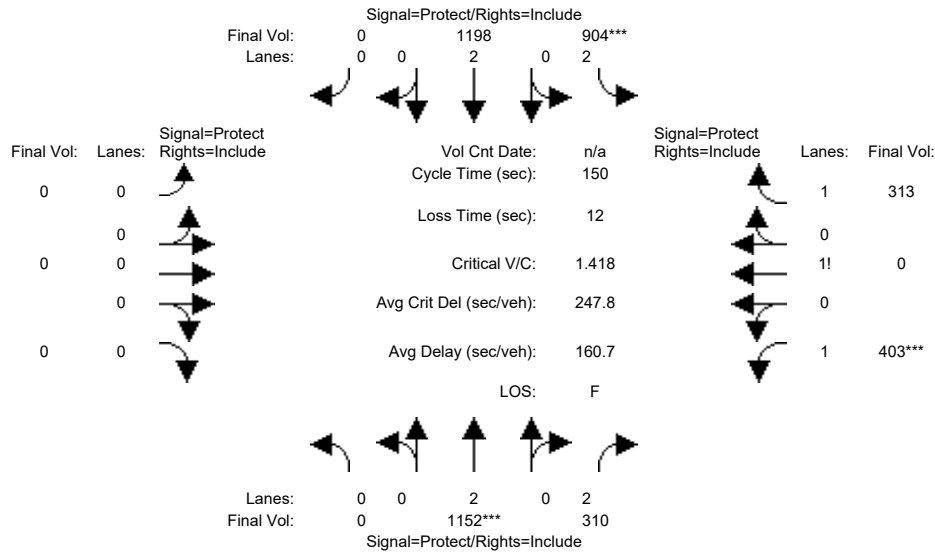


Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	7	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0
Volume Module:												
Base Vol:	80	15	39	163	0	295	678	941	0	0	503	150
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	80	15	39	163	0	295	678	941	0	0	503	150
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	15	39	163	0	295	678	941	0	0	503	150
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	80	15	39	163	0	295	678	941	0	0	503	150
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	80	15	39	163	0	295	678	941	0	0	503	150
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	80	15	39	163	0	295	678	941	0	0	503	150
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.60	0.60	0.54	0.60	0.63	0.54	0.60	0.57	0.63	0.63	0.58	0.58
Lanes:	1.68	0.32	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.54	0.46
Final Sat.:	1935	363	1017	1140	0	1017	1137	3268	0	0	1692	505
Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.14	0.00	0.29	0.60	0.29	0.00	0.00	0.30	0.30
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	24.3	0.0	24.3	49.9	74.7	0.0	0.0	24.9	24.9
Volume/Cap:	0.55	0.55	0.51	0.71	0.00	1.43	1.43	0.46	0.00	0.00	1.43	1.43
Uniform Del:	53.6	53.6	53.4	44.6	0.0	47.9	35.1	12.0	0.0	0.0	47.6	47.6
IncrcmntDel:	3.8	3.8	5.7	9.7	0.0	221.0	207.3	0.2	0.0	0.0	208	207.8
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	57.3	57.3	59.1	54.3	0.0	268.9	242.4	12.2	0.0	0.0	255	255.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	57.3	59.1	54.3	0.0	268.9	242.4	12.2	0.0	0.0	255	255.3
LOS by Move:	E	E	E	D	A	F	F	B	A	A	F	F
HCM2kAvgQ:	3	3	2	7	0	24	51	7	0	0	27	27

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #48: (46) University/US 101 SB Ramps

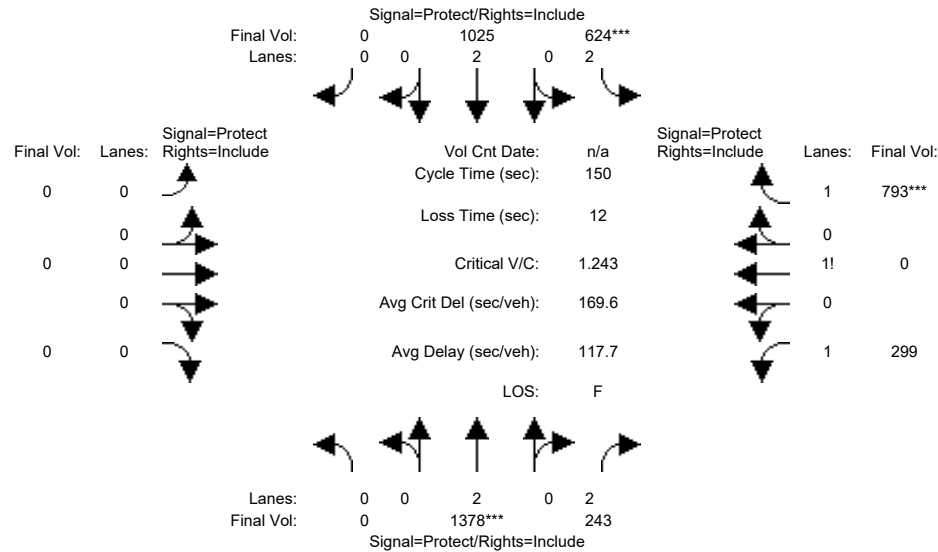


Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	1152	310	904	1198	0	0	0	0	403	0	313
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1152	310	904	1198	0	0	0	0	403	0	313
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1152	310	904	1198	0	0	0	0	403	0	313
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1152	310	904	1198	0	0	0	0	403	0	313
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1152	310	904	1198	0	0	0	0	403	0	313
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1152	310	904	1198	0	0	0	0	403	0	313
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.56	0.53	0.42	0.51	0.53	0.56	0.56	0.56	0.56	0.51	0.56	0.51
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.56	0.00	1.44
Final Sat.:	0	2011	1583	1950	2011	0	0	0	0	1503	0	1382
Capacity Analysis Module:												
Vol/Sat:	0.00	0.57	0.20	0.46	0.60	0.00	0.00	0.00	0.00	0.27	0.00	0.23
Crit Moves:	****			****			****			****		
Green Time:	0.0	60.6	60.6	49.0	110	0.0	0.0	0.0	0.0	28.4	0.0	28.4
Volume/Cap:	0.00	1.42	0.48	1.42	0.82	0.00	0.00	0.00	0.00	1.42	0.00	1.20
Uniform Del:	0.0	44.7	33.1	50.5	13.4	0.0	0.0	0.0	0.0	60.8	0.0	60.8
IncrcmntDel:	0.0	195	0.6	197.2	3.6	0.0	0.0	0.0	0.0	199.5	0.0	104.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	240	33.7	247.7	17.1	0.0	0.0	0.0	0.0	260.3	0.0	165.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	240	33.7	247.7	17.1	0.0	0.0	0.0	0.0	260.3	0.0	165.3
LOS by Move:	A	F	C	F	B	A	A	A	A	F	A	F
HCM2kAvgQ:	0	51	6	39	21	0	0	0	0	23	0	17

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #48: (46) University/US 101 SB Ramps

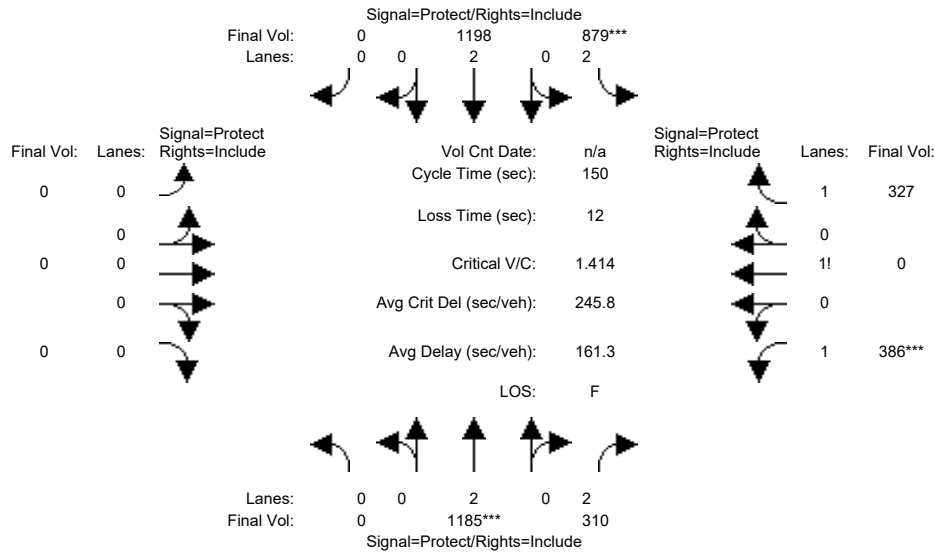


Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	1378	243	624	1025	0	0	0	0	299	0	793
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1378	243	624	1025	0	0	0	0	299	0	793
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1378	243	624	1025	0	0	0	0	299	0	793
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1378	243	624	1025	0	0	0	0	299	0	793
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1378	243	624	1025	0	0	0	0	299	0	793
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1378	243	624	1025	0	0	0	0	299	0	793
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.69	0.55	0.67	0.69	0.73	0.73	0.73	0.73	0.64	0.73	0.64
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.27	0.00	1.73
Final Sat.:	0	2635	2075	2556	2635	0	0	0	0	1552	0	2103
Capacity Analysis Module:												
Vol/Sat:	0.00	0.52	0.12	0.24	0.39	0.00	0.00	0.00	0.00	0.19	0.00	0.38
Crit Moves:	****			****						****		
Green Time:	0.0	63.1	63.1	29.4	92.5	0.0	0.0	0.0	0.0	45.5	0.0	45.5
Volume/Cap:	0.00	1.24	0.28	1.24	0.63	0.00	0.00	0.00	0.00	0.64	0.00	1.24
Uniform Del:	0.0	43.5	28.5	60.3	18.0	0.0	0.0	0.0	0.0	45.1	0.0	52.3
IncrementDel:	0.0	117	0.2	125.6	0.8	0.0	0.0	0.0	0.0	0.8	0.0	119.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	161	28.7	185.8	18.8	0.0	0.0	0.0	0.0	45.9	0.0	171.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	161	28.7	185.8	18.8	0.0	0.0	0.0	0.0	45.9	0.0	171.5
LOS by Move:	A	F	C	F	B	A	A	A	A	D	A	F
HCM2kAvgQ:	0	52	4	25	16	0	0	0	0	10	0	34

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #48: (46) University/US 101 SB Ramps

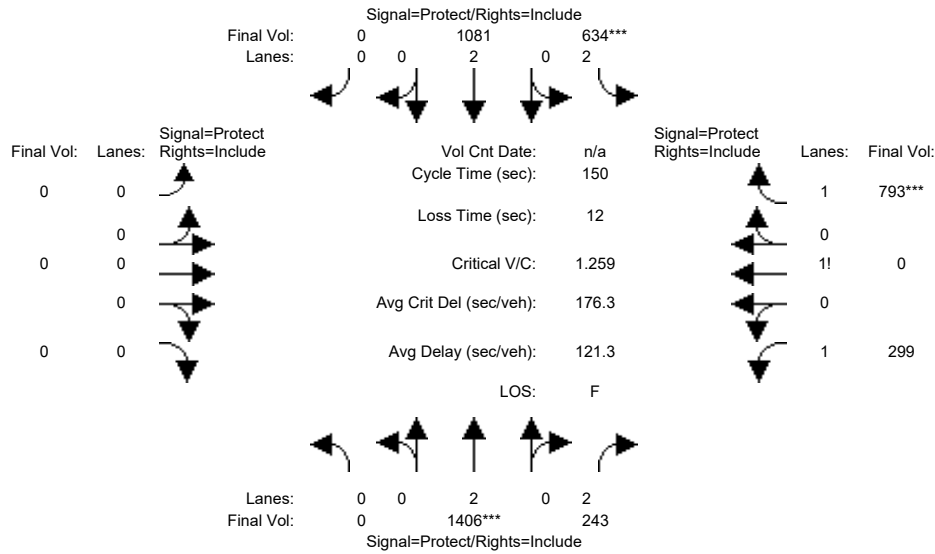


Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	1185	310	879	1198	0	0	0	0	386	0	327
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1185	310	879	1198	0	0	0	0	386	0	327
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1185	310	879	1198	0	0	0	0	386	0	327
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1185	310	879	1198	0	0	0	0	386	0	327
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1185	310	879	1198	0	0	0	0	386	0	327
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1185	310	879	1198	0	0	0	0	386	0	327
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.56	0.53	0.42	0.51	0.53	0.56	0.56	0.56	0.56	0.51	0.56	0.51
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.54	0.00	1.46
Final Sat.:	0	2011	1583	1950	2011	0	0	0	0	1479	0	1400
Capacity Analysis Module:												
Vol/Sat:	0.00	0.59	0.20	0.45	0.60	0.00	0.00	0.00	0.00	0.26	0.00	0.23
Crit Moves:	****			****						****		
Green Time:	0.0	62.5	62.5	47.8	110	0.0	0.0	0.0	0.0	27.7	0.0	27.7
Volume/Cap:	0.00	1.41	0.47	1.41	0.81	0.00	0.00	0.00	0.00	1.41	0.00	1.27
Uniform Del:	0.0	43.7	31.7	51.1	13.0	0.0	0.0	0.0	0.0	61.2	0.0	61.2
IncrcmntDel:	0.0	193	0.5	195.7	3.5	0.0	0.0	0.0	0.0	197.8	0.0	133.3
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	237	32.3	246.8	16.5	0.0	0.0	0.0	0.0	259.0	0.0	194.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	237	32.3	246.8	16.5	0.0	0.0	0.0	0.0	259.0	0.0	194.5
LOS by Move:	A	F	C	F	B	A	A	A	A	F	A	F
HCM2kAvgQ:	0	52	6	38	21	0	0	0	0	22	0	18

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #48: (46) University/US 101 SB Ramps

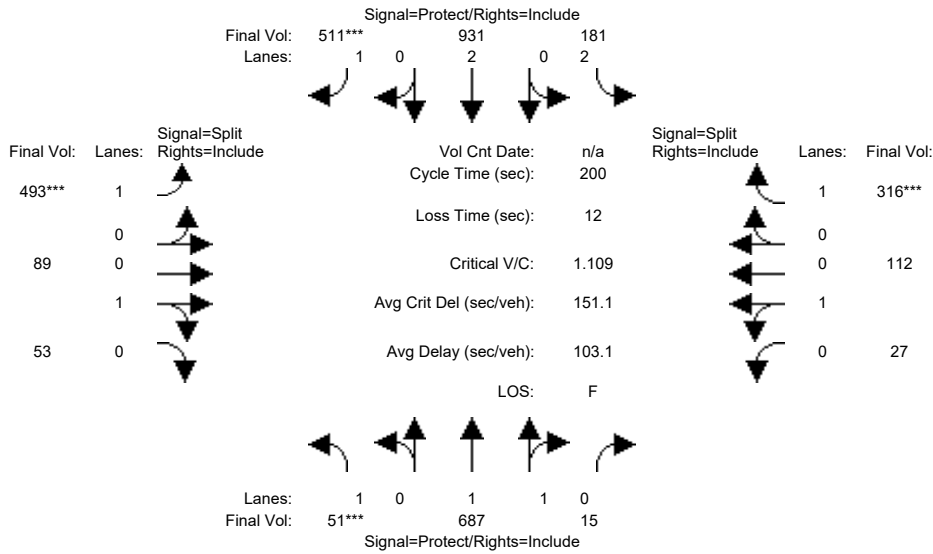


Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	1406	243	634	1081	0	0	0	0	299	0	793
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1406	243	634	1081	0	0	0	0	299	0	793
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1406	243	634	1081	0	0	0	0	299	0	793
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1406	243	634	1081	0	0	0	0	299	0	793
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1406	243	634	1081	0	0	0	0	299	0	793
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1406	243	634	1081	0	0	0	0	299	0	793
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.69	0.55	0.67	0.69	0.73	0.73	0.73	0.73	0.64	0.73	0.64
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.27	0.00	1.73
Final Sat.:	0	2635	2075	2556	2635	0	0	0	0	1552	0	2103
Capacity Analysis Module:												
Vol/Sat:	0.00	0.53	0.12	0.25	0.41	0.00	0.00	0.00	0.00	0.19	0.00	0.38
Crit Moves:		****		****								****
Green Time:	0.0	63.6	63.6	29.5	93.1	0.0	0.0	0.0	0.0	44.9	0.0	44.9
Volume/Cap:	0.00	1.26	0.28	1.26	0.66	0.00	0.00	0.00	0.00	0.64	0.00	1.26
Uniform Del:	0.0	43.2	28.2	60.2	18.3	0.0	0.0	0.0	0.0	45.6	0.0	52.5
IncrementDel:	0.0	124	0.2	132.0	1.0	0.0	0.0	0.0	0.0	0.9	0.0	126.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	167	28.4	192.3	19.3	0.0	0.0	0.0	0.0	46.5	0.0	178.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	167	28.4	192.3	19.3	0.0	0.0	0.0	0.0	46.5	0.0	178.6
LOS by Move:	A	F	C	F	B	A	A	A	A	D	A	F
HCM2kAvgQ:	0	54	4	25	17	0	0	0	0	10	0	35

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #49: (47) University/Woodland



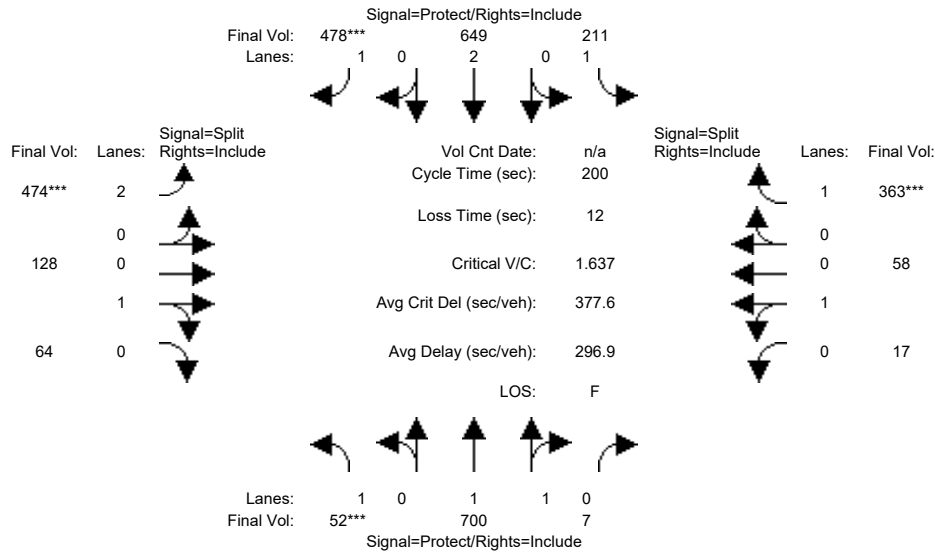
Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	10	10	10
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6
Volume Module:												
Base Vol:	51	687	15	181	931	511	493	89	53	27	112	316
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	687	15	181	931	511	493	89	53	27	112	316
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	51	687	15	181	931	511	493	89	53	27	112	316
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	51	687	15	181	931	511	493	89	53	27	112	316
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	51	687	15	181	931	511	493	89	53	27	112	316
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	51	687	15	181	931	511	493	89	53	27	112	316
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.74	0.72	0.74	0.66	0.74	0.74	0.74	0.77	0.77	0.66
Lanes:	1.00	1.96	0.04	2.00	2.00	1.00	1.00	0.63	0.37	0.19	0.81	1.00
Final Sat.:	1408	2747	60	2731	2816	1260	1408	877	522	285	1182	1260
Capacity Analysis Module:												
Vol/Sat:	0.04	0.25	0.25	0.07	0.33	0.41	0.35	0.10	0.10	0.09	0.09	0.25
Crit Moves:	****					****	****					****
Green Time:	7.0	63.2	63.2	16.7	72.9	72.9	63.0	63.0	63.0	45.1	45.1	45.1
Volume/Cap:	1.03	0.79	0.79	0.79	0.91	1.11	1.11	0.32	0.32	0.42	0.42	1.11
Uniform Del:	96.5	62.4	62.4	89.9	60.3	63.5	68.5	52.3	52.3	66.3	66.3	77.4
IncrcmntDel:	138.5	4.9	4.9	16.9	11.4	76.3	77.0	0.4	0.4	0.9	0.9	87.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	235.0	67.3	67.3	106.8	71.7	139.8	145.5	52.7	52.7	67.1	67.1	164.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	235.0	67.3	67.3	106.8	71.7	139.8	145.5	52.7	52.7	67.1	67.1	164.5
LOS by Move:	F	E	E	F	E	F	F	D	D	E	E	F
HCM2kAvgQ:	5	22	22	7	31	40	39	6	6	7	7	26

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #49: (47) University/Woodland

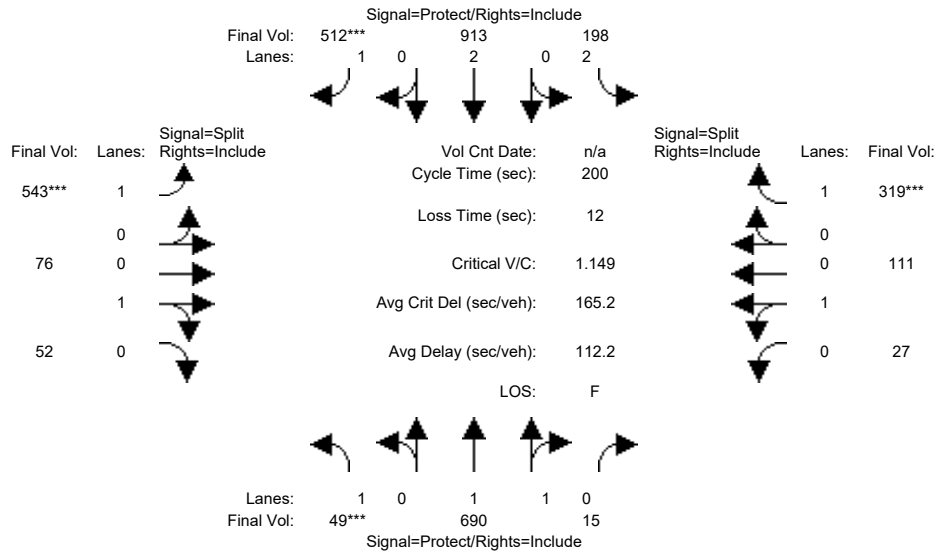


Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	11	11	11
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6
Volume Module:												
Base Vol:	52	700	7	211	649	478	474	128	64	17	58	363
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	52	700	7	211	649	478	474	128	64	17	58	363
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	700	7	211	649	478	474	128	64	17	58	363
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	52	700	7	211	649	478	474	128	64	17	58	363
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	700	7	211	649	478	474	128	64	17	58	363
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	52	700	7	211	649	478	474	128	64	17	58	363
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.42	0.42	0.42	0.42	0.42	0.38	0.41	0.42	0.42	0.44	0.44	0.38
Lanes:	1.00	1.98	0.02	1.00	2.00	1.00	2.00	0.67	0.33	0.23	0.77	1.00
Final Sat.:	803	1589	16	803	1606	719	1558	535	268	190	647	719
Capacity Analysis Module:												
Vol/Sat:	0.06	0.44	0.44	0.26	0.40	0.67	0.30	0.24	0.24	0.09	0.09	0.51
Crit Moves:	****					****	****					****
Green Time:	7.9	55.8	55.8	33.3	81.2	81.2	37.2	37.2	37.2	61.7	61.7	61.7
Volume/Cap:	1.64	1.58	1.58	1.58	0.99	1.64	1.64	1.29	1.29	0.29	0.29	1.64
Uniform Del:	96.0	72.1	72.1	83.3	59.2	59.4	81.4	81.4	81.4	52.5	52.5	69.2
IncrementDel:	393.1	270	270.5	292.6	33.8	301.9	302.0	170	170.1	0.6	0.6	306.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	489.1	343	342.6	376.0	92.9	361.2	383.4	251	251.5	53.2	53.2	375.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	489.1	343	342.6	376.0	92.9	361.2	383.4	251	251.5	53.2	53.2	375.5
LOS by Move:	F	F	F	F	F	F	F	F	F	D	D	F
HCM2kAvgQ:	7	40	40	24	25	52	28	19	19	4	4	40

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	10	10	10
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:

Base Vol:	49	690	15	198	913	512	543	76	52	27	111	319
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	690	15	198	913	512	543	76	52	27	111	319
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	49	690	15	198	913	512	543	76	52	27	111	319
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	49	690	15	198	913	512	543	76	52	27	111	319
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	49	690	15	198	913	512	543	76	52	27	111	319
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	49	690	15	198	913	512	543	76	52	27	111	319

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.74	0.72	0.74	0.66	0.74	0.73	0.73	0.77	0.77	0.66
Lanes:	1.00	1.96	0.04	2.00	2.00	1.00	1.00	0.59	0.41	0.20	0.80	1.00
Final Sat.:	1408	2748	60	2731	2816	1260	1408	826	565	287	1180	1260

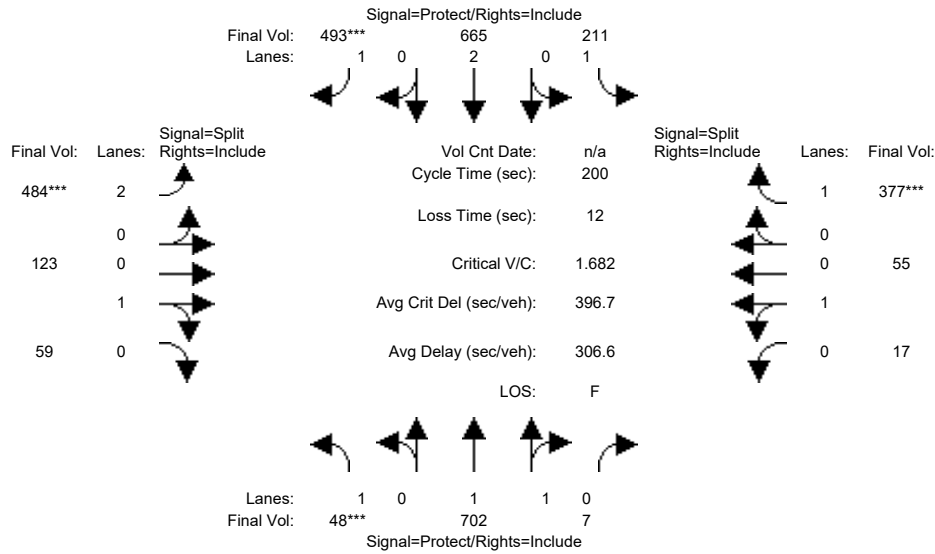
Capacity Analysis Module:

Vol/Sat:	0.03	0.25	0.25	0.07	0.32	0.41	0.39	0.09	0.09	0.09	0.09	0.25
Crit Moves:	****					****	****					****
Green Time:	7.0	60.0	60.0	17.3	70.4	70.4	66.8	66.8	66.8	43.8	43.8	43.8
Volume/Cap:	0.99	0.84	0.84	0.84	0.92	1.16	1.16	0.28	0.28	0.43	0.43	1.16
Uniform Del:	96.5	65.4	65.4	89.9	62.2	64.8	66.6	48.9	48.9	67.3	67.3	78.1
IncrcmntDel:	126.0	7.3	7.3	22.1	13.5	92.6	91.5	0.3	0.3	0.9	0.9	102.8
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	222.5	72.7	72.7	112.0	75.7	157.4	158.1	49.2	49.2	68.2	68.2	180.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	222.5	72.7	72.7	112.0	75.7	157.4	158.1	49.2	49.2	68.2	68.2	180.8
LOS by Move:	F	E	E	F	E	F	F	D	D	E	E	F
HCM2kAvgQ:	5	23	23	8	31	42	44	6	6	7	7	27

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	11	11	11
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:												
Base Vol:	48	702	7	211	665	493	484	123	59	17	55	377
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	48	702	7	211	665	493	484	123	59	17	55	377
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	48	702	7	211	665	493	484	123	59	17	55	377
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	48	702	7	211	665	493	484	123	59	17	55	377
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	48	702	7	211	665	493	484	123	59	17	55	377
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	48	702	7	211	665	493	484	123	59	17	55	377

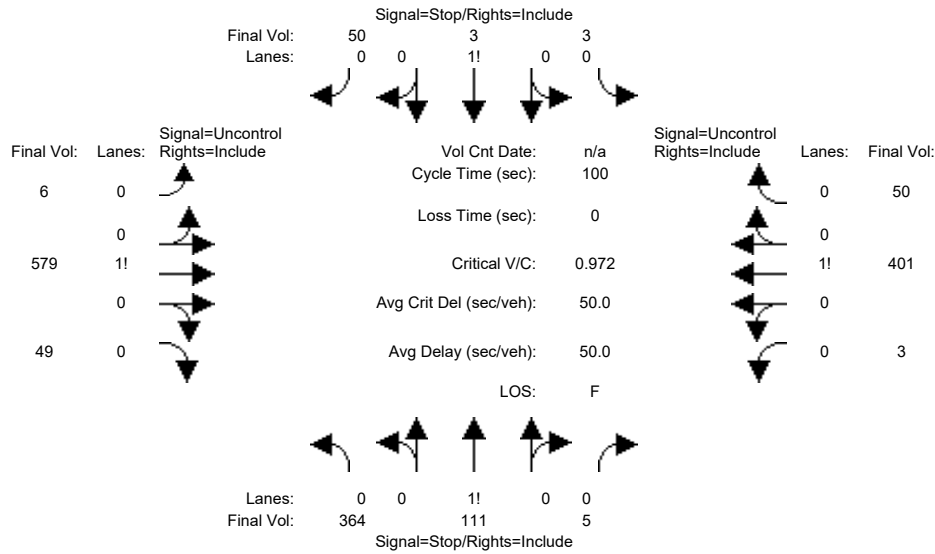
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.42	0.42	0.42	0.42	0.42	0.38	0.41	0.42	0.42	0.44	0.44	0.38
Lanes:	1.00	1.98	0.02	1.00	2.00	1.00	2.00	0.68	0.32	0.24	0.76	1.00
Final Sat.:	803	1589	16	803	1606	719	1558	543	261	197	638	719

Capacity Analysis Module:												
Vol/Sat:	0.06	0.44	0.44	0.26	0.41	0.69	0.31	0.23	0.23	0.09	0.09	0.52
Crit Moves:	****					****	****					****
Green Time:	7.1	55.6	55.6	33.1	81.6	81.6	36.9	36.9	36.9	62.4	62.4	62.4
Volume/Cap:	1.68	1.59	1.59	1.59	1.01	1.68	1.68	1.23	1.23	0.28	0.28	1.68
Uniform Del:	96.4	72.2	72.2	83.5	59.2	59.2	81.5	81.5	81.5	51.8	51.8	68.8
IncrcmntDel:	420.4	275	275.4	297.5	38.9	321.3	321.5	147	147.0	0.6	0.6	325.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	516.8	348	347.6	381.0	98.1	380.5	403.1	229	228.5	52.4	52.4	394.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	516.8	348	347.6	381.0	98.1	380.5	403.1	229	228.5	52.4	52.4	394.3
LOS by Move:	F	F	F	F	F	F	F	F	F	D	D	F
HCM2kAvgQ:	7	40	40	24	26	55	29	17	17	3	3	42

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Cumulative AM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name:	Saratoga Avenue						Newbridge Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R

Volume Module:	North Bound			South Bound			East Bound			West Bound		
Base Vol:	364	111	5	3	3	50	6	579	49	3	401	50
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	364	111	5	3	3	50	6	579	49	3	401	50
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	364	111	5	3	3	50	6	579	49	3	401	50
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	364	111	5	3	3	50	6	579	49	3	401	50
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	364	111	5	3	3	50	6	579	49	3	401	50

Critical Gap Module:	North Bound			South Bound			East Bound			West Bound		
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	4.1	xxxx	xxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxx	2.2	xxxx	xxxxx

Capacity Module:	North Bound			South Bound			East Bound			West Bound		
Cnflct Vol:	1074	1073	604	1106	1072	426	451	xxxx	xxxxx	628	xxxx	xxxxx
Potent Cap.:	199	222	502	190	222	633	1120	xxxx	xxxxx	964	xxxx	xxxxx
Move Cap.:	180	220	502	113	220	633	1120	xxxx	xxxxx	964	xxxx	xxxxx
Total Cap:	375	396	xxxxx	293	393	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Volume/Cap:	0.97	0.28	0.01	0.01	0.01	0.08	0.01	xxxx	xxxx	0.00	xxxx	xxxx

Level Of Service Module:	North Bound			South Bound			East Bound			West Bound		
2Way95thQ:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	0.0	xxxx	xxxxxx	0.0	xxxx	xxxxxx
Control Del:	xxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	8.2	xxxx	xxxxxx	8.7	xxxx	xxxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	A	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	
Shared Cap.:	xxxx	380	xxxxxx	xxxx	578	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	21.0	xxxxxx	xxxxxx	0.3	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	168	xxxxxx	xxxxxx	11.9	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	F	*	*	B	*	*	*	*	*	*	*
ApproachDel:	167.6			11.9			xxxxxxx			xxxxxxx		
ApproachLOS:	F			B			*			*		

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

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Intersection #52 (52) Saratoga Avenue and Newbridge Street  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0	1! 0	0	0	1! 0	0	0	1! 0	0	0	1! 0
Initial Vol:	364	111	5	3	3	50	6	579	49	3	401	50
ApproachDel:	167.6			11.9			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=22.3]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=480]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1624]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=56]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1624]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #52 (52) Saratoga Avenue and Newbridge Street

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0	1! 0	0	0	1! 0	0	0	1! 0	0	0	1! 0
Initial Vol:	364	111	5	3	3	50	6	579	49	3	401	50

Major Street Volume: 1088

Minor Approach Volume: 480

Minor Approach Volume Threshold: 197

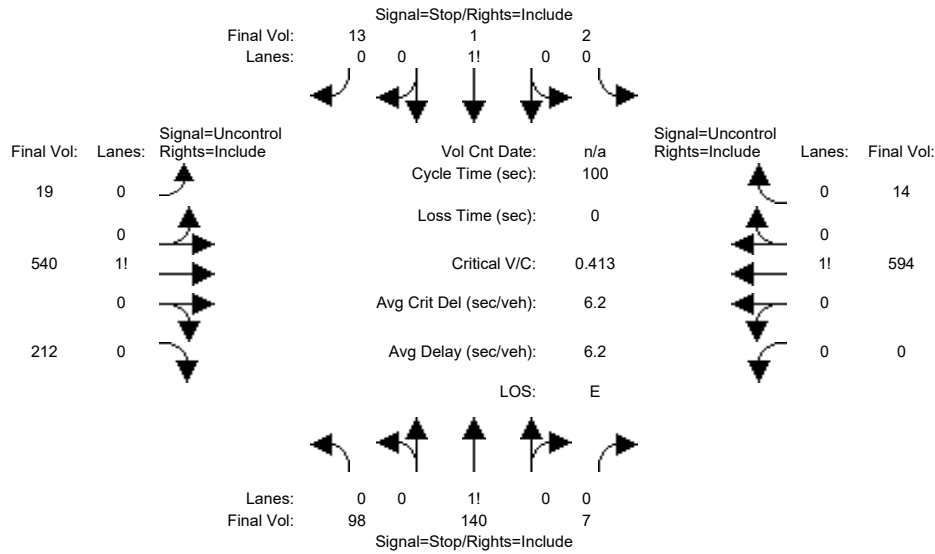
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative PM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name: Saratoga Avenue Newbridge Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 12 columns representing movements and 2 rows of critical gap data including Critical Gap and FollowUp Time.

Table with 12 columns representing movements and 6 rows of capacity data including Conflict Vol, Potent Cap, Move Cap, Total Cap, and Volume/Cap.

Table with 12 columns representing movements and 8 rows of level of service data including 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap, Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	98 140 7	2 1 13	19 540 212	0 594 14
ApproachDel:	40.0	13.9	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=2.7]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=245]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1640]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=16]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1640]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #52 (52) Saratoga Avenue and Newbridge Street

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	98 140 7	2 1 13	19 540 212	0 594 14

Major Street Volume: 1379

Minor Approach Volume: 245

Minor Approach Volume Threshold: 134

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Project AM

Intersection #52: (52) Saratoga Avenue and Newbridge Street

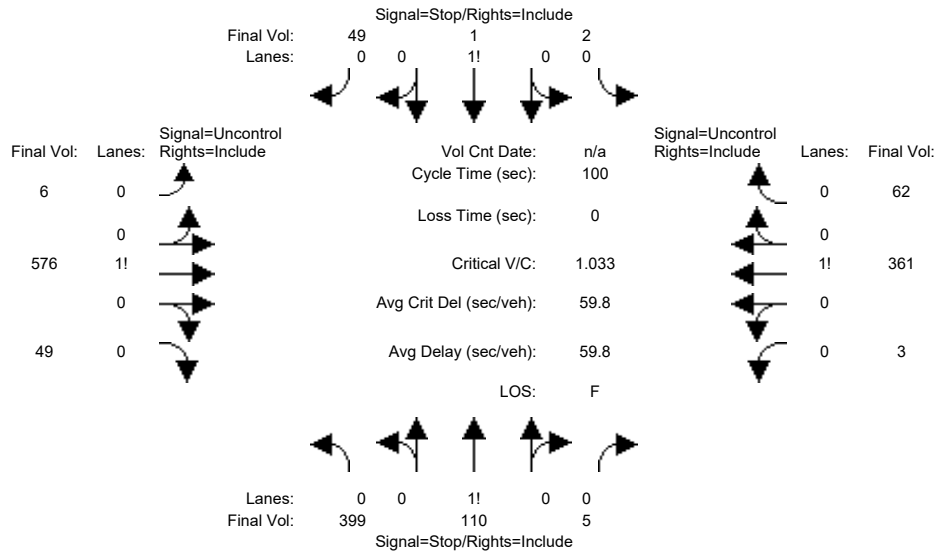


Table with 4 columns: Street Name, Approach, Movement, and Lane types (L, T, R) for Saratoga Avenue and Newbridge Street.

Volume Module table showing traffic volume data across various approaches and movements, including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Critical Gap Module table showing critical gap and follow-up time values for different approaches and movements.

Capacity Module table showing conflict volume, potential capacity, move capacity, total capacity, and volume/capacity ratios for various approaches and movements.

Level Of Service Module table showing Level of Service (LOS) and other performance metrics like 2Way95thQ, Control Del, LOS by Move, Shared Cap, Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*



Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	399 110 5	2 1 49	6 576 49	3 361 62
ApproachDel:	187.6	11.3	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=26.8]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=514]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1623]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=52]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1623]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #52 (52) Saratoga Avenue and Newbridge Street

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	399 110 5	2 1 49	6 576 49	3 361 62

Major Street Volume: 1057

Minor Approach Volume: 514

Minor Approach Volume Threshold: 205

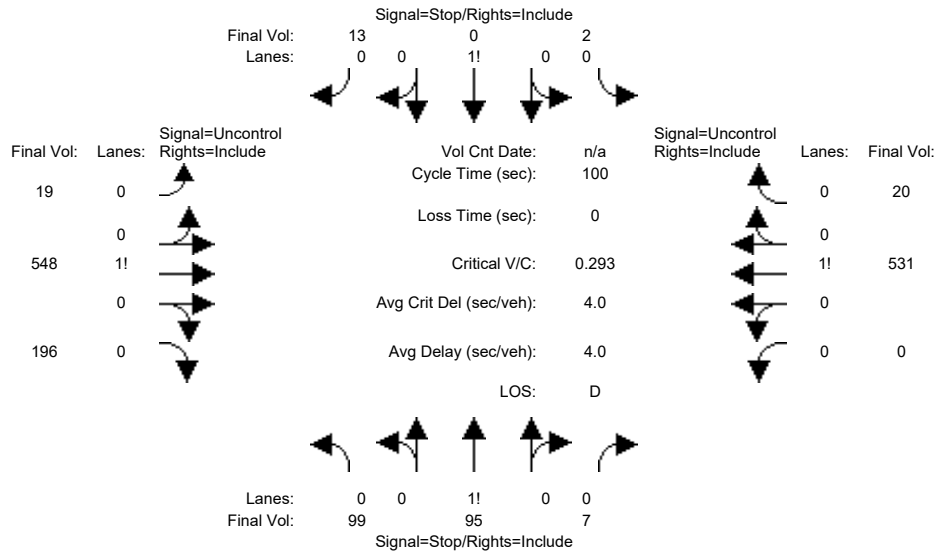
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
 2000 HCM Unsignalized (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name:	Saratoga Avenue						Newbridge Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R

Volume Module:	Saratoga Avenue North Bound			Saratoga Avenue South Bound			Newbridge Street East Bound			Newbridge Street West Bound		
Base Vol:	99	95	7	2	0	13	19	548	196	0	531	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	99	95	7	2	0	13	19	548	196	0	531	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	99	95	7	2	0	13	19	548	196	0	531	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	99	95	7	2	0	13	19	548	196	0	531	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	99	95	7	2	0	13	19	548	196	0	531	20

Critical Gap Module:	Saratoga Avenue North Bound			Saratoga Avenue South Bound			Newbridge Street East Bound			Newbridge Street West Bound		
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx

Capacity Module:	Saratoga Avenue North Bound			Saratoga Avenue South Bound			Newbridge Street East Bound			Newbridge Street West Bound		
Cnflct Vol:	1232	1235	646	1276	1323	541	551	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Potent Cap.:	156	178	475	145	158	545	1029	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Move Cap.:	150	175	475	80	155	545	1029	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Total Cap:	338	351	xxxxxx	265	331	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Volume/Cap:	0.29	0.27	0.01	0.01	0.00	0.02	0.02	xxxx	xxxx	xxxx	xxxx	xxxx

Level Of Service Module:	Saratoga Avenue North Bound			Saratoga Avenue South Bound			Newbridge Street East Bound			Newbridge Street West Bound		
2Way95thQ:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	0.1	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	xxxxx	xxxx	xxxxxx	xxxxx	xxxx	xxxxxx	8.6	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	348	xxxxxx	xxxx	478	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	3.5	xxxxxx	xxxxxx	0.1	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	28.6	xxxxxx	xxxxxx	12.8	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	D	*	*	B	*	*	*	*	*	*	*
ApproachDel:		28.6			12.8		xxxxxxx			xxxxxxx		
ApproachLOS:		D			B			*			*	

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #52 (52) Saratoga Avenue and Newbridge Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0	1! 0	0	0	1! 0	0	0	1! 0	0	0	0 1 0
Initial Vol:	99	95	7	2	0	13	19	548	196	0	531	20
ApproachDel:	28.6			12.8			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=1.6]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=201]  
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=4][total volume=1530]  
SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=0.1]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=15]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=4][total volume=1530]  
SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #52 (52) Saratoga Avenue and Newbridge Street  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0	1! 0	0	0	1! 0	0	0	1! 0	0	0	0 1 0
Initial Vol:	99	95	7	2	0	13	19	548	196	0	531	20

Major Street Volume: 1314  
Minor Approach Volume: 201  
Minor Approach Volume Threshold: 147

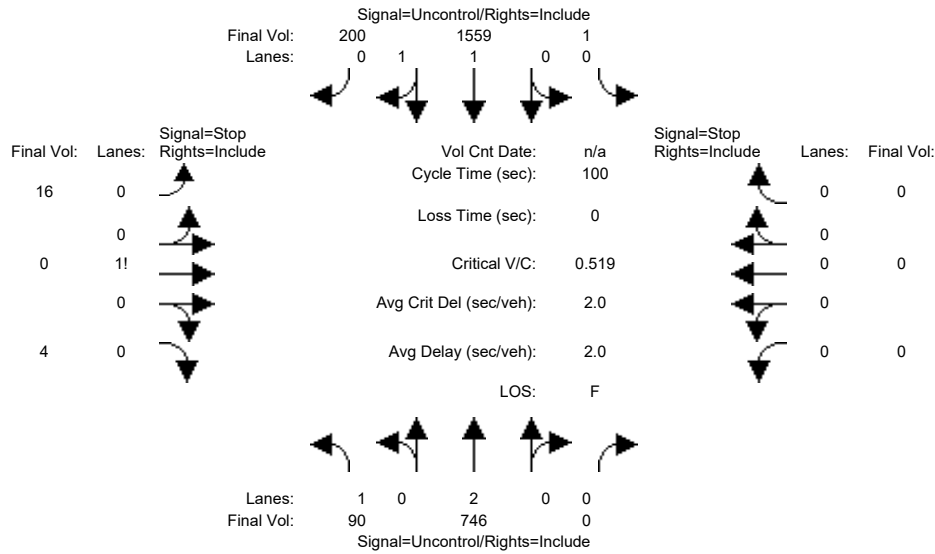
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Cumulative AM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:												
Base Vol:	90	746	0	1	1559	200	16	0	4	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	90	746	0	1	1559	200	16	0	4	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	746	0	1	1559	200	16	0	4	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	746	0	1	1559	200	16	0	4	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	90	746	0	1	1559	200	16	0	4	0	0	0

Critical Gap Module:												
Critical Gp:	4.1	xxxx	xxxxxx	4.1	xxxx	xxxxxx	6.8	6.5	6.9	xxxxxx	xxxx	xxxxxx
FollowUpTim:	2.2	xxxx	xxxxxx	2.2	xxxx	xxxxxx	3.5	4.0	3.3	xxxxxx	xxxx	xxxxxx

Capacity Module:												
Cnflct Vol:	1759	xxxx	xxxxxx	746	xxxx	xxxxxx	2214	2587	880	xxxx	xxxx	xxxxxx
Potent Cap.:	360	xxxx	xxxxxx	871	xxxx	xxxxxx	38	26	294	xxxx	xxxx	xxxxxx
Move Cap.:	360	xxxx	xxxxxx	871	xxxx	xxxxxx	31	19	294	xxxx	xxxx	xxxxxx
Volume/Cap:	0.25	xxxx	xxxx	0.00	xxxx	xxxx	0.52	0.00	0.01	xxxx	xxxx	xxxx

Level Of Service Module:												
2Way95thQ:	1.0	xxxx	xxxxxx	0.0	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	18.3	xxxx	xxxxxx	9.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	C	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT
Shared Cap.:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	38	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	xxxx	xxxxxx	0.0	xxxx	xxxxxx	xxxxxx	1.9	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	9.1	xxxx	xxxxxx	xxxxxx	180	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	*	*	A	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxxx			xxxxxxx				180.0			xxxxxxx	
ApproachLOS:	*			*				F			*	

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*  
 Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 1 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 746 0	1 1559 200	16 0 4	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	180.0	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=1.0]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=20]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=2616]  
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #300 (37) University Ave & Adams Dr  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 1 0 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 746 0	1 1559 200	16 0 4	0 0 0 0

Major Street Volume: 2596  
Minor Approach Volume: 20  
Minor Approach Volume Threshold: -44 [less than minimum of 100]

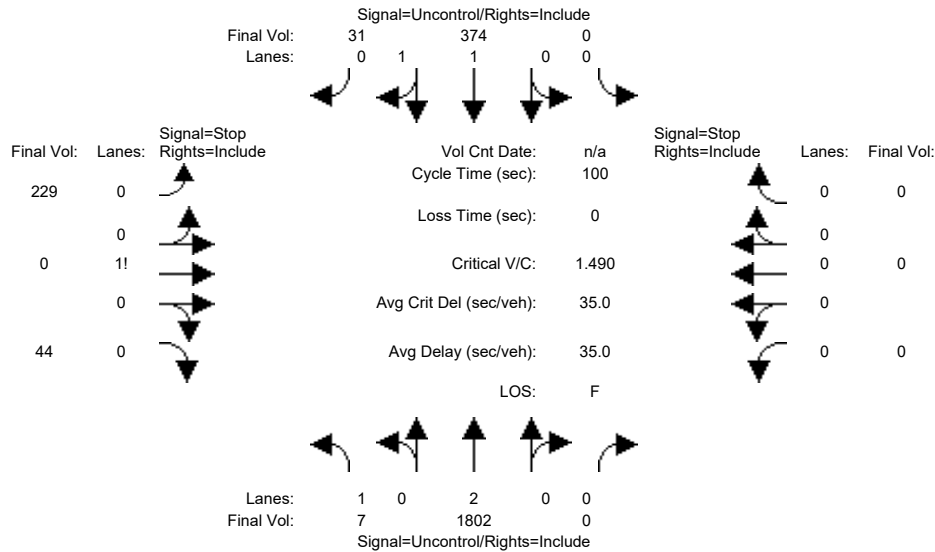
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Cumulative PM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
Base Vol:	7	1802	0	0	0	374	31	229	0	44	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	1802	0	0	0	374	31	229	0	44	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	1802	0	0	0	374	31	229	0	44	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	7	1802	0	0	0	374	31	229	0	44	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Final Volume:	7	1802	0	0	0	374	31	229	0	44	0	0

Critical Gap Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
Critical Gp:	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	6.8	6.5	6.9	xxxxxx	xxxx	xxxxxx
FollowUpTim:	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	3.5	4.0	3.3	xxxxxx	xxxx	xxxxxx

Capacity Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
Cnflct Vol:	405	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	1305	2206	203	xxxx	xxxx	xxxxxx
Potent Cap.:	1165	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	154	45	811	xxxx	xxxx	xxxxxx
Move Cap.:	1165	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	154	45	811	xxxx	xxxx	xxxxxx
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	1.49	0.00	0.05	xxxx	xxxx	xxxx

Level Of Service Module:	University Ave North Bound			University Ave South Bound			Adams Dr East Bound			Adams Dr West Bound		
2Way95thQ:	0.0	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	8.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT				
Shared Cap.:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	177	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	17.8	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	318	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxxx	xxxxxxx			318.3			xxxxxxx				
ApproachLOS:	*	*	*	*	*	*	F	*	*	*	*	*

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*  
 Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 31	229 0 44	0 0 0 0
ApproachDel:	xxxxxx	xxxxxx	318.3	xxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=24.1]  
SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=273]  
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=2487]  
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #300 (37) University Ave & Adams Dr  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 31	229 0 44	0 0 0 0

Major Street Volume: 2214  
Minor Approach Volume: 273  
Minor Approach Volume Threshold: 11 [less than minimum of 100]

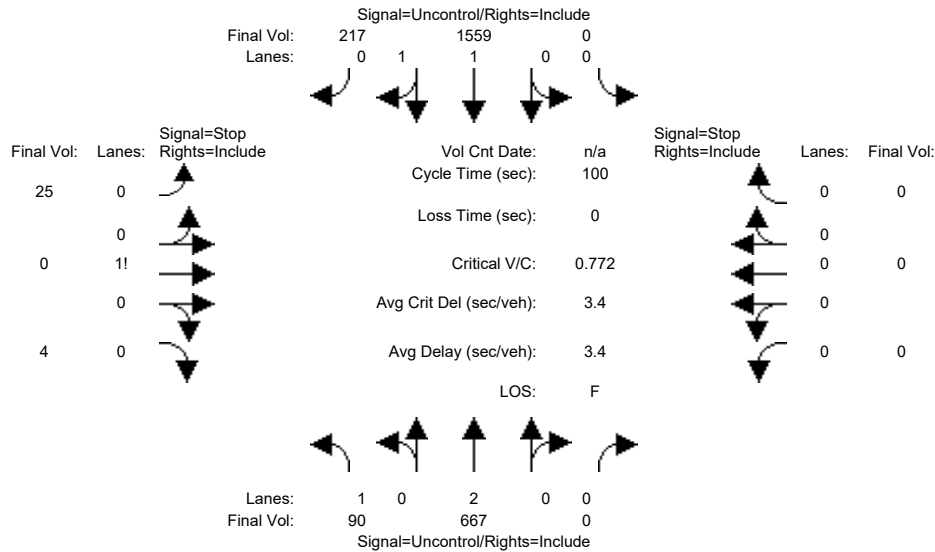
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Cumulative + Project AM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:	University Ave North Bound		University Ave South Bound		Adams Dr East Bound		Adams Dr West Bound		
	L	T	R	L	T	R	L	T	R
Base Vol:	90	667	0	0	1559	217	25	0	4
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	90	667	0	0	1559	217	25	0	4
Added Vol:	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0
Initial Fut:	90	667	0	0	1559	217	25	0	4
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	667	0	0	1559	217	25	0	4
Reduct Vol:	0	0	0	0	0	0	0	0	0
Final Volume:	90	667	0	0	1559	217	25	0	4

Critical Gap Module:

Critical Gp:	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	6.8	6.5	6.9	xxxxxx	xxxx	xxxxxx
FollowUpTim:	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	3.5	4.0	3.3	xxxxxx	xxxx	xxxxxx

Capacity Module:

Cnflict Vol:	1776	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	2181	2515	888	xxxx	xxxx	xxxxxx
Potent Cap.:	355	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	40	29	291	xxxx	xxxx	xxxxxx
Move Cap.:	355	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	32	21	291	xxxx	xxxx	xxxxxx
Volume/Cap:	0.25	xxxx	xxxx	xxxx	xxxx	xxxx	0.77	0.00	0.01	xxxx	xxxx	xxxx

Level Of Service Module:

2Way95thQ:	1.0	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx			
Control Del:	18.6	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx			
LOS by Move:	C	*	*	*	*	*	*	*	*	*	*	*			
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxx	37	xxxxxx	xxxxxx	xxxx	xxxxxx			
SharedQueue:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	2.8	xxxxxx	xxxxxx	xxxx	xxxxxx			
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	246	xxxxxx	xxxxxx	xxxx	xxxxxx			
Shared LOS:	*	*	*	*	*	*	*	F	*	*	*	*			
ApproachDel:	xxxxxxx			xxxxxxx			246.1			xxxxxxx					
ApproachLOS:	*			*			F			*					

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*  
 Future Volume Alternative: Peak Hour Warrant NOT Met



Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 667 0	0 1559 217	25 0 4	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	246.1	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=2.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=29]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=2562]  
 SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 667 0	0 1559 217	25 0 4	0 0 0 0

Major Street Volume: 2533  
 Minor Approach Volume: 29  
 Minor Approach Volume Threshold: -35 [less than minimum of 100]

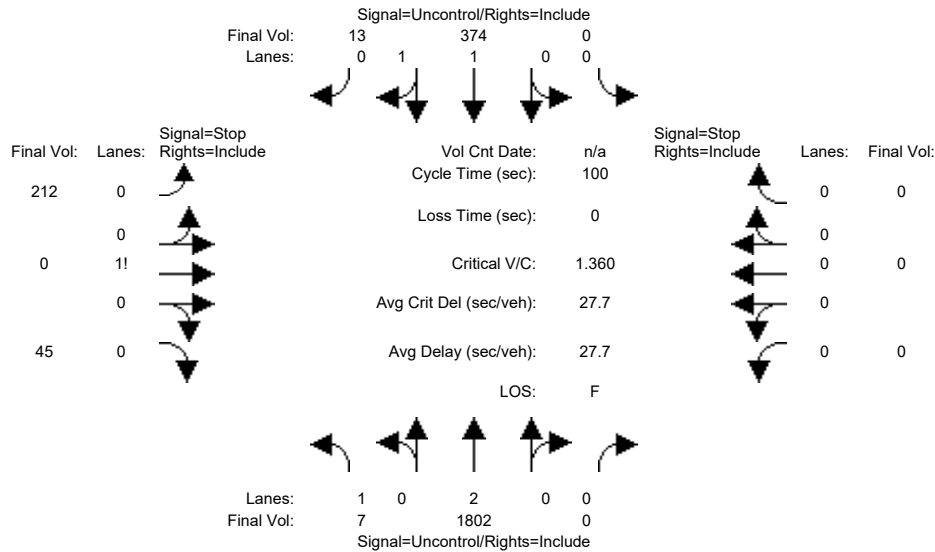
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Cumulative + Project PM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:

Base Vol:	7	1802	0	0	374	13	212	0	45	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	1802	0	0	374	13	212	0	45	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	1802	0	0	374	13	212	0	45	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	7	1802	0	0	374	13	212	0	45	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	7	1802	0	0	374	13	212	0	45	0	0	0

Critical Gap Module:

Critical Gp:	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	6.8	6.5	6.9	xxxxxx	xxxx	xxxxxx
FollowUpTim:	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	3.5	4.0	3.3	xxxxxx	xxxx	xxxxxx

Capacity Module:

Cnflict Vol:	387	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	1296	2197	194	xxxx	xxxx	xxxxxx
Potent Cap.:	1183	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	157	46	822	xxxx	xxxx	xxxxxx
Move Cap.:	1183	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	156	45	822	xxxx	xxxx	xxxxxx
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	1.36	0.00	0.05	xxxx	xxxx	xxxx

Level Of Service Module:

2Way95thQ:	0.0	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	8.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT
Shared Cap.:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	182	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	15.6	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	264	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxxx		xxxxxxx					264.3		xxxxxxx		
ApproachLOS:	*		*					F		*		*

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*  
 Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 13	212 0 45	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	264.3	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=18.9]  
SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=257]  
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=2453]  
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #300 (37) University Ave & Adams Dr  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 13	212 0 45	0 0 0 0

Major Street Volume: 2196  
Minor Approach Volume: 257  
Minor Approach Volume Threshold: 14 [less than minimum of 100]

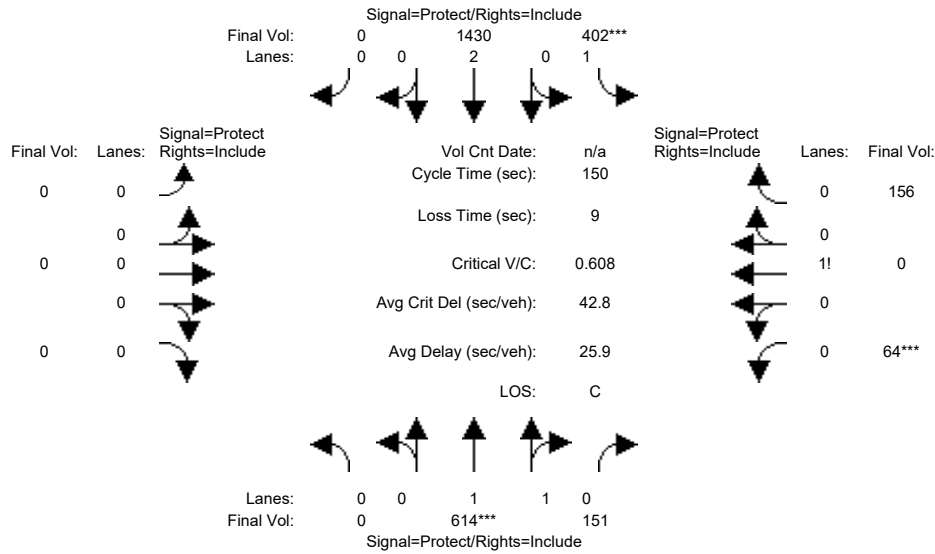
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative AM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	7	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	614	151	402	1430	0	0	0	0	64	0	156
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	614	151	402	1430	0	0	0	0	64	0	156
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	614	151	402	1430	0	0	0	0	64	0	156
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	614	151	402	1430	0	0	0	0	64	0	156
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	614	151	402	1430	0	0	0	0	64	0	156
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	614	151	402	1430	0	0	0	0	64	0	156

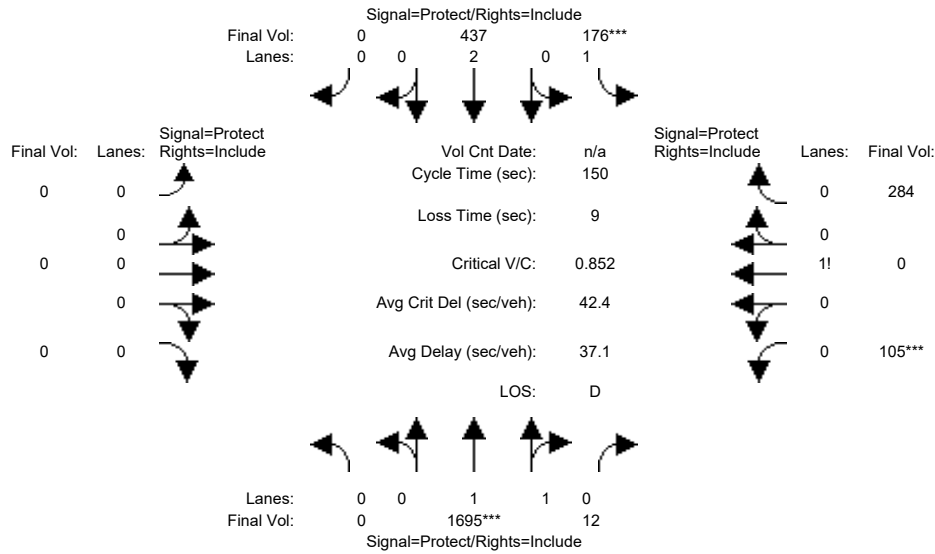
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	0.95	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	1.61	0.39	1.00	2.00	0.00	0.00	0.00	0.00	0.29	0.00	0.71
Final Sat.:	0	2811	691	1805	3610	0	0	0	0	493	0	1201

Capacity Analysis Module:												
Vol/Sat:	0.00	0.22	0.22	0.22	0.40	0.00	0.00	0.00	0.00	0.13	0.00	0.13
Crit Moves:	****			****						****		
Green Time:	0.0	53.9	53.9	55.0	109	0.0	0.0	0.0	0.0	32.1	0.0	32.1
Volume/Cap:	0.00	0.61	0.61	0.61	0.55	0.00	0.00	0.00	0.00	0.61	0.00	0.61
Uniform Del:	0.0	39.4	39.4	38.7	9.3	0.0	0.0	0.0	0.0	53.3	0.0	53.3
IncrcmntDel:	0.0	0.9	0.9	1.6	0.2	0.0	0.0	0.0	0.0	3.0	0.0	3.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	40.2	40.2	40.3	9.6	0.0	0.0	0.0	0.0	56.2	0.0	56.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	40.2	40.2	40.3	9.6	0.0	0.0	0.0	0.0	56.2	0.0	56.2
LOS by Move:	A	D	D	D	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	15	15	15	15	0	0	0	0	10	0	10

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative PM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	7	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1695	12	176	437	0	0	0	0	105	0	284
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1695	12	176	437	0	0	0	0	105	0	284
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1695	12	176	437	0	0	0	0	105	0	284
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1695	12	176	437	0	0	0	0	105	0	284
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1695	12	176	437	0	0	0	0	105	0	284
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1695	12	176	437	0	0	0	0	105	0	284

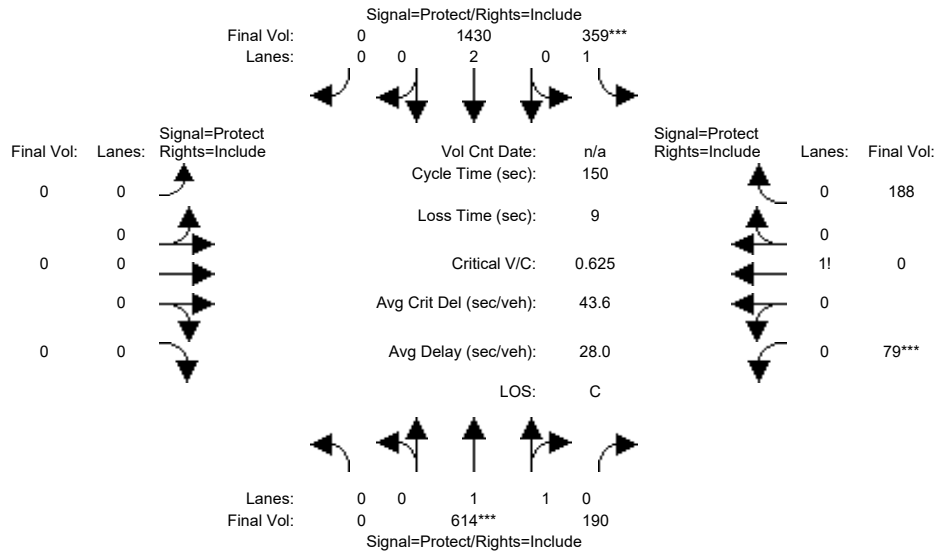
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	1.99	0.01	1.00	2.00	0.00	0.00	0.00	0.00	0.27	0.00	0.73
Final Sat.:	0	3581	25	1805	3610	0	0	0	0	456	0	1234

Capacity Analysis Module:												
Vol/Sat:	0.00	0.47	0.47	0.10	0.12	0.00	0.00	0.00	0.00	0.23	0.00	0.23
Crit Moves:	****			****						****		
Green Time:	0.0	83.3	83.3	17.2	100	0.0	0.0	0.0	0.0	40.5	0.0	40.5
Volume/Cap:	0.00	0.85	0.85	0.85	0.18	0.00	0.00	0.00	0.00	0.85	0.00	0.85
Uniform Del:	0.0	28.1	28.1	65.2	9.3	0.0	0.0	0.0	0.0	51.9	0.0	51.9
IncrementDel:	0.0	3.7	3.7	27.2	0.0	0.0	0.0	0.0	0.0	14.3	0.0	14.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	31.9	31.9	92.4	9.3	0.0	0.0	0.0	0.0	66.2	0.0	66.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	31.9	31.9	92.4	9.3	0.0	0.0	0.0	0.0	66.2	0.0	66.2
LOS by Move:	A	C	C	F	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	36	36	10	4	0	0	0	0	19	0	19

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project AM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	7	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	614	190	359	1430	0	0	0	0	79	0	188
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	614	190	359	1430	0	0	0	0	79	0	188
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	614	190	359	1430	0	0	0	0	79	0	188
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	614	190	359	1430	0	0	0	0	79	0	188
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	614	190	359	1430	0	0	0	0	79	0	188
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	614	190	359	1430	0	0	0	0	79	0	188

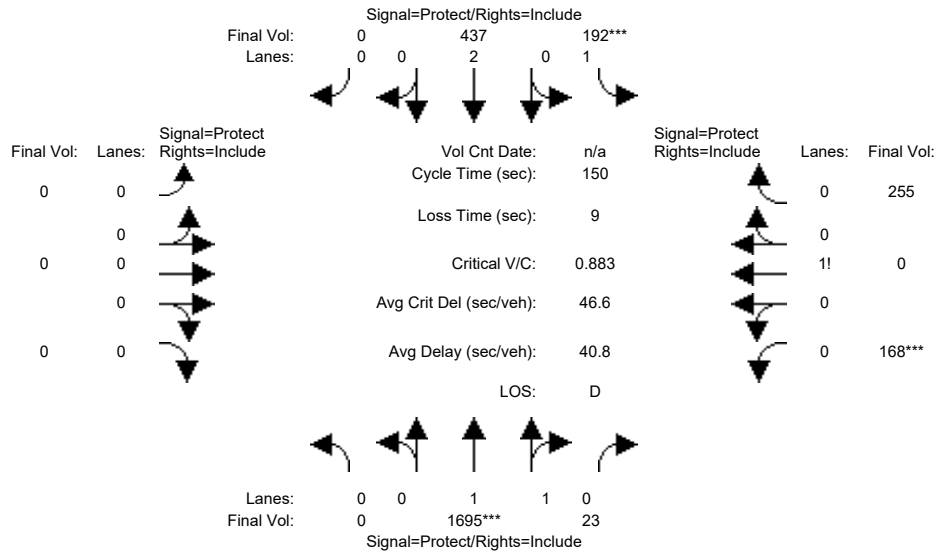
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	0.95	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	1.53	0.47	1.00	2.00	0.00	0.00	0.00	0.00	0.30	0.00	0.70
Final Sat.:	0	2660	823	1805	3610	0	0	0	0	501	0	1193

Capacity Analysis Module:												
Vol/Sat:	0.00	0.23	0.23	0.20	0.40	0.00	0.00	0.00	0.00	0.16	0.00	0.16
Crit Moves:	****			****						****		
Green Time:	0.0	55.4	55.4	47.7	103	0.0	0.0	0.0	0.0	37.8	0.0	37.8
Volume/Cap:	0.00	0.62	0.62	0.62	0.58	0.00	0.00	0.00	0.00	0.62	0.00	0.62
Uniform Del:	0.0	38.8	38.8	43.5	12.1	0.0	0.0	0.0	0.0	49.8	0.0	49.8
IncrementDel:	0.0	1.0	1.0	2.2	0.3	0.0	0.0	0.0	0.0	2.9	0.0	2.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	39.7	39.7	45.7	12.4	0.0	0.0	0.0	0.0	52.7	0.0	52.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	39.7	39.7	45.7	12.4	0.0	0.0	0.0	0.0	52.7	0.0	52.7
LOS by Move:	A	D	D	D	B	A	A	A	A	D	A	D
HCM2kAvgQ:	0	16	16	14	18	0	0	0	0	11	0	11

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Project PM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	7	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1695	23	192	437	0	0	0	0	168	0	255
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1695	23	192	437	0	0	0	0	168	0	255
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1695	23	192	437	0	0	0	0	168	0	255
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1695	23	192	437	0	0	0	0	168	0	255
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1695	23	192	437	0	0	0	0	168	0	255
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1695	23	192	437	0	0	0	0	168	0	255

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.90	1.00	0.90
Lanes:	0.00	1.97	0.03	1.00	2.00	0.00	0.00	0.00	0.00	0.40	0.00	0.60
Final Sat.:	0	3555	48	1805	3610	0	0	0	0	680	0	1033

Capacity Analysis Module:												
Vol/Sat:	0.00	0.48	0.48	0.11	0.12	0.00	0.00	0.00	0.00	0.25	0.00	0.25
Crit Moves:	****			****						****		
Green Time:	0.0	81.0	81.0	18.1	99.1	0.0	0.0	0.0	0.0	41.9	0.0	41.9
Volume/Cap:	0.00	0.88	0.88	0.88	0.18	0.00	0.00	0.00	0.00	0.88	0.00	0.88
Uniform Del:	0.0	30.3	30.3	64.9	9.8	0.0	0.0	0.0	0.0	51.7	0.0	51.7
IncrementDel:	0.0	5.2	5.2	31.7	0.0	0.0	0.0	0.0	0.0	17.4	0.0	17.4
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	35.5	35.5	96.7	9.9	0.0	0.0	0.0	0.0	69.0	0.0	69.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	35.5	35.5	96.7	9.9	0.0	0.0	0.0	0.0	69.0	0.0	69.0
LOS by Move:	A	D	D	F	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	39	39	11	4	0	0	0	0	21	0	21

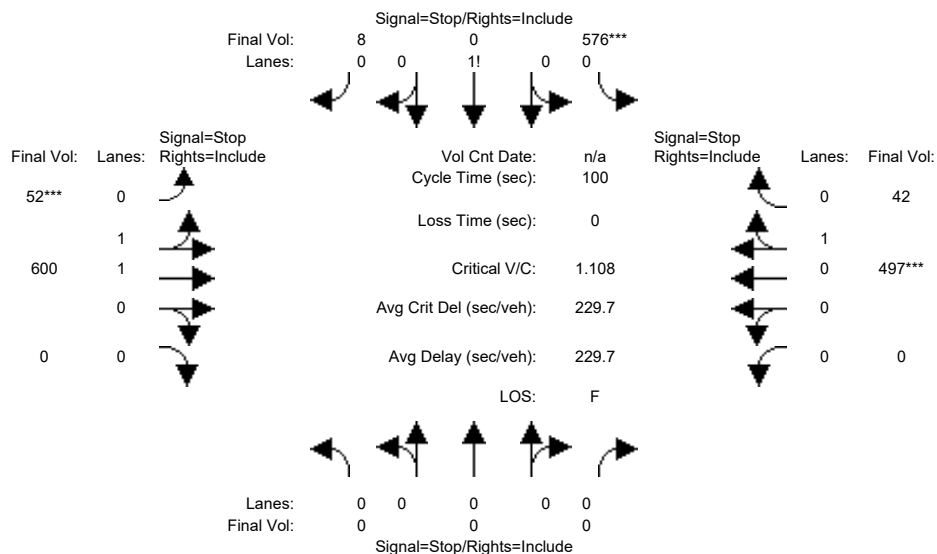
Note: Queue reported is the number of cars per lane.





Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name: East Bayshore Road Euclid Avenue  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Min. Green: 0 0 0 0 0 0 0 0 0 0 0 0

Volume Module:

Base Vol:	0	0	0	576	0	8	52	600	0	0	497	42
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	576	0	8	52	600	0	0	497	42
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	576	0	8	52	600	0	0	497	42
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	576	0	8	52	600	0	0	497	42
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	576	0	8	52	600	0	0	497	42
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	576	0	8	52	600	0	0	497	42

Saturation Flow Module:

Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.99	0.00	0.01	0.16	1.84	0.00	0.00	0.92	0.08
Final Sat.:	0	0	0	520	0	7	76	886	0	0	489	41

Capacity Analysis Module:

Vol/Sat:	xxxx	xxxx	xxxx	1.11	xxxx	1.11	0.68	0.68	xxxx	xxxx	1.02	1.02
Crit Moves:				****			****				****	
Delay/Veh:	0.0	0.0	0.0	97.4	0.0	97.4	24.8	24.5	0.0	0.0	69.3	69.3
Delay Adj:	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
AdjDel/Veh:	0.0	0.0	0.0	360.4	0.0	360.4	91.8	90.6	0.0	0.0	256	256.4
LOS by Move:	*	*	*	F	*	F	F	F	*	*	F	F
ApproachDel:	xxxxxx			97.4			24.5			69.3		
Delay Adj:	xxxxxx			3.70			3.70			3.70		
ApprAdjDel:	xxxxxx			360.4			90.7			256.4		
LOS by Appr:	*			F			F			F		
AllWayAvgQ:	0.0	0.0	0.0	12.8	12.8	12.8	1.9	1.9	0.0	8.8	8.8	8.8

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
 \*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0	0	576	0	8		52	600	0		0	497	42	
Major Street Volume:					1191											
Minor Approach Volume:					584											
Minor Approach Volume Threshold:					225											

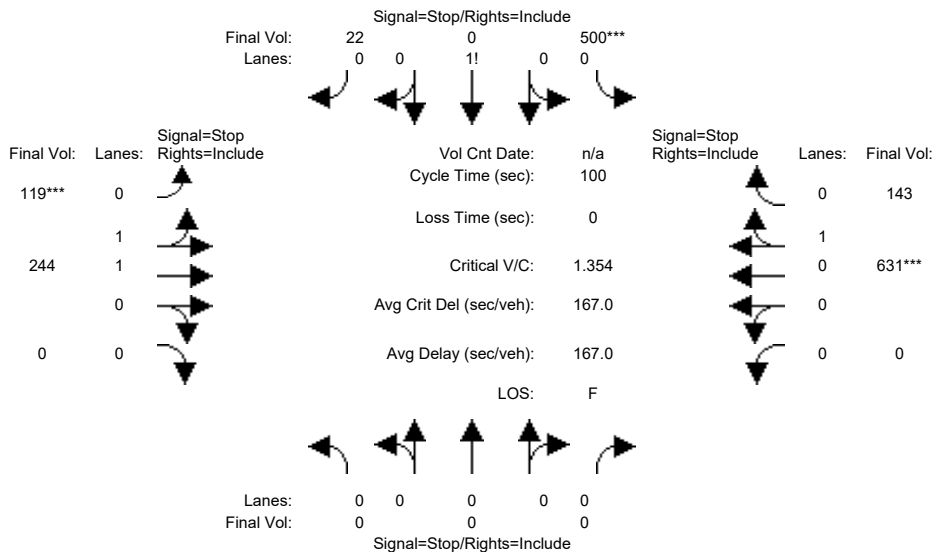
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Movement:												
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0

Volume Module:												
Base Vol:	0	0	0	500	0	22	119	244	0	0	631	143
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	500	0	22	119	244	0	0	631	143
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	500	0	22	119	244	0	0	631	143
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	500	0	22	119	244	0	0	631	143
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	500	0	22	119	244	0	0	631	143
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	500	0	22	119	244	0	0	631	143

Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.96	0.00	0.04	0.66	1.34	0.00	0.00	0.82	0.18
Final Sat.:	0	0	0	529	0	23	304	643	0	0	466	106

Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.95	xxxx	0.95	0.39	0.38	xxxx	xxxx	1.35	1.35
Crit Moves:				****			****			****		
Delay/Veh:	0.0	0.0	0.0	51.0	0.0	51.0	15.0	14.4	0.0	0.0	190	189.7
Delay Adj:	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
AdjDel/Veh:	0.0	0.0	0.0	79.0	0.0	79.0	23.3	22.3	0.0	0.0	294	294.1
LOS by Move:	*	*	*	F	*	F	C	C	*	*	F	F
ApproachDel:	xxxxxx			51.0			14.6			189.7		
Delay Adj:	xxxxxx			1.55			1.55			1.55		
ApprAdjDel:	xxxxxx			79.0			22.7			294.1		
LOS by Appr:	*			F			C			F		
AllWayAvgQ:	0.0	0.0	0.0	6.4	6.4	6.4	0.6	0.6	0.0	28.7	28.7	28.7

Note: Queue reported is the number of cars per lane.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0		500	0	22		119	244	0		0	631	143	
Major Street Volume:													1137			
Minor Approach Volume:													522			
Minor Approach Volume Threshold:													241			

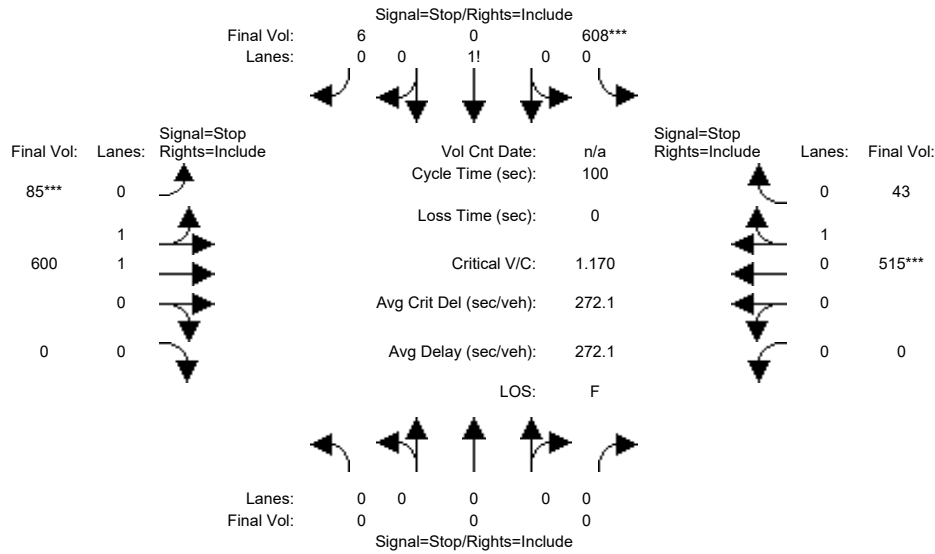
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Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0

Volume Module:												
Base Vol:	0	0	0	608	0	6	85	600	0	0	515	43
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	608	0	6	85	600	0	0	515	43
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	608	0	6	85	600	0	0	515	43
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	608	0	6	85	600	0	0	515	43
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	608	0	6	85	600	0	0	515	43
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	608	0	6	85	600	0	0	515	43

Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.99	0.00	0.01	0.25	1.75	0.00	0.00	0.92	0.08
Final Sat.:	0	0	0	520	0	5	118	841	0	0	488	41

Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	1.17	xxxx	1.17	0.72	0.71	xxxx	xxxx	1.06	1.06
Crit Moves:				****			****			****		
Delay/Veh:	0.0	0.0	0.0	119.2	0.0	119.2	27.4	26.7	0.0	0.0	80.7	80.7
Delay Adj:	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70	3.70
AdjDel/Veh:	0.0	0.0	0.0	441.0	0.0	441.0	101.3	98.9	0.0	0.0	299	298.6
LOS by Move:	*	*	*	F	*	F	F	F	*	*	F	F
ApproachDel:	xxxxxx			119.2			26.8			80.7		
Delay Adj:	xxxxxx			3.70			3.70			3.70		
ApprAdjDel:	xxxxxx			441.0			99.2			298.6		
LOS by Appr:	*			F			F			F		
AllWayAvgQ:	0.0	0.0	0.0	15.9	15.9	15.9	2.3	2.2	0.0	10.4	10.4	10.4

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0	0	608	0	6		85	600	0		0	515	43	
Major Street Volume:					1243											
Minor Approach Volume:					614											
Minor Approach Volume Threshold:					210											

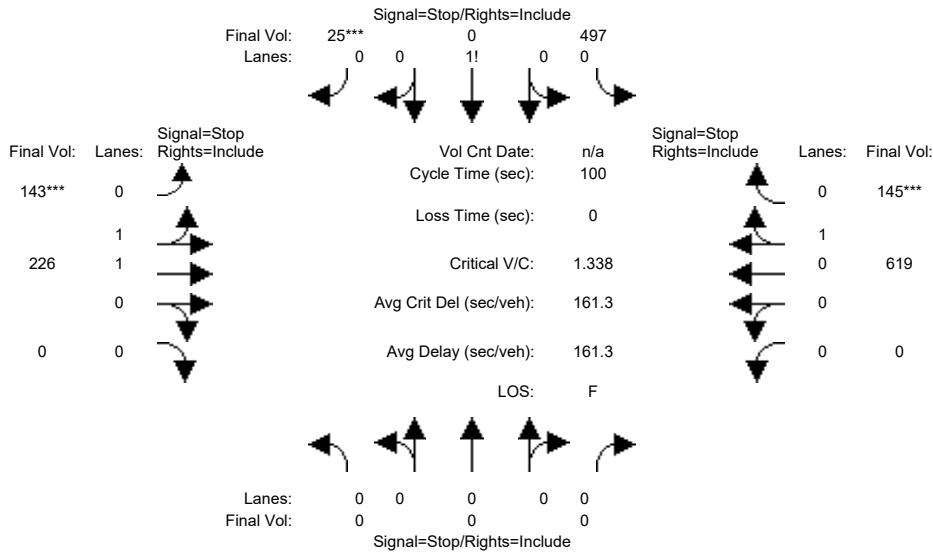
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Level Of Service Computation Report  
 2000 HCM 4-Way Stop (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #5: (53) East Bayshore Road and Euclid Avenue



Street Name:	East Bayshore Road						Euclid Avenue					
	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0

Volume Module:												
Base Vol:	0	0	0	497	0	25	143	226	0	0	619	145
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	497	0	25	143	226	0	0	619	145
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	497	0	25	143	226	0	0	619	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	497	0	25	143	226	0	0	619	145
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	497	0	25	143	226	0	0	619	145
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	497	0	25	143	226	0	0	619	145

Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.95	0.00	0.05	0.78	1.22	0.00	0.00	0.81	0.19
Final Sat.:	0	0	0	525	0	26	357	587	0	0	463	108

Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.95	xxxx	0.95	0.40	0.38	xxxx	xxxx	1.34	1.34
Crit Moves:						****	****					****
Delay/Veh:	0.0	0.0	0.0	51.2	0.0	51.2	15.3	14.5	0.0	0.0	183	183.3
Delay Adj:	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55
AdjDel/Veh:	0.0	0.0	0.0	79.3	0.0	79.3	23.7	22.5	0.0	0.0	284	284.1
LOS by Move:	*	*	*	F	*	F	C	C	*	*	F	F
ApproachDel:	xxxxxx			51.2			14.8			183.3		
Delay Adj:	xxxxxx			1.55			1.55			1.55		
ApprAdjDel:	xxxxxx			79.3			23.0			284.1		
LOS by Appr:	*			F			C			F		
AllWayAvgQ:	0.0	0.0	0.0	6.4	6.4	6.4	0.6	0.6	0.0	27.6	27.6	27.6

Note: Queue reported is the number of cars per lane.  
 Peak Hour Volume Signal Warrant Report [Urban]  
 \*\*\*\*\*  
 Intersection #5 (53) East Bayshore Road and Euclid Avenue  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Lanes:	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	1
Initial Vol:	0	0	0	0	497	0	25		143	226	0		0	619	145	
Major Street Volume:	1133															
Minor Approach Volume:	522															
Minor Approach Volume Threshold:	242															

SIGNAL WARRANT DISCLAIMER

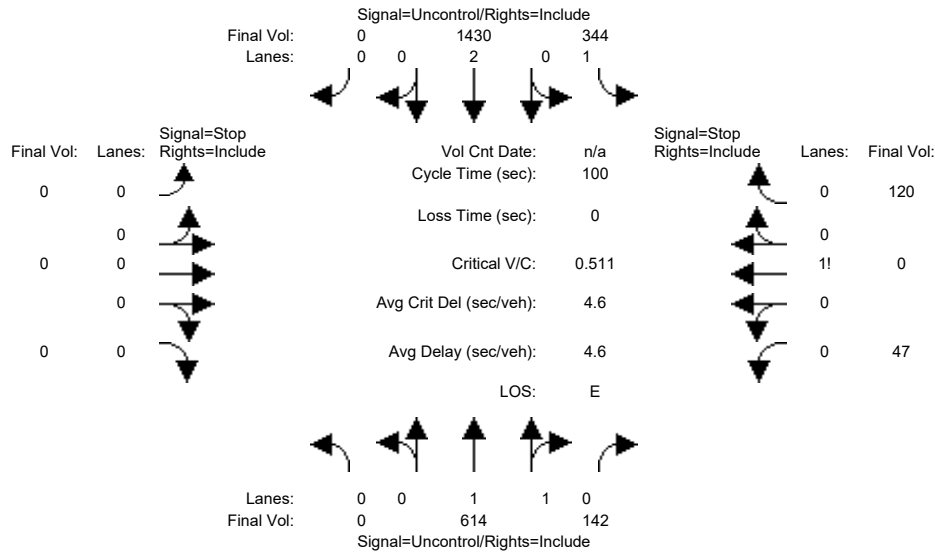
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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton No Project AM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module metrics: Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Final Volume.

Table for Critical Gap Module with 12 columns and 2 rows: Critical Gp, FollowUpTim.

Table for Capacity Module with 12 columns and 4 rows: Cnflct Vol, Potent Cap., Move Cap., Total Cap., Volume/Cap.

Table for Level Of Service Module with 12 columns and 10 rows: 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #8 (36) University Avenue and Purdue Avenue
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 142	344 1430 0	0 0 0 0	47 0 120
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	49.8

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=2.3]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=167]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2697]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 142	344 1430 0	0 0 0 0	47 0 120

Major Street Volume: 2530

Minor Approach Volume: 167

Minor Approach Volume Threshold: -35 [less than minimum of 100]

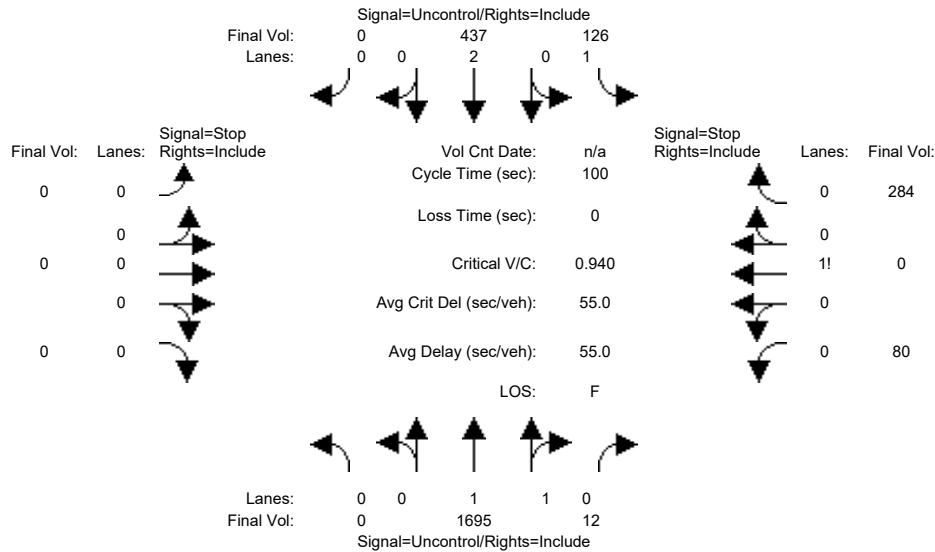
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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Cumulative + Dumbarton No Project PM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:												
	University Avenue North Bound			University Avenue South Bound			Purdue Avenue East Bound			Purdue Avenue West Bound		
Base Vol:	0	1695	12	126	437	0	0	0	0	80	0	284
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1695	12	126	437	0	0	0	0	80	0	284
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1695	12	126	437	0	0	0	0	80	0	284
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1695	12	126	437	0	0	0	0	80	0	284
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	1695	12	126	437	0	0	0	0	80	0	284

Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3

Capacity Module:												
Cnflct Vol:	xxxx	xxxx	xxxxx	1707	xxxx	xxxxx	xxxx	xxxx	xxxxx	2172	2390	854
Potent Cap.:	xxxx	xxxx	xxxxx	364	xxxx	xxxxx	xxxx	xxxx	xxxxx	40	33	302
Move Cap.:	xxxx	xxxx	xxxxx	364	xxxx	xxxxx	xxxx	xxxx	xxxxx	29	22	302
Total Cap:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	0	0	xxxxx	100	97	xxxxx
Volume/Cap:	xxxx	xxxx	xxxx	0.35	xxxx	xxxx	xxxx	xxxx	xxxx	0.80	0.00	0.94

Level Of Service Module:															
2Way95thQ:	xxxx	xxxx	xxxxx	1.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx			
Control Del:	xxxxx	xxxx	xxxxx	20.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx			
LOS by Move:	*	*	*	C	*	*	*	*	*	*	*	*			
Movement:	LT	-	LTR	-	RT	LT	-	LTR	-	RT	LT	-	LTR	-	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	209	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	24.8	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	391	xxxxx			
Shared LOS:	*	*	*	*	*	*	*	*	*	*	F	*			
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			391.1					
ApproachLOS:	*			*			*			F					

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
Intersection #8 (36) University Avenue and Purdue Avenue  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 12	126 437 0	0 0 0 0	80 0 284
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	391.1

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=39.5]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=364]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2634]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 12	126 437 0	0 0 0 0	80 0 284

Major Street Volume: 2270

Minor Approach Volume: 364

Minor Approach Volume Threshold: 2 [less than minimum of 100]

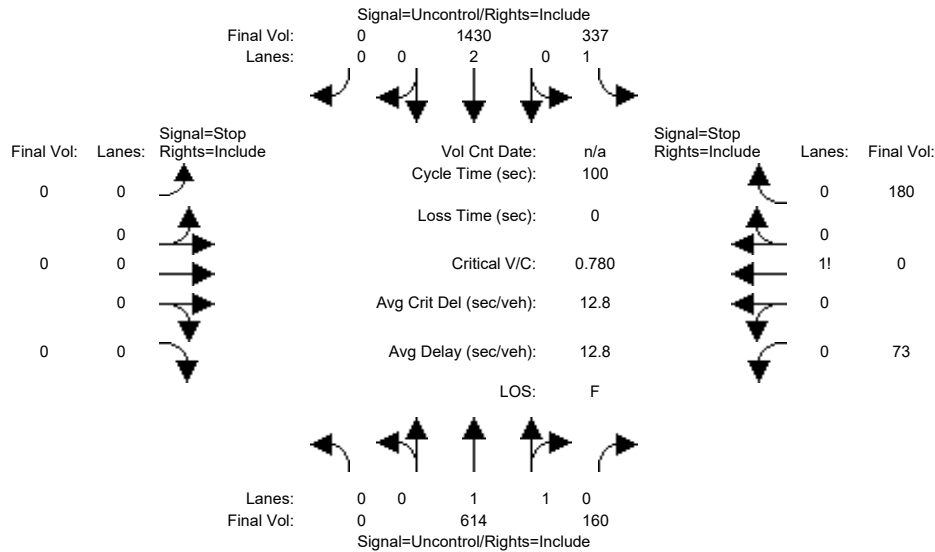
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton WITH Project AM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module metrics: Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Final Volume.

Table for Critical Gap Module with 12 columns and rows for Critical Gp and FollowUpTim.

Table for Capacity Module with 12 columns and rows for Cnflct Vol, Potent Cap., Move Cap., Total Cap., and Volume/Cap.

Table for Level Of Service Module with 12 columns and rows for 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #8 (36) University Avenue and Purdue Avenue
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 160	337 1430 0	0 0 0 0	73 0 180
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	124.8

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=8.8]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=253]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2794]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 614 160	337 1430 0	0 0 0 0	73 0 180

Major Street Volume: 2541

Minor Approach Volume: 253

Minor Approach Volume Threshold: -36 [less than minimum of 100]

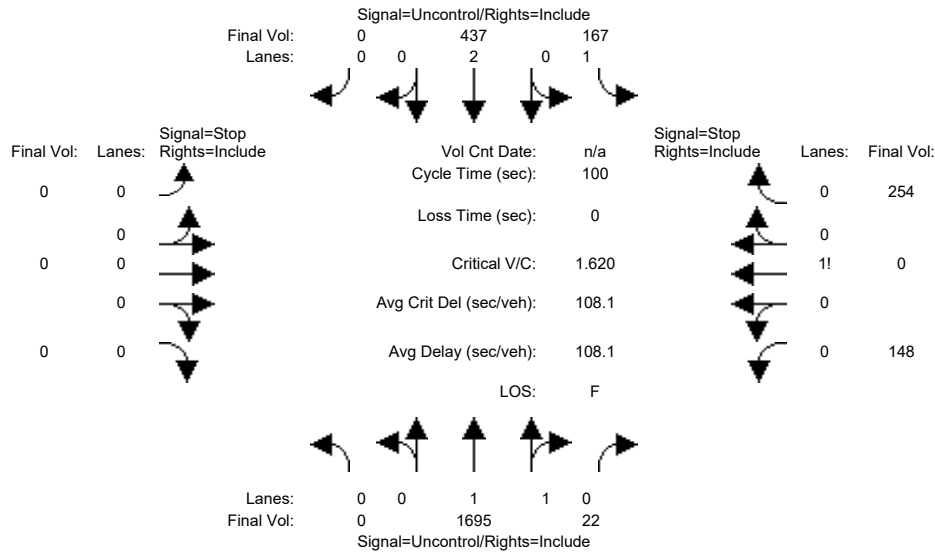
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton WITH Project PM

Intersection #8: (36) University Avenue and Purdue Avenue



Street Name: University Avenue Purdue Avenue
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module: Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume.

Table with 12 columns representing movements and rows for Critical Gap Module: Critical Gp, FollowUpTim.

Table with 12 columns representing movements and rows for Capacity Module: Cnflct Vol, Potent Cap., Move Cap., Total Cap., Volume/Cap.

Table with 12 columns representing movements and rows for Level Of Service Module: 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #8 (36) University Avenue and Purdue Avenue
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 22	167 437 0	0 0 0 0	148 0 254
ApproachDel:	xxxxxx	xxxxxx	xxxxxx	722.5

Approach[westbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=80.7]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=402]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=3][total volume=2723]

SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #8 (36) University Avenue and Purdue Avenue

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 1 0	1 0 2 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 1695 22	167 437 0	0 0 0 0	148 0 254

Major Street Volume: 2321

Minor Approach Volume: 402

Minor Approach Volume Threshold: -5 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

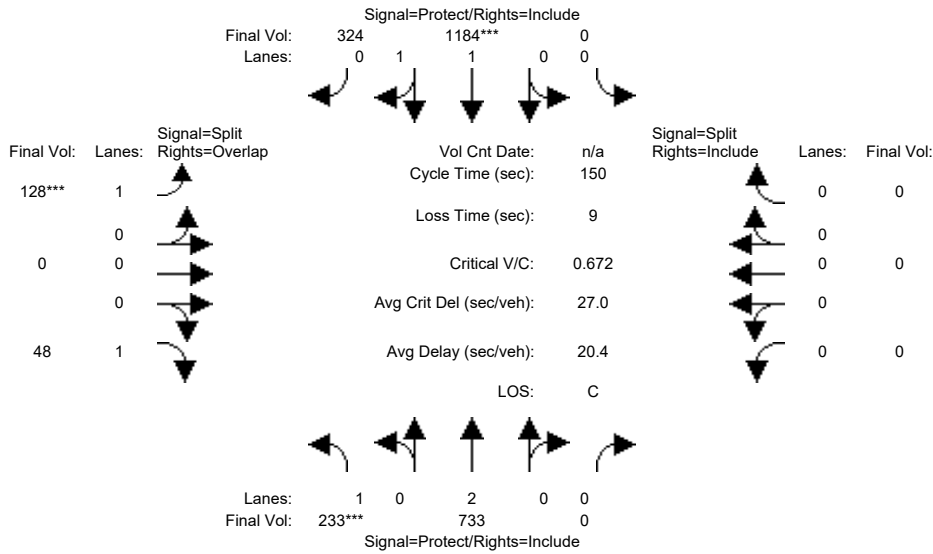
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:	North Bound			South Bound			East Bound			West Bound		
Base Vol:	233	733	0	0	1184	324	128	0	48	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	233	733	0	0	1184	324	128	0	48	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	233	733	0	0	1184	324	128	0	48	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	233	733	0	0	1184	324	128	0	48	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	233	733	0	0	1184	324	128	0	48	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	233	733	0	0	1184	324	128	0	48	0	0	0

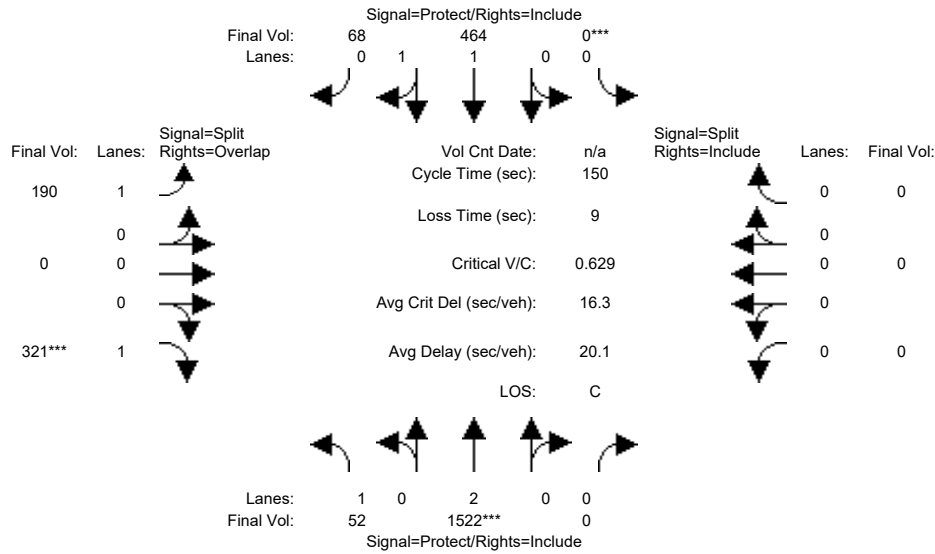
Saturation Flow Module:	North Bound			South Bound			East Bound			West Bound		
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.92	0.92	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.57	0.43	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2744	751	1805	0	1615	0	0	0

Capacity Analysis Module:	North Bound			South Bound			East Bound			West Bound		
Vol/Sat:	0.13	0.20	0.00	0.00	0.43	0.43	0.07	0.00	0.03	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	28.8	125	0.0	0.0	96.3	96.3	15.8	0.0	44.7	0.0	0.0	0.0
Volume/Cap:	0.67	0.24	0.00	0.00	0.67	0.67	0.67	0.00	0.10	0.00	0.00	0.00
Uniform Del:	56.2	2.6	0.0	0.0	16.9	16.9	64.6	0.0	38.1	0.0	0.0	0.0
IncrementDel:	5.1	0.0	0.0	0.0	0.8	0.8	9.0	0.0	0.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	61.3	2.6	0.0	0.0	17.7	17.7	73.6	0.0	38.2	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	61.3	2.6	0.0	0.0	17.7	17.7	73.6	0.0	38.2	0.0	0.0	0.0
LOS by Move:	E	A	A	A	B	B	E	A	D	A	A	A
HCM2kAvgQ:	11	4	0	0	23	23	7	0	2	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	52	1522	0	0	464	68	190	0	321	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	52	1522	0	0	464	68	190	0	321	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	1522	0	0	464	68	190	0	321	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	52	1522	0	0	464	68	190	0	321	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	1522	0	0	464	68	190	0	321	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	52	1522	0	0	464	68	190	0	321	0	0	0

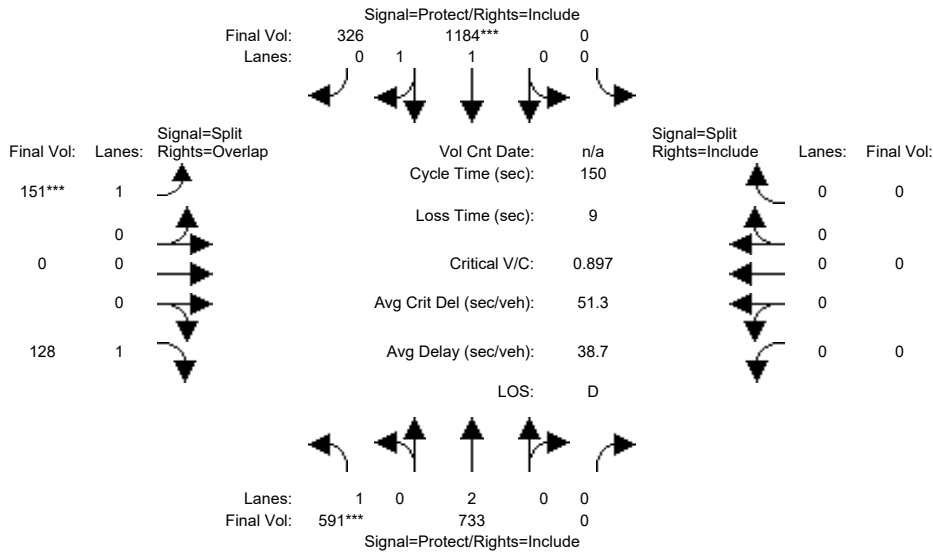
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.74	0.26	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3089	453	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.03	0.42	0.00	0.00	0.15	0.15	0.11	0.00	0.20	0.00	0.00	0.00
Crit Moves:	****			****			****			****		
Green Time:	24.6	104	0.0	0.0	79.1	79.1	37.4	0.0	61.9	0.0	0.0	0.0
Volume/Cap:	0.18	0.61	0.00	0.00	0.29	0.29	0.42	0.00	0.48	0.00	0.00	0.00
Uniform Del:	54.0	12.4	0.0	0.0	19.7	19.7	47.3	0.0	32.3	0.0	0.0	0.0
IncrementDel:	0.3	0.4	0.0	0.0	0.1	0.1	0.6	0.0	0.5	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	54.3	12.8	0.0	0.0	19.8	19.8	47.9	0.0	32.8	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	54.3	12.8	0.0	0.0	19.8	19.8	47.9	0.0	32.8	0.0	0.0	0.0
LOS by Move:	D	B	A	A	B	B	D	A	C	A	A	A
HCM2kAvgQ:	2	19	0	0	7	7	7	0	11	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	591	733	0	0	1184	326	151	0	128	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	591	733	0	0	1184	326	151	0	128	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	591	733	0	0	1184	326	151	0	128	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	591	733	0	0	1184	326	151	0	128	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	591	733	0	0	1184	326	151	0	128	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	591	733	0	0	1184	326	151	0	128	0	0	0

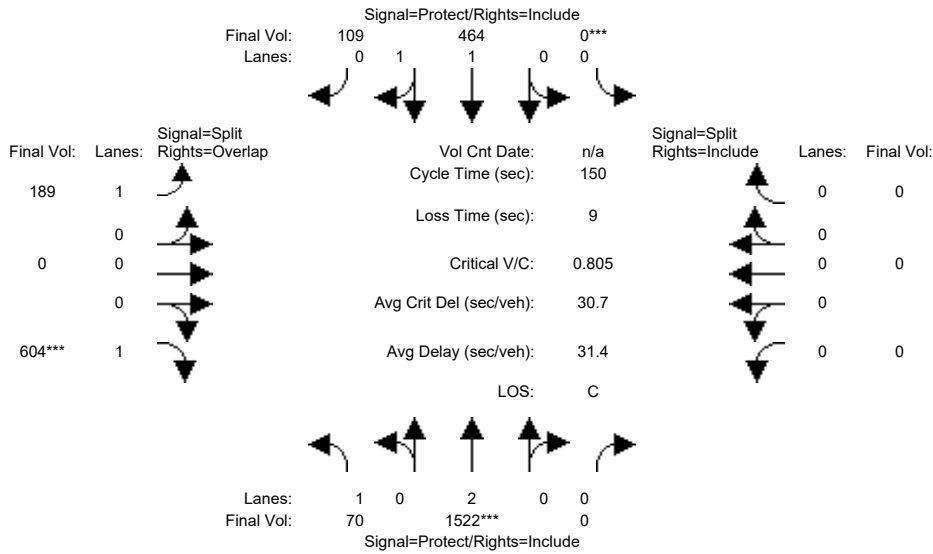
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.92	0.92	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.57	0.43	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2740	754	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.33	0.20	0.00	0.00	0.43	0.43	0.08	0.00	0.08	0.00	0.00	0.00
Crit Moves:	***				***		***					
Green Time:	54.8	127	0.0	0.0	72.3	72.3	14.0	0.0	68.7	0.0	0.0	0.0
Volume/Cap:	0.90	0.24	0.00	0.00	0.90	0.90	0.90	0.00	0.17	0.00	0.00	0.00
Uniform Del:	45.0	2.2	0.0	0.0	35.5	35.5	67.3	0.0	23.9	0.0	0.0	0.0
IncrementDel:	15.0	0.0	0.0	0.0	6.8	6.8	41.2	0.0	0.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	60.0	2.3	0.0	0.0	42.3	42.3	108.5	0.0	24.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	60.0	2.3	0.0	0.0	42.3	42.3	108.5	0.0	24.0	0.0	0.0	0.0
LOS by Move:	E	A	A	A	D	D	F	A	C	A	A	A
HCM2kAvgQ:	29	3	0	0	36	36	10	0	3	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #9: (38) University Avenue and O'Brien Drive



Street Name:	University Avenue						O'Brien Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	70	1522	0	0	464	109	189	0	604	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	70	1522	0	0	464	109	189	0	604	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	70	1522	0	0	464	109	189	0	604	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	70	1522	0	0	464	109	189	0	604	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	70	1522	0	0	464	109	189	0	604	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	70	1522	0	0	464	109	189	0	604	0	0	0

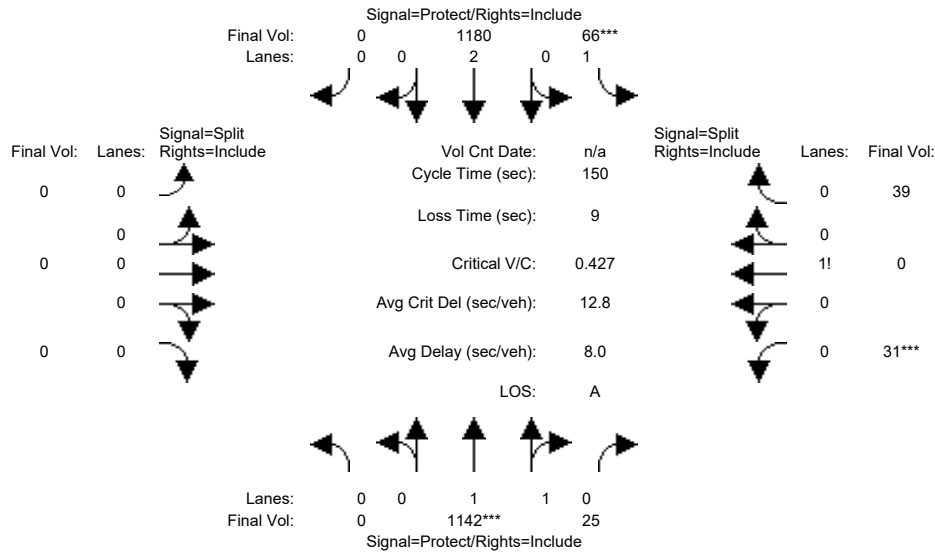
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.92	0.92	0.95	1.00	0.85	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.62	0.38	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2841	667	1805	0	1615	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.04	0.42	0.00	0.00	0.16	0.16	0.10	0.00	0.37	0.00	0.00	0.00
Crit Moves:	****			****			****			****		
Green Time:	17.6	79.4	0.0	0.0	61.7	61.7	61.6	0.0	79.3	0.0	0.0	0.0
Volume/Cap:	0.33	0.80	0.00	0.00	0.40	0.40	0.25	0.00	0.71	0.00	0.00	0.00
Uniform Del:	60.8	28.7	0.0	0.0	31.0	31.0	29.1	0.0	26.6	0.0	0.0	0.0
IncrementDel:	0.9	2.4	0.0	0.0	0.2	0.2	0.2	0.0	2.8	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	61.7	31.2	0.0	0.0	31.2	31.2	29.3	0.0	29.4	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	61.7	31.2	0.0	0.0	31.2	31.2	29.3	0.0	29.4	0.0	0.0	0.0
LOS by Move:	E	C	A	A	C	C	C	A	C	A	A	A
HCM2kAvgQ:	3	31	0	0	9	9	6	0	21	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1142	25	66	1180	0	0	0	0	31	0	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1142	25	66	1180	0	0	0	0	31	0	39
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1142	25	66	1180	0	0	0	0	31	0	39
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1142	25	66	1180	0	0	0	0	31	0	39
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1142	25	66	1180	0	0	0	0	31	0	39
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1142	25	66	1180	0	0	0	0	31	0	39

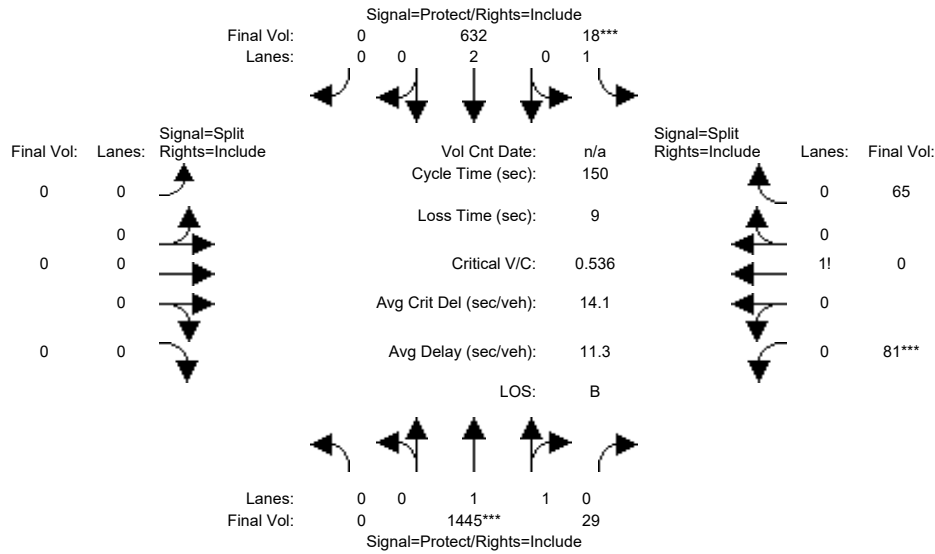
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.90	1.00	0.90
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.44	0.00	0.56
Final Sat.:	0	3522	77	1805	3610	0	0	0	0	761	0	958

Capacity Analysis Module:												
Vol/Sat:	0.00	0.32	0.32	0.04	0.33	0.00	0.00	0.00	0.00	0.04	0.00	0.04
Crit Moves:	****			****						****		
Green Time:	0.0	114	113.9	12.8	127	0.0	0.0	0.0	0.0	14.3	0.0	14.3
Volume/Cap:	0.00	0.43	0.43	0.43	0.39	0.00	0.00	0.00	0.00	0.43	0.00	0.43
Uniform Del:	0.0	6.4	6.4	65.1	2.7	0.0	0.0	0.0	0.0	64.0	0.0	64.0
IncrementDel:	0.0	0.1	0.1	1.9	0.1	0.0	0.0	0.0	0.0	1.8	0.0	1.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	6.6	6.6	67.0	2.8	0.0	0.0	0.0	0.0	65.8	0.0	65.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	6.6	6.6	67.0	2.8	0.0	0.0	0.0	0.0	65.8	0.0	65.8
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	10	10	3	7	0	0	0	0	3	0	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]

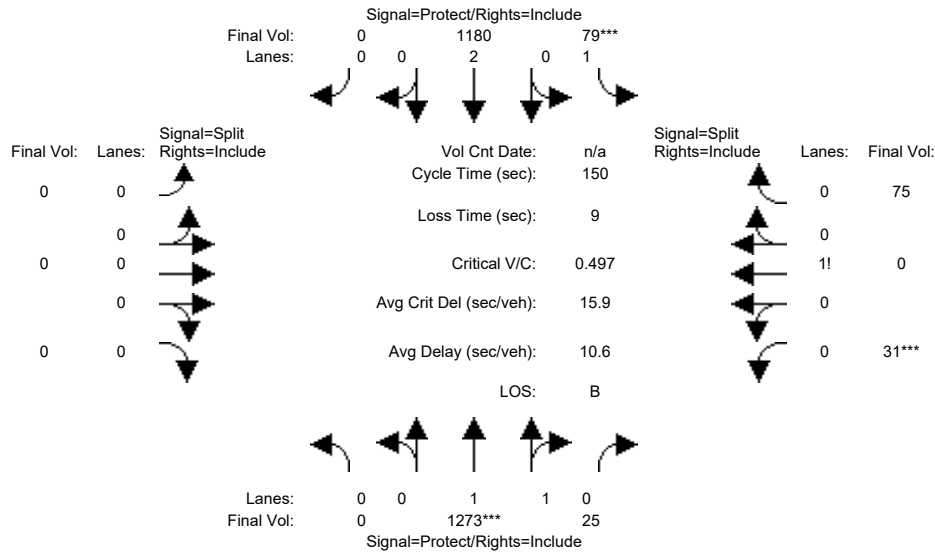


Street Name:	University Avenue						Notre Dame Avenue					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	1445	29	18	632	0	0	0	0	81	0	65
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1445	29	18	632	0	0	0	0	81	0	65
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1445	29	18	632	0	0	0	0	81	0	65
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1445	29	18	632	0	0	0	0	81	0	65
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1445	29	18	632	0	0	0	0	81	0	65
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1445	29	18	632	0	0	0	0	81	0	65
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.91	1.00	0.91
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.55	0.00	0.45
Final Sat.:	0	3528	71	1805	3610	0	0	0	0	964	0	774
Capacity Analysis Module:												
Vol/Sat:	0.00	0.41	0.41	0.01	0.18	0.00	0.00	0.00	0.00	0.08	0.00	0.08
Crit Moves:	****			****						****		
Green Time:	0.0	111	111.2	7.0	118	0.0	0.0	0.0	0.0	22.8	0.0	22.8
Volume/Cap:	0.00	0.55	0.55	0.21	0.22	0.00	0.00	0.00	0.00	0.55	0.00	0.55
Uniform Del:	0.0	8.5	8.5	68.8	4.1	0.0	0.0	0.0	0.0	58.9	0.0	58.9
IncrementDel:	0.0	0.3	0.3	1.3	0.0	0.0	0.0	0.0	0.0	2.5	0.0	2.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	8.8	8.8	70.1	4.1	0.0	0.0	0.0	0.0	61.4	0.0	61.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	8.8	8.8	70.1	4.1	0.0	0.0	0.0	0.0	61.4	0.0	61.4
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	15	15	1	4	0	0	0	0	7	0	7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1273	25	79	1180	0	0	0	0	31	0	75
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1273	25	79	1180	0	0	0	0	31	0	75
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1273	25	79	1180	0	0	0	0	31	0	75
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1273	25	79	1180	0	0	0	0	31	0	75
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1273	25	79	1180	0	0	0	0	31	0	75
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1273	25	79	1180	0	0	0	0	31	0	75

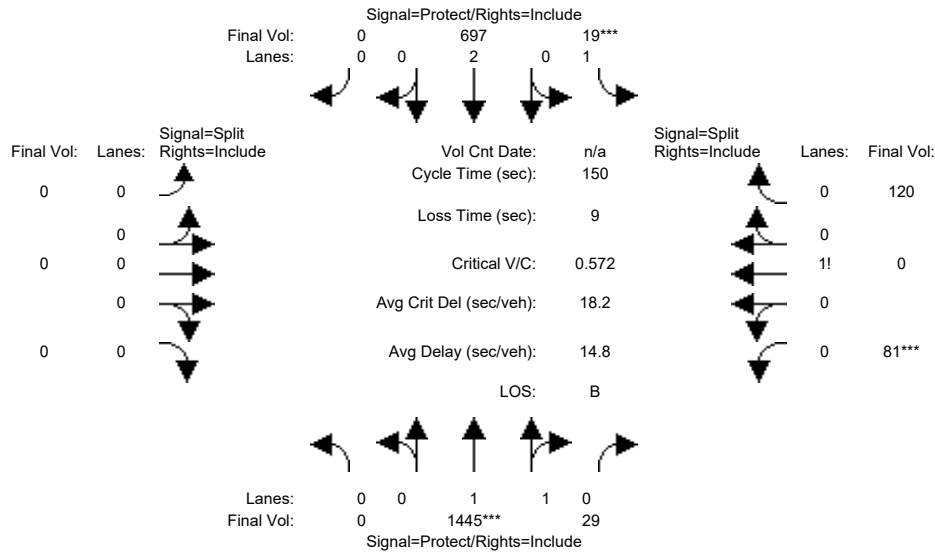
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.29	0.00	0.71
Final Sat.:	0	3530	69	1805	3610	0	0	0	0	495	0	1198

Capacity Analysis Module:												
Vol/Sat:	0.00	0.36	0.36	0.04	0.33	0.00	0.00	0.00	0.00	0.06	0.00	0.06
Crit Moves:	****			****						****		
Green Time:	0.0	109	108.9	13.2	122	0.0	0.0	0.0	0.0	18.9	0.0	18.9
Volume/Cap:	0.00	0.50	0.50	0.50	0.40	0.00	0.00	0.00	0.00	0.50	0.00	0.50
Uniform Del:	0.0	8.8	8.8	65.2	3.9	0.0	0.0	0.0	0.0	61.1	0.0	61.1
IncrementDel:	0.0	0.1	0.1	2.4	0.1	0.0	0.0	0.0	0.0	1.8	0.0	1.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	9.0	9.0	67.7	3.9	0.0	0.0	0.0	0.0	62.9	0.0	62.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	9.0	9.0	67.7	3.9	0.0	0.0	0.0	0.0	62.9	0.0	62.9
LOS by Move:	A	A	A	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	13	13	4	8	0	0	0	0	5	0	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #10: (39.1) University Avenue and Notre Dame Avenue [\*\*\*\* SIGN SAYS NO RT M-F 3-8PM]



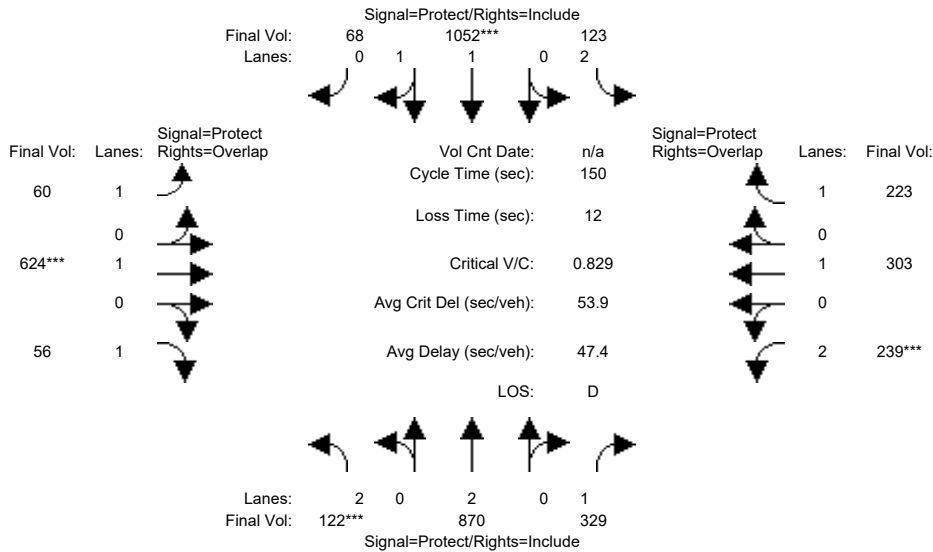
Street Name:	University Avenue						Notre Dame Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	10	10	7	10	0	0	0	0	10	0	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	0	1445	29	19	697	0	0	0	0	81	0	120
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1445	29	19	697	0	0	0	0	81	0	120
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1445	29	19	697	0	0	0	0	81	0	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1445	29	19	697	0	0	0	0	81	0	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1445	29	19	697	0	0	0	0	81	0	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	1445	29	19	697	0	0	0	0	81	0	120
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	0.90	1.00	0.90
Lanes:	0.00	1.96	0.04	1.00	2.00	0.00	0.00	0.00	0.00	0.40	0.00	0.60
Final Sat.:	0	3528	71	1805	3610	0	0	0	0	690	0	1022
Capacity Analysis Module:												
Vol/Sat:	0.00	0.41	0.41	0.01	0.19	0.00	0.00	0.00	0.00	0.12	0.00	0.12
Crit Moves:	****			****						****		
Green Time:	0.0	104	104.1	7.0	111	0.0	0.0	0.0	0.0	29.9	0.0	29.9
Volume/Cap:	0.00	0.59	0.59	0.23	0.26	0.00	0.00	0.00	0.00	0.59	0.00	0.59
Uniform Del:	0.0	11.9	11.9	68.9	6.2	0.0	0.0	0.0	0.0	54.5	0.0	54.5
IncrementDel:	0.0	0.4	0.4	1.4	0.1	0.0	0.0	0.0	0.0	2.7	0.0	2.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	12.3	12.3	70.3	6.3	0.0	0.0	0.0	0.0	57.2	0.0	57.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	12.3	12.3	70.3	6.3	0.0	0.0	0.0	0.0	57.2	0.0	57.2
LOS by Move:	A	B	B	E	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	18	18	1	5	0	0	0	0	9	0	9

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	122	870	329	123	1052	68	60	624	56	239	303	223
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	122	870	329	123	1052	68	60	624	56	239	303	223
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	122	870	329	123	1052	68	60	624	56	239	303	223
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	122	870	329	123	1052	68	60	624	56	239	303	223
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	122	870	329	123	1052	68	60	624	56	239	303	223
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	122	870	329	123	1052	68	60	624	56	239	303	223

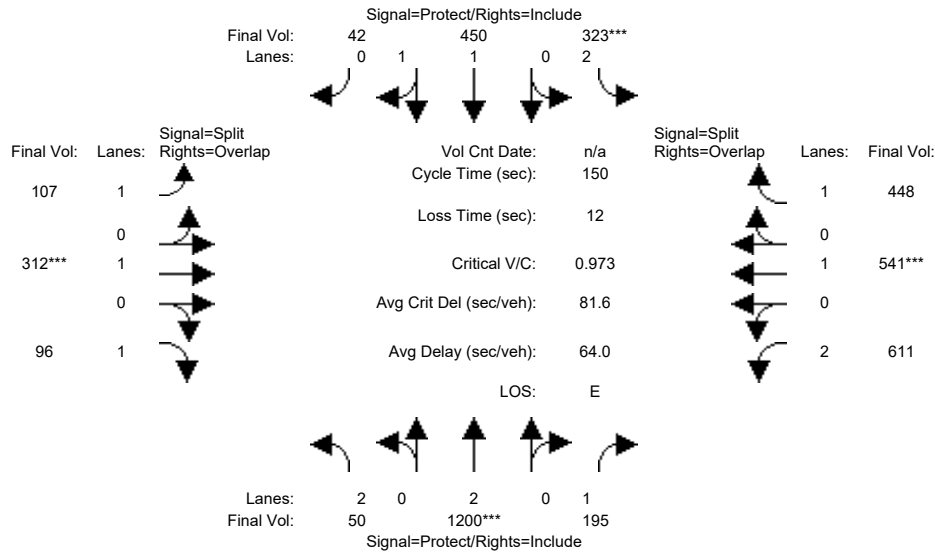
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.92	0.83	0.89	0.91	0.91	0.93	0.98	0.83	0.90	0.98	0.83
Lanes:	2.00	2.00	1.00	2.00	1.88	0.12	1.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3400	3505	1568	3400	3263	211	1769	1862	1583	3432	1862	1583

Capacity Analysis Module:												
Vol/Sat:	0.04	0.25	0.21	0.04	0.32	0.32	0.03	0.34	0.04	0.07	0.16	0.14
Crit Moves:	***			****			****			****		
Green Time:	7.0	54.8	54.8	10.3	58.1	58.1	16.3	60.4	67.4	12.5	56.7	67.0
Volume/Cap:	0.77	0.68	0.57	0.53	0.83	0.83	0.31	0.83	0.08	0.83	0.43	0.32
Uniform Del:	70.7	40.2	38.2	67.5	41.6	41.6	61.7	40.3	23.6	67.7	34.7	26.8
IncrementDel:	20.1	1.5	1.4	2.2	4.6	4.6	0.9	7.9	0.0	18.4	0.4	0.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	90.8	41.7	39.7	69.7	46.2	46.2	62.7	48.2	23.6	86.1	35.1	27.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	90.8	41.7	39.7	69.7	46.2	46.2	62.7	48.2	23.6	86.1	35.1	27.0
LOS by Move:	F	D	D	E	D	D	E	D	C	F	D	C
HCM2kAvgQ:	4	18	12	4	26	26	3	27	1	8	10	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	50	1200	195	323	450	42	107	312	96	611	541	448
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	1200	195	323	450	42	107	312	96	611	541	448
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	50	1200	195	323	450	42	107	312	96	611	541	448
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	50	1200	195	323	450	42	107	312	96	611	541	448
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	1200	195	323	450	42	107	312	96	611	541	448
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	50	1200	195	323	450	42	107	312	96	611	541	448

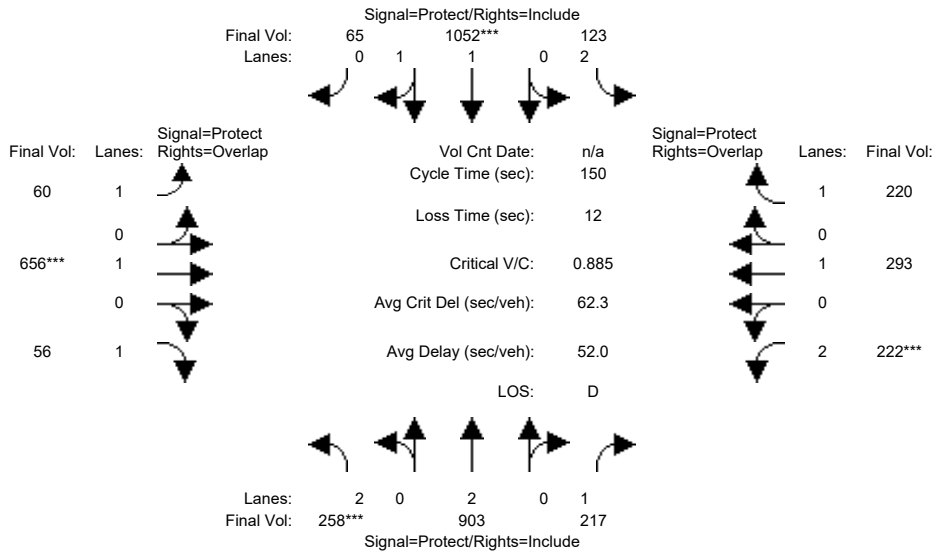
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.92	0.83	0.89	0.91	0.91	0.93	0.98	0.83	0.90	0.98	0.83
Lanes:	2.00	2.00	1.00	2.00	1.83	0.17	1.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3400	3505	1568	3400	3164	295	1769	1862	1583	3432	1862	1583

Capacity Analysis Module:												
Vol/Sat:	0.01	0.34	0.12	0.09	0.14	0.14	0.06	0.17	0.06	0.18	0.29	0.28
Crit Moves:	****			****			****			****		
Green Time:	16.7	52.8	52.8	14.6	50.7	50.7	25.8	25.8	42.5	44.8	44.8	59.4
Volume/Cap:	0.13	0.97	0.35	0.97	0.42	0.42	0.35	0.97	0.21	0.60	0.97	0.71
Uniform Del:	60.2	47.9	36.0	67.5	38.3	38.3	54.7	61.7	41.0	44.9	52.0	38.1
IncrementDel:	0.2	19.5	0.4	42.1	0.2	0.2	0.7	42.9	0.2	1.0	31.3	3.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	60.3	67.4	36.4	109.5	38.5	38.5	55.4	105	41.3	45.9	83.3	42.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	60.3	67.4	36.4	109.5	38.5	38.5	55.4	105	41.3	45.9	83.3	42.1
LOS by Move:	E	E	D	F	D	D	E	F	D	D	F	D
HCM2kAvgQ:	1	34	7	11	9	9	4	19	3	13	30	18

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #11: (40) University Avenue and Bay Road



Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	258	903	217	123	1052	65	60	656	56	222	293	220
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	258	903	217	123	1052	65	60	656	56	222	293	220
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	258	903	217	123	1052	65	60	656	56	222	293	220
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	258	903	217	123	1052	65	60	656	56	222	293	220
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	258	903	217	123	1052	65	60	656	56	222	293	220
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	258	903	217	123	1052	65	60	656	56	222	293	220

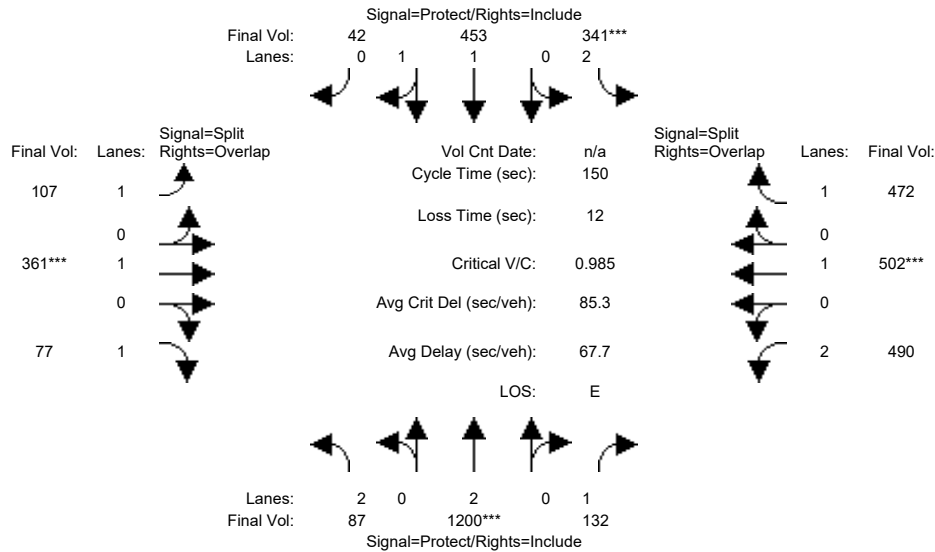
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.92	0.83	0.89	0.91	0.91	0.93	0.98	0.83	0.90	0.98	0.83
Lanes:	2.00	2.00	1.00	2.00	1.88	0.12	1.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3400	3505	1568	3400	3272	202	1769	1862	1583	3432	1862	1583

Capacity Analysis Module:												
Vol/Sat:	0.08	0.26	0.14	0.04	0.32	0.32	0.03	0.35	0.04	0.06	0.16	0.14
Crit Moves:	***			****			****			****		
Green Time:	12.9	57.0	57.0	10.3	54.5	54.5	16.2	59.7	72.6	11.0	54.5	64.8
Volume/Cap:	0.89	0.68	0.36	0.53	0.89	0.89	0.31	0.89	0.07	0.89	0.43	0.32
Uniform Del:	67.8	38.8	33.5	67.5	44.8	44.8	61.8	42.0	20.7	68.9	36.1	28.1
IncrementDel:	25.9	1.4	0.4	2.2	7.8	7.8	1.0	12.3	0.0	29.0	0.4	0.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	93.7	40.2	33.8	69.7	52.6	52.6	62.8	54.3	20.8	97.9	36.5	28.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	93.7	40.2	33.8	69.7	52.6	52.6	62.8	54.3	20.8	97.9	36.5	28.4
LOS by Move:	F	D	C	E	D	D	E	D	C	F	D	C
HCM2kAvgQ:	9	19	7	4	28	28	3	31	1	8	10	7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #11: (40) University Avenue and Bay Road

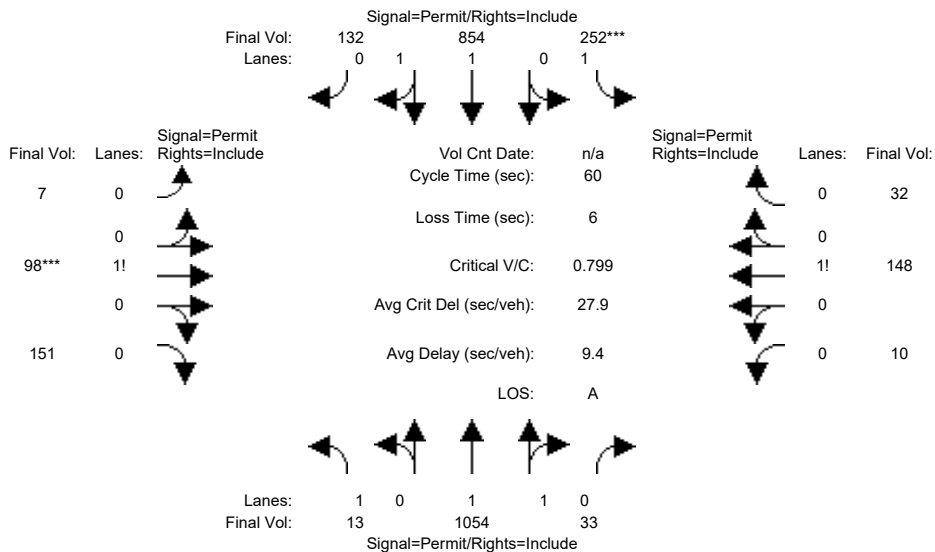


Street Name:	University Avenue						Bay Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	7	10	10	7	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	87	1200	132	341	453	42	107	361	77	490	502	472
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	1200	132	341	453	42	107	361	77	490	502	472
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	1200	132	341	453	42	107	361	77	490	502	472
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	87	1200	132	341	453	42	107	361	77	490	502	472
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	87	1200	132	341	453	42	107	361	77	490	502	472
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	87	1200	132	341	453	42	107	361	77	490	502	472
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	0.92	0.83	0.89	0.91	0.91	0.93	0.98	0.83	0.90	0.98	0.83
Lanes:	2.00	2.00	1.00	2.00	1.83	0.17	1.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3400	3505	1568	3400	3166	294	1769	1862	1583	3432	1862	1583
Capacity Analysis Module:												
Vol/Sat:	0.03	0.34	0.08	0.10	0.14	0.14	0.06	0.19	0.05	0.14	0.27	0.30
Crit Moves:	****			****			****			****		
Green Time:	16.6	52.1	52.1	15.3	50.8	50.8	29.5	29.5	46.1	41.1	41.1	56.3
Volume/Cap:	0.23	0.98	0.24	0.98	0.42	0.42	0.31	0.98	0.16	0.52	0.98	0.79
Uniform Del:	60.9	48.5	34.9	67.2	38.3	38.3	51.5	60.0	37.8	46.1	54.2	41.7
IncrementDel:	0.3	22.1	0.2	44.1	0.2	0.2	0.5	42.8	0.2	0.5	35.8	7.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	61.2	70.6	35.1	111.4	38.5	38.5	52.0	103	38.0	46.7	90.0	48.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	61.2	70.6	35.1	111.4	38.5	38.5	52.0	103	38.0	46.7	90.0	48.9
LOS by Move:	E	E	D	F	D	D	D	F	D	D	F	D
HCM2kAvgQ:	2	34	4	12	9	9	4	21	3	10	28	21

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	13	1054	33	252	854	132	7	98	151	10	148	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	13	1054	33	252	854	132	7	98	151	10	148	32
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	13	1054	33	252	854	132	7	98	151	10	148	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	13	1054	33	252	854	132	7	98	151	10	148	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	13	1054	33	252	854	132	7	98	151	10	148	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	13	1054	33	252	854	132	7	98	151	10	148	32

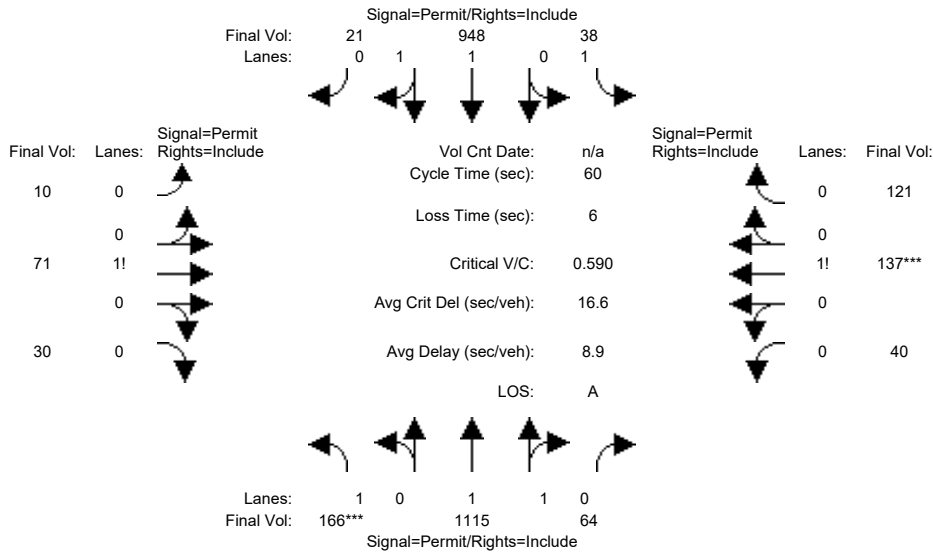
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.27	0.95	0.95	0.23	0.93	0.93	0.91	0.91	0.91	0.95	0.95	0.95
Lanes:	1.00	1.94	0.06	1.00	1.73	0.27	0.03	0.38	0.59	0.05	0.78	0.17
Final Sat.:	504	3486	109	441	3064	474	47	664	1024	95	1403	303

Capacity Analysis Module:												
Vol/Sat:	0.03	0.30	0.30	0.57	0.28	0.28	0.15	0.15	0.15	0.11	0.11	0.11
Crit Moves:				****			****					
Green Time:	42.9	42.9	42.9	42.9	42.9	42.9	11.1	11.1	11.1	11.1	11.1	11.1
Volume/Cap:	0.04	0.42	0.42	0.80	0.39	0.39	0.80	0.80	0.80	0.57	0.57	0.57
Uniform Del:	2.5	3.5	3.5	5.7	3.4	3.4	23.4	23.4	23.4	22.3	22.3	22.3
IncrementDel:	0.0	0.1	0.1	13.4	0.1	0.1	13.2	13.2	13.2	2.4	2.4	2.4
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	2.5	3.6	3.6	19.1	3.5	3.5	36.6	36.6	36.6	24.7	24.7	24.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	2.5	3.6	3.6	19.1	3.5	3.5	36.6	36.6	36.6	24.7	24.7	24.7
LOS by Move:	A	A	A	B	A	A	D	D	D	C	C	C
HCM2kAvgQ:	0	5	5	6	4	4	7	7	7	4	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	166	1115	64	38	948	21	10	71	30	40	137	121
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	166	1115	64	38	948	21	10	71	30	40	137	121
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	166	1115	64	38	948	21	10	71	30	40	137	121
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	166	1115	64	38	948	21	10	71	30	40	137	121
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	166	1115	64	38	948	21	10	71	30	40	137	121
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	166	1115	64	38	948	21	10	71	30	40	137	121

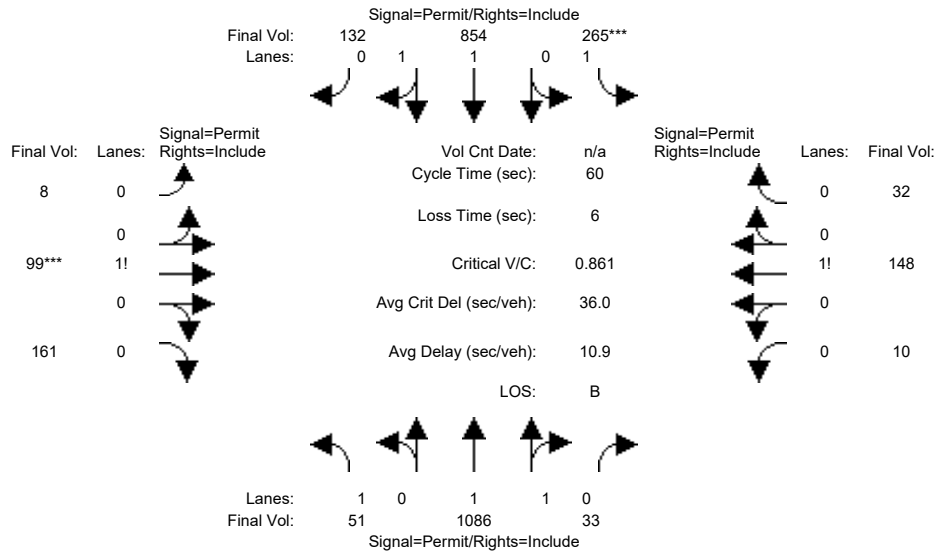
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.25	0.94	0.94	0.18	0.95	0.95	0.93	0.93	0.93	0.90	0.90	0.90
Lanes:	1.00	1.89	0.11	1.00	1.96	0.04	0.09	0.64	0.27	0.13	0.46	0.41
Final Sat.:	466	3387	194	336	3521	78	159	1132	478	229	786	694

Capacity Analysis Module:												
Vol/Sat:	0.36	0.33	0.33	0.11	0.27	0.27	0.06	0.06	0.06	0.17	0.17	0.17
Crit Moves:	***									****		
Green Time:	36.3	36.3	36.3	36.3	36.3	36.3	17.7	17.7	17.7	17.7	17.7	17.7
Volume/Cap:	0.59	0.54	0.54	0.19	0.45	0.45	0.21	0.21	0.21	0.59	0.59	0.59
Uniform Del:	7.3	7.0	7.0	5.3	6.4	6.4	15.9	15.9	15.9	18.0	18.0	18.0
IncrementDel:	3.3	0.3	0.3	0.4	0.1	0.1	0.2	0.2	0.2	1.8	1.8	1.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	10.6	7.3	7.3	5.7	6.6	6.6	16.1	16.1	16.1	19.9	19.9	19.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.6	7.3	7.3	5.7	6.6	6.6	16.1	16.1	16.1	19.9	19.9	19.9
LOS by Move:	B	A	A	A	A	A	B	B	B	B	B	B
HCM2kAvgQ:	3	7	7	1	5	5	2	2	2	6	6	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	51	1086	33	265	854	132	8	99	161	10	148	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	51	1086	33	265	854	132	8	99	161	10	148	32
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	51	1086	33	265	854	132	8	99	161	10	148	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	51	1086	33	265	854	132	8	99	161	10	148	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	51	1086	33	265	854	132	8	99	161	10	148	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	51	1086	33	265	854	132	8	99	161	10	148	32

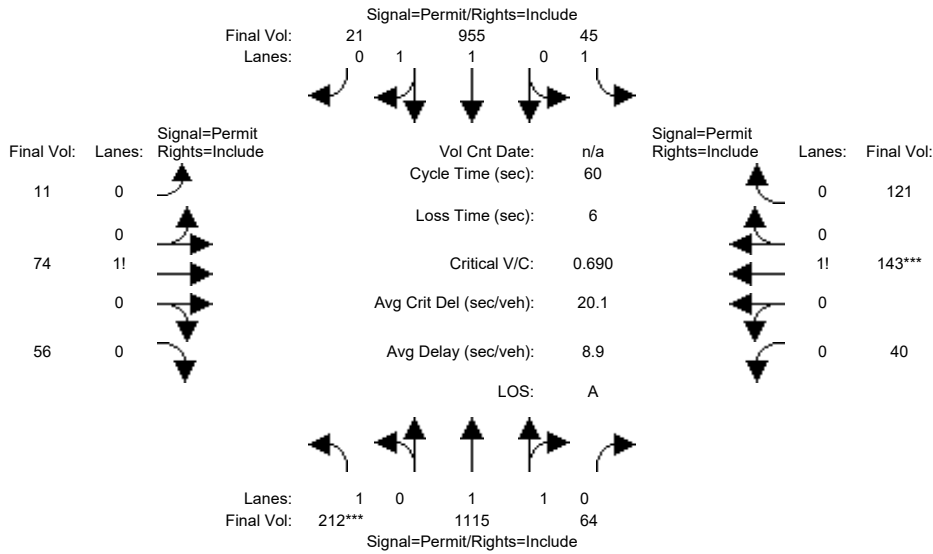
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.27	0.95	0.95	0.23	0.93	0.93	0.91	0.91	0.91	0.94	0.94	0.94
Lanes:	1.00	1.94	0.06	1.00	1.73	0.27	0.03	0.37	0.60	0.05	0.78	0.17
Final Sat.:	505	3490	106	428	3064	474	52	640	1041	94	1388	300

Capacity Analysis Module:												
Vol/Sat:	0.10	0.31	0.31	0.62	0.28	0.28	0.15	0.15	0.15	0.11	0.11	0.11
Crit Moves:				****			****					
Green Time:	43.2	43.2	43.2	43.2	43.2	43.2	10.8	10.8	10.8	10.8	10.8	10.8
Volume/Cap:	0.14	0.43	0.43	0.86	0.39	0.39	0.86	0.86	0.86	0.59	0.59	0.59
Uniform Del:	2.6	3.4	3.4	6.2	3.3	3.3	23.9	23.9	23.9	22.6	22.6	22.6
IncrementDel:	0.2	0.1	0.1	21.0	0.1	0.1	20.8	20.8	20.8	3.0	3.0	3.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	2.8	3.5	3.5	27.2	3.4	3.4	44.7	44.7	44.7	25.6	25.6	25.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	2.8	3.5	3.5	27.2	3.4	3.4	44.7	44.7	44.7	25.6	25.6	25.6
LOS by Move:	A	A	A	C	A	A	D	D	D	C	C	C
HCM2kAvgQ:	0	5	5	7	4	4	8	8	8	4	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #12: (41) University Avenue and Runnymede Street



Street Name:	University Avenue						Runnymede Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	212	1115	64	45	955	21	11	74	56	40	143	121
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	212	1115	64	45	955	21	11	74	56	40	143	121
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	212	1115	64	45	955	21	11	74	56	40	143	121
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	212	1115	64	45	955	21	11	74	56	40	143	121
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	212	1115	64	45	955	21	11	74	56	40	143	121
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	212	1115	64	45	955	21	11	74	56	40	143	121

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.25	0.94	0.94	0.19	0.95	0.95	0.92	0.92	0.92	0.90	0.90	0.90
Lanes:	1.00	1.89	0.11	1.00	1.96	0.04	0.08	0.52	0.40	0.13	0.47	0.40
Final Sat.:	479	3387	194	357	3522	77	137	919	695	224	801	677

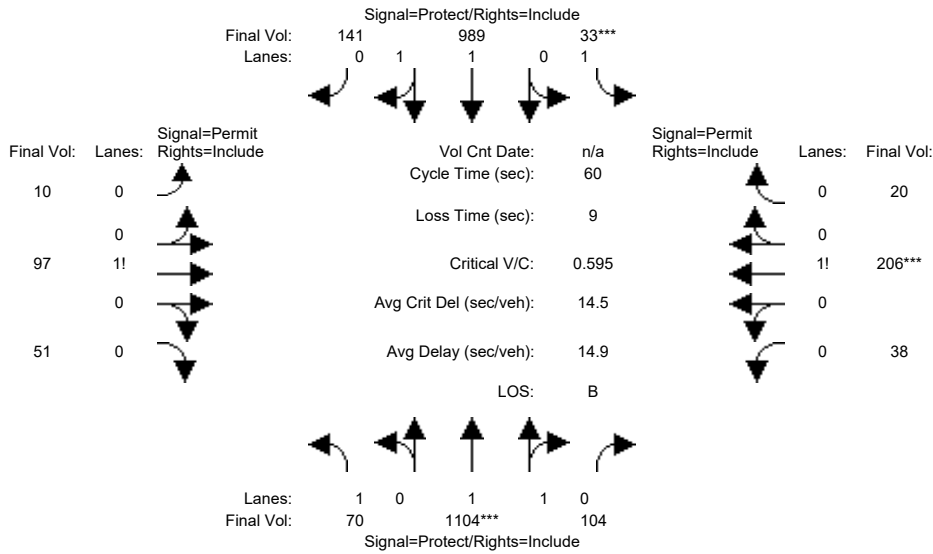
Capacity Analysis Module:												
Vol/Sat:	0.44	0.33	0.33	0.13	0.27	0.27	0.08	0.08	0.08	0.18	0.18	0.18
Crit Moves:	***									****		
Green Time:	38.5	38.5	38.5	38.5	38.5	38.5	15.5	15.5	15.5	15.5	15.5	15.5
Volume/Cap:	0.69	0.51	0.51	0.20	0.42	0.42	0.31	0.31	0.31	0.69	0.69	0.69
Uniform Del:	6.9	5.8	5.8	4.4	5.3	5.3	17.9	17.9	17.9	20.1	20.1	20.1
IncrementDel:	6.6	0.2	0.2	0.4	0.1	0.1	0.4	0.4	0.4	4.6	4.6	4.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	13.5	6.0	6.0	4.8	5.4	5.4	18.3	18.3	18.3	24.7	24.7	24.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.5	6.0	6.0	4.8	5.4	5.4	18.3	18.3	18.3	24.7	24.7	24.7
LOS by Move:	B	A	A	A	A	A	B	B	B	C	C	C
HCM2kAvgQ:	4	7	7	1	5	5	2	2	2	7	7	7

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	70	1104	104	33	989	141	10	97	51	38	206	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	70	1104	104	33	989	141	10	97	51	38	206	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	70	1104	104	33	989	141	10	97	51	38	206	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	70	1104	104	33	989	141	10	97	51	38	206	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	70	1104	104	33	989	141	10	97	51	38	206	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	70	1104	104	33	989	141	10	97	51	38	206	20

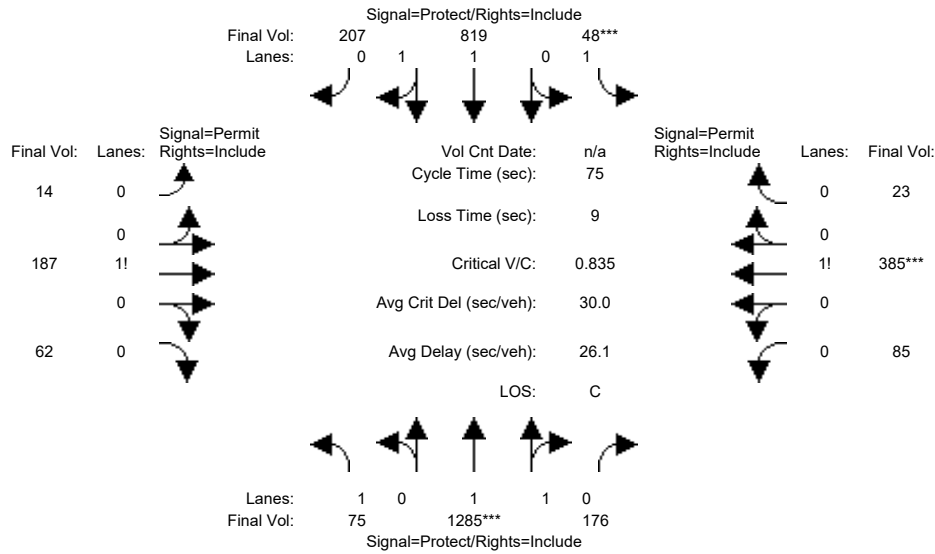
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.94	0.94	0.95	0.93	0.93	0.94	0.94	0.94	0.94	0.94	0.94
Lanes:	1.00	1.83	0.17	1.00	1.75	0.25	0.06	0.62	0.32	0.14	0.78	0.08
Final Sat.:	1805	3256	307	1805	3100	442	113	1094	575	256	1390	135

Capacity Analysis Module:												
Vol/Sat:	0.04	0.34	0.34	0.02	0.32	0.32	0.09	0.09	0.09	0.15	0.15	0.15
Crit Moves:	****			****						****		
Green Time:	10.1	30.6	30.6	7.0	27.5	27.5	13.4	13.4	13.4	13.4	13.4	13.4
Volume/Cap:	0.23	0.66	0.66	0.16	0.70	0.70	0.40	0.40	0.40	0.66	0.66	0.66
Uniform Del:	21.6	10.9	10.9	23.8	12.9	12.9	19.9	19.9	19.9	21.3	21.3	21.3
IncrementDel:	0.4	0.9	0.9	0.3	1.3	1.3	0.7	0.7	0.7	4.2	4.2	4.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	22.0	11.8	11.8	24.2	14.2	14.2	20.5	20.5	20.5	25.5	25.5	25.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.0	11.8	11.8	24.2	14.2	14.2	20.5	20.5	20.5	25.5	25.5	25.5
LOS by Move:	C	B	B	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	1	10	10	1	10	10	3	3	3	6	6	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	75	1285	176	48	819	207	14	187	62	85	385	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1285	176	48	819	207	14	187	62	85	385	23
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	1285	176	48	819	207	14	187	62	85	385	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1285	176	48	819	207	14	187	62	85	385	23
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1285	176	48	819	207	14	187	62	85	385	23
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	75	1285	176	48	819	207	14	187	62	85	385	23

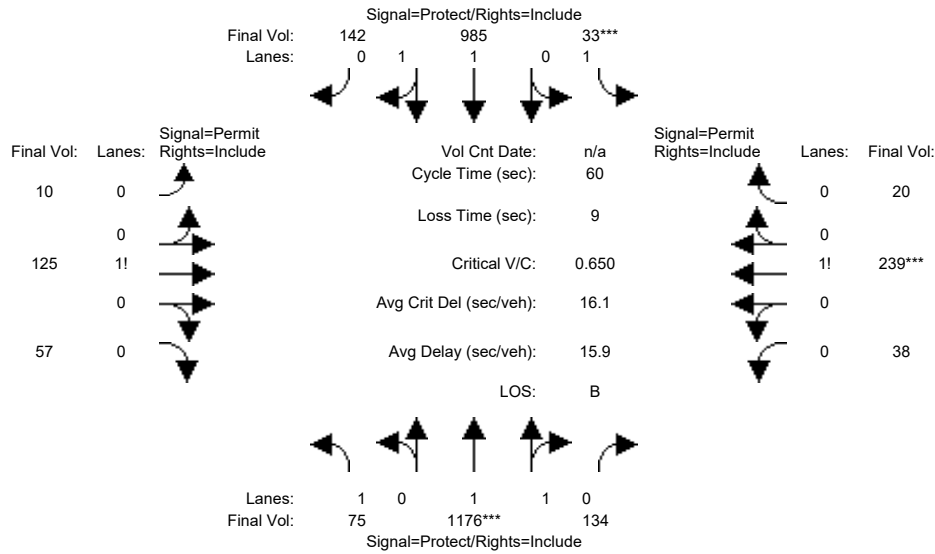
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	0.92	0.92	0.94	0.94	0.94	0.88	0.88	0.88
Lanes:	1.00	1.76	0.24	1.00	1.60	0.40	0.05	0.71	0.24	0.17	0.78	0.05
Final Sat.:	1805	3118	427	1805	2795	706	95	1274	423	287	1301	78

Capacity Analysis Module:												
Vol/Sat:	0.04	0.41	0.41	0.03	0.29	0.29	0.15	0.15	0.15	0.30	0.30	0.30
Crit Moves:	****			****						****		
Green Time:	10.0	34.3	34.3	7.0	31.4	31.4	24.7	24.7	24.7	24.7	24.7	24.7
Volume/Cap:	0.31	0.90	0.90	0.28	0.70	0.70	0.45	0.45	0.45	0.90	0.90	0.90
Uniform Del:	29.4	18.7	18.7	31.7	18.0	18.0	19.8	19.8	19.8	24.0	24.0	24.0
IncrementDel:	0.7	7.2	7.2	0.9	1.5	1.5	0.5	0.5	0.5	17.8	17.8	17.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	30.1	26.0	26.0	32.6	19.5	19.5	20.3	20.3	20.3	41.8	41.8	41.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.1	26.0	26.0	32.6	19.5	19.5	20.3	20.3	20.3	41.8	41.8	41.8
LOS by Move:	C	C	C	C	B	B	C	C	C	D	D	D
HCM2kAvgQ:	2	21	21	1	11	11	5	5	5	15	15	15

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	75	1176	134	33	985	142	10	125	57	38	239	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1176	134	33	985	142	10	125	57	38	239	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	1176	134	33	985	142	10	125	57	38	239	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1176	134	33	985	142	10	125	57	38	239	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1176	134	33	985	142	10	125	57	38	239	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	75	1176	134	33	985	142	10	125	57	38	239	20

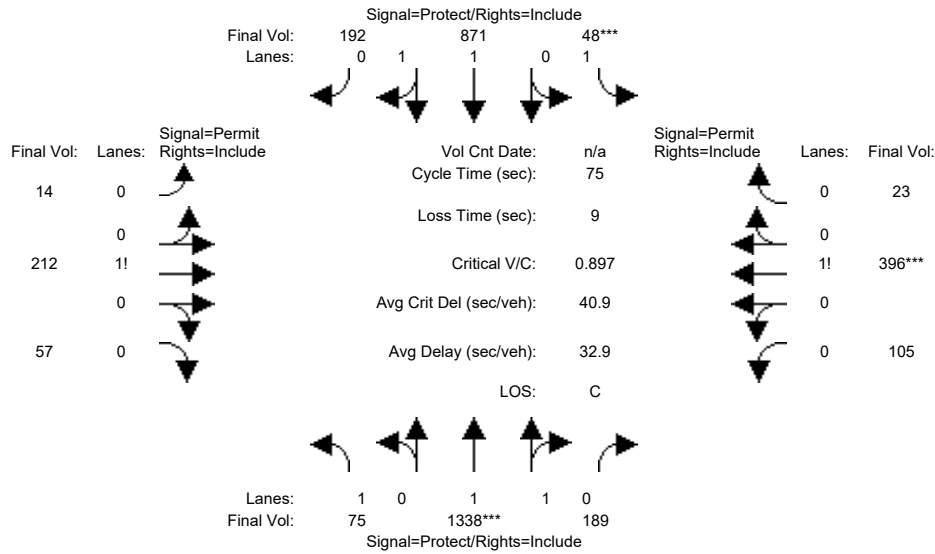
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.94	0.94	0.95	0.93	0.93	0.94	0.94	0.94	0.94	0.94	0.94
Lanes:	1.00	1.80	0.20	1.00	1.75	0.25	0.05	0.65	0.30	0.13	0.80	0.07
Final Sat.:	1805	3192	364	1805	3095	446	93	1165	531	229	1439	120

Capacity Analysis Module:												
Vol/Sat:	0.04	0.37	0.37	0.02	0.32	0.32	0.11	0.11	0.11	0.17	0.17	0.17
Crit Moves:	****			****						****		
Green Time:	10.0	30.3	30.3	7.0	27.3	27.3	13.7	13.7	13.7	13.7	13.7	13.7
Volume/Cap:	0.25	0.73	0.73	0.16	0.70	0.70	0.47	0.47	0.47	0.73	0.73	0.73
Uniform Del:	21.7	11.6	11.6	23.8	13.1	13.1	20.0	20.0	20.0	21.4	21.4	21.4
IncrementDel:	0.4	1.5	1.5	0.3	1.4	1.4	0.9	0.9	0.9	6.5	6.5	6.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	22.2	13.2	13.2	24.2	14.4	14.4	20.9	20.9	20.9	28.0	28.0	28.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	22.2	13.2	13.2	24.2	14.4	14.4	20.9	20.9	20.9	28.0	28.0	28.0
LOS by Move:	C	B	B	C	B	B	C	C	C	C	C	C
HCM2kAvgQ:	1	11	11	1	10	10	4	4	4	7	7	7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #13: (42) University Avenue and Bell Street



Street Name:	University Avenue						Bell Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:

Base Vol:	75	1338	189	48	871	192	14	212	57	105	396	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	1338	189	48	871	192	14	212	57	105	396	23
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	1338	189	48	871	192	14	212	57	105	396	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	75	1338	189	48	871	192	14	212	57	105	396	23
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	75	1338	189	48	871	192	14	212	57	105	396	23
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	75	1338	189	48	871	192	14	212	57	105	396	23

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.93	0.93	0.95	0.92	0.92	0.95	0.95	0.95	0.83	0.83	0.83
Lanes:	1.00	1.75	0.25	1.00	1.64	0.36	0.05	0.75	0.20	0.20	0.76	0.04
Final Sat.:	1805	3103	438	1805	2878	634	89	1352	363	317	1195	69

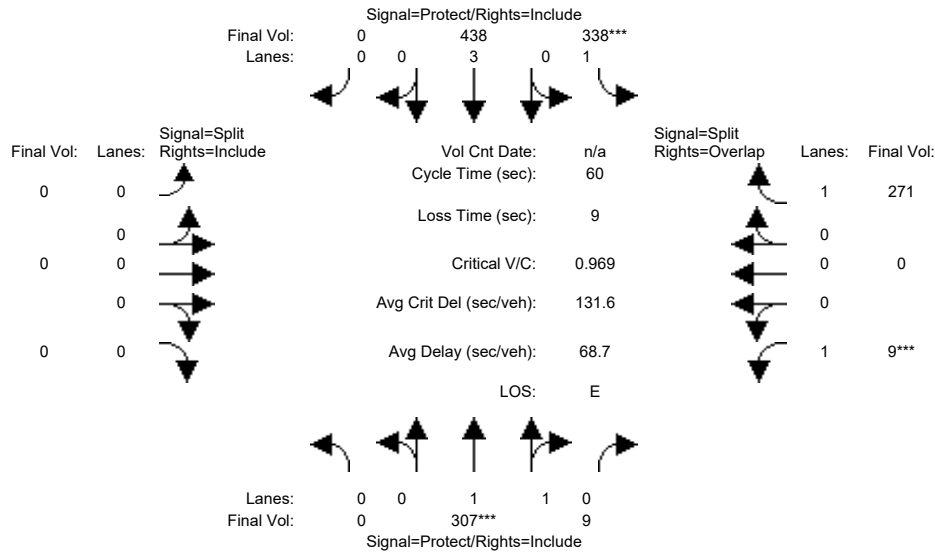
Capacity Analysis Module:

Vol/Sat:	0.04	0.43	0.43	0.03	0.30	0.30	0.16	0.16	0.16	0.33	0.33	0.33
Crit Moves:	****			****						****		
Green Time:	9.5	33.4	33.4	7.0	30.8	30.8	25.6	25.6	25.6	25.6	25.6	25.6
Volume/Cap:	0.33	0.97	0.97	0.28	0.74	0.74	0.46	0.46	0.46	0.97	0.97	0.97
Uniform Del:	29.8	20.3	20.3	31.7	18.6	18.6	19.3	19.3	19.3	24.3	24.3	24.3
IncrementDel:	0.8	16.0	16.0	0.9	2.0	2.0	0.5	0.5	0.5	30.9	30.9	30.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	30.7	36.3	36.3	32.6	20.7	20.7	19.8	19.8	19.8	55.2	55.2	55.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.7	36.3	36.3	32.6	20.7	20.7	19.8	19.8	19.8	55.2	55.2	55.2
LOS by Move:	C	D	D	C	C	C	B	B	B	E	E	E
HCM2kAvgQ:	2	25	25	1	12	12	5	5	5	18	18	18

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	307	9	338	438	0	0	0	0	9	0	271
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	307	9	338	438	0	0	0	0	9	0	271
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	307	9	338	438	0	0	0	0	9	0	271
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	307	9	338	438	0	0	0	0	9	0	271
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	307	9	338	438	0	0	0	0	9	0	271
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	307	9	338	438	0	0	0	0	9	0	271

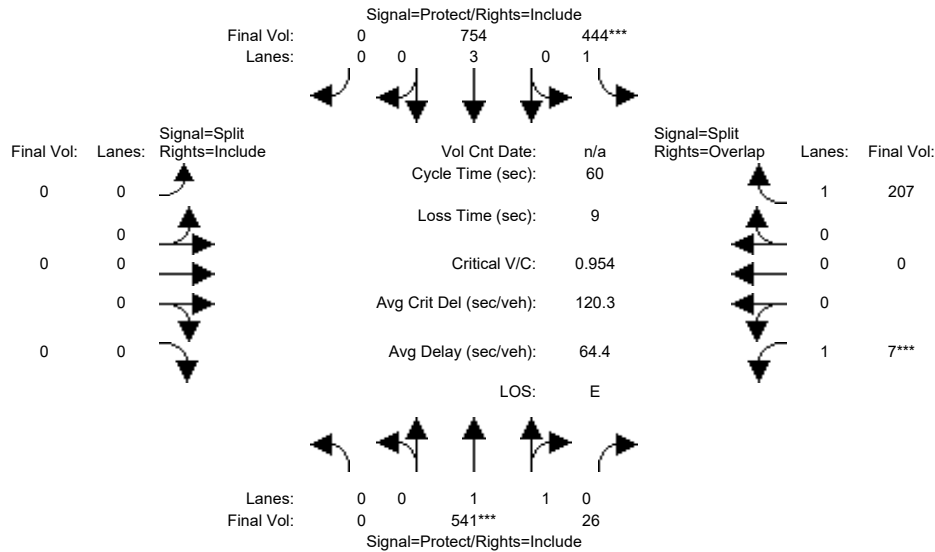
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.34	0.32	0.32	0.32	0.31	0.34	0.34	0.34	0.34	0.32	0.34	0.29
Lanes:	0.00	1.94	0.06	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1188	35	614	1764	0	0	0	0	614	0	549

Capacity Analysis Module:												
Vol/Sat:	0.00	0.26	0.26	0.55	0.25	0.00	0.00	0.00	0.00	0.01	0.00	0.49
Crit Moves:		****		****						****		
Green Time:	0.0	13.1	13.1	27.9	41.0	0.0	0.0	0.0	0.0	10.0	0.0	37.9
Volume/Cap:	0.00	1.18	1.18	1.18	0.36	0.00	0.00	0.00	0.00	0.09	0.00	0.78
Uniform Del:	0.0	23.5	23.5	16.0	4.0	0.0	0.0	0.0	0.0	21.1	0.0	8.0
IncrementDel:	0.0	114	114.4	112.7	0.2	0.0	0.0	0.0	0.0	0.4	0.0	10.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	138	137.8	128.8	4.2	0.0	0.0	0.0	0.0	21.5	0.0	18.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	138	137.8	128.8	4.2	0.0	0.0	0.0	0.0	21.5	0.0	18.9
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	B
HCM2kAvgQ:	0	9	9	16	2	0	0	0	0	0	0	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	541	26	444	754	0	0	0	0	7	0	207
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	541	26	444	754	0	0	0	0	7	0	207
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	541	26	444	754	0	0	0	0	7	0	207
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	541	26	444	754	0	0	0	0	7	0	207
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	541	26	444	754	0	0	0	0	7	0	207
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	541	26	444	754	0	0	0	0	7	0	207

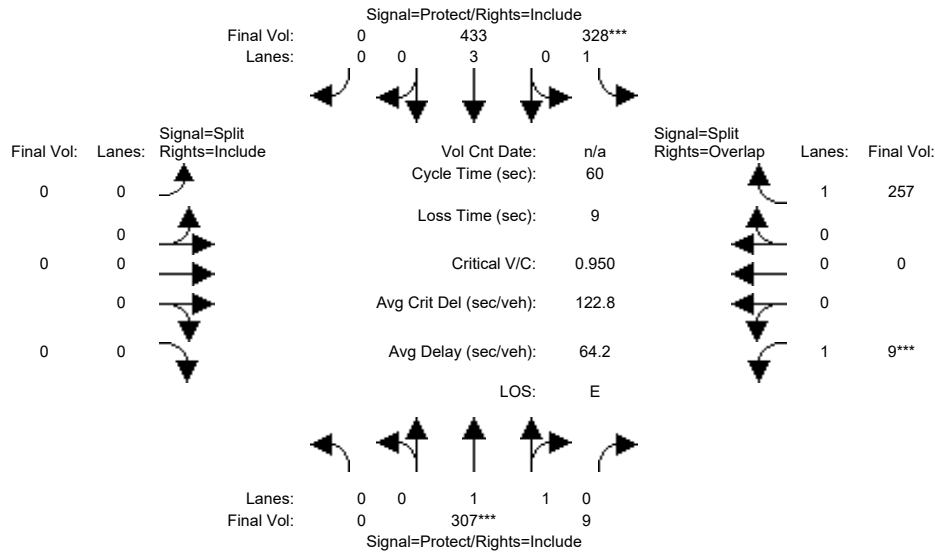
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.50	0.47	0.47	0.48	0.46	0.50	0.50	0.50	0.50	0.48	0.50	0.43
Lanes:	0.00	1.91	0.09	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1720	83	908	2609	0	0	0	0	908	0	812

Capacity Analysis Module:												
Vol/Sat:	0.00	0.31	0.31	0.49	0.29	0.00	0.00	0.00	0.00	0.01	0.00	0.25
Crit Moves:	****			****						****		
Green Time:	0.0	16.0	16.0	25.0	41.0	0.0	0.0	0.0	0.0	10.0	0.0	35.0
Volume/Cap:	0.00	1.18	1.18	1.18	0.42	0.00	0.00	0.00	0.00	0.05	0.00	0.44
Uniform Del:	0.0	22.0	22.0	17.5	4.2	0.0	0.0	0.0	0.0	21.0	0.0	7.0
IncrementDel:	0.0	99.1	99.1	103.5	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	121	121.0	121.0	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	121	121.0	121.0	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.7
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	A
HCM2kAvgQ:	0	14	14	20	3	0	0	0	0	0	0	3

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	307	9	328	433	0	0	0	0	9	0	257
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	307	9	328	433	0	0	0	0	9	0	257
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	307	9	328	433	0	0	0	0	9	0	257
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	307	9	328	433	0	0	0	0	9	0	257
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	307	9	328	433	0	0	0	0	9	0	257
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	307	9	328	433	0	0	0	0	9	0	257

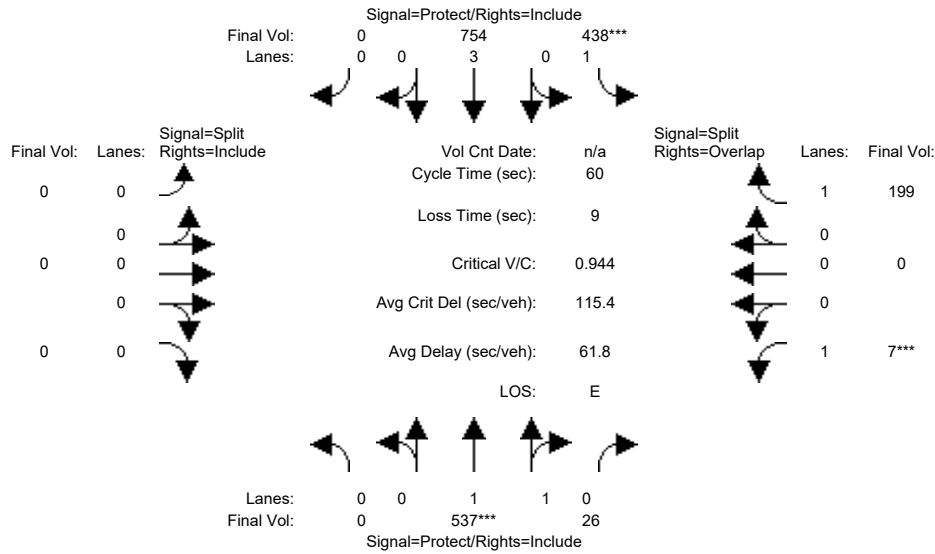
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.34	0.32	0.32	0.32	0.31	0.34	0.34	0.34	0.34	0.32	0.34	0.29
Lanes:	0.00	1.94	0.06	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1188	35	614	1764	0	0	0	0	614	0	549

Capacity Analysis Module:												
Vol/Sat:	0.00	0.26	0.26	0.53	0.25	0.00	0.00	0.00	0.00	0.01	0.00	0.47
Crit Moves:	****			****						****		
Green Time:	0.0	13.4	13.4	27.6	41.0	0.0	0.0	0.0	0.0	10.0	0.0	37.6
Volume/Cap:	0.00	1.16	1.16	1.16	0.36	0.00	0.00	0.00	0.00	0.09	0.00	0.75
Uniform Del:	0.0	23.3	23.3	16.2	4.0	0.0	0.0	0.0	0.0	21.1	0.0	7.8
IncemntDel:	0.0	105	105.0	104.1	0.2	0.0	0.0	0.0	0.0	0.4	0.0	8.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	128	128.4	120.3	4.2	0.0	0.0	0.0	0.0	21.5	0.0	16.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	128	128.4	120.3	4.2	0.0	0.0	0.0	0.0	21.5	0.0	16.5
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	B
HCM2kAvgQ:	0	9	9	15	2	0	0	0	0	0	0	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #20: (50) East Bayshore Road and Donohoe Street



Street Name:	East Bayshore Road						Donohoe Street					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	537	26	438	754	0	0	0	0	7	0	199
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	537	26	438	754	0	0	0	0	7	0	199
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	537	26	438	754	0	0	0	0	7	0	199
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	537	26	438	754	0	0	0	0	7	0	199
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	537	26	438	754	0	0	0	0	7	0	199
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	537	26	438	754	0	0	0	0	7	0	199

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.50	0.47	0.47	0.48	0.46	0.50	0.50	0.50	0.50	0.48	0.50	0.43
Lanes:	0.00	1.91	0.09	1.00	3.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Final Sat.:	0	1720	83	908	2609	0	0	0	0	908	0	812

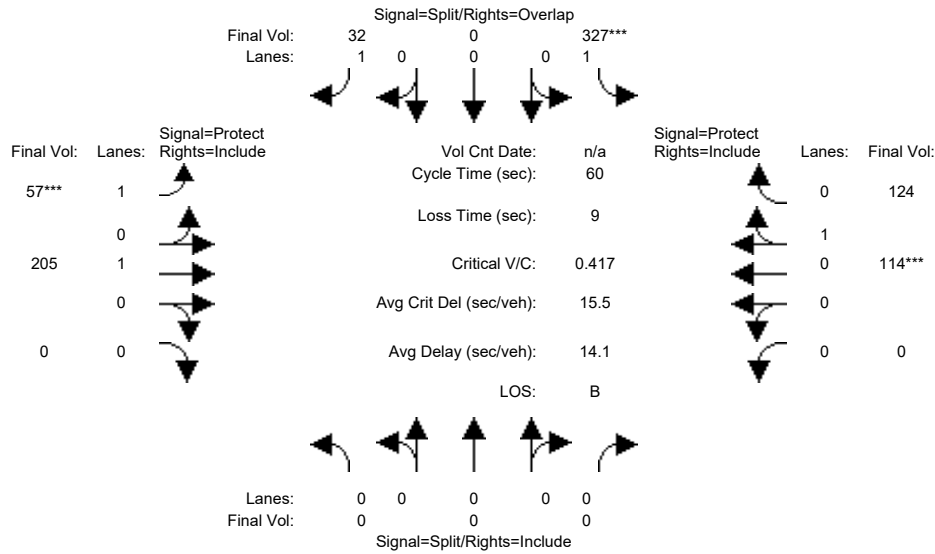
Capacity Analysis Module:												
Vol/Sat:	0.00	0.31	0.31	0.48	0.29	0.00	0.00	0.00	0.00	0.01	0.00	0.24
Crit Moves:	****			****						****		
Green Time:	0.0	16.1	16.1	24.9	41.0	0.0	0.0	0.0	0.0	10.0	0.0	34.9
Volume/Cap:	0.00	1.16	1.16	1.16	0.42	0.00	0.00	0.00	0.00	0.05	0.00	0.42
Uniform Del:	0.0	21.9	21.9	17.6	4.2	0.0	0.0	0.0	0.0	21.0	0.0	7.0
IncrementDel:	0.0	94.0	94.0	98.7	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	116	116.0	116.2	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	116	116.0	116.2	4.4	0.0	0.0	0.0	0.0	21.1	0.0	7.6
LOS by Move:	A	F	F	F	A	A	A	A	A	C	A	A
HCM2kAvgQ:	0	14	14	19	3	0	0	0	0	0	0	3

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	327	0	32	57	205	0	0	114	124
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	327	0	32	57	205	0	0	114	124
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	327	0	32	57	205	0	0	114	124
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	327	0	32	57	205	0	0	114	124
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	327	0	32	57	205	0	0	114	124
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	327	0	32	57	205	0	0	114	124

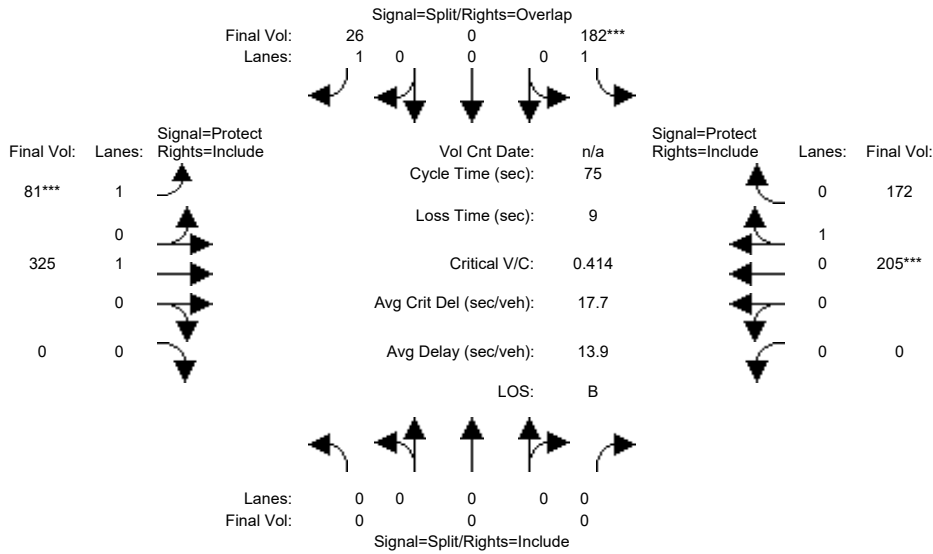
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.91	0.91
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.48	0.52
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	829	902

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.18	0.00	0.02	0.03	0.11	0.00	0.00	0.14	0.14
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	25.2	0.0	32.2	7.0	25.8	0.0	0.0	18.8	18.8
Volume/Cap:	0.00	0.00	0.00	0.44	0.00	0.04	0.28	0.26	0.00	0.00	0.44	0.44
Uniform Del:	0.0	0.0	0.0	12.4	0.0	6.6	24.2	11.0	0.0	0.0	16.4	16.4
IncrementDel:	0.0	0.0	0.0	0.4	0.0	0.0	0.7	0.2	0.0	0.0	0.6	0.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	12.8	0.0	6.6	24.9	11.1	0.0	0.0	17.0	17.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	12.8	0.0	6.6	24.9	11.1	0.0	0.0	17.0	17.0
LOS by Move:	A	A	A	B	A	A	C	B	A	A	B	B
HCM2kAvgQ:	0	0	0	5	0	0	1	3	0	0	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	182	0	26	81	325	0	0	205	172
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	182	0	26	81	325	0	0	205	172
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	182	0	26	81	325	0	0	205	172
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	182	0	26	81	325	0	0	205	172
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	182	0	26	81	325	0	0	205	172
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	182	0	26	81	325	0	0	205	172

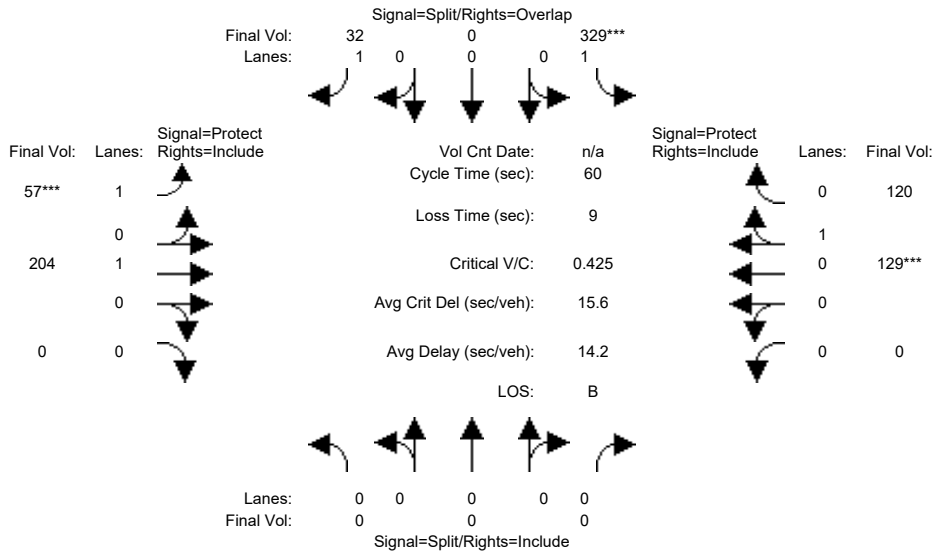
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.54	0.46
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	950	797

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.02	0.05	0.17	0.00	0.00	0.22	0.22
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	18.6	0.0	26.9	8.3	47.4	0.0	0.0	39.1	39.1
Volume/Cap:	0.00	0.00	0.00	0.41	0.00	0.05	0.41	0.28	0.00	0.00	0.41	0.41
Uniform Del:	0.0	0.0	0.0	23.6	0.0	15.7	31.1	6.2	0.0	0.0	11.0	11.0
IncrementDel:	0.0	0.0	0.0	0.6	0.0	0.0	1.4	0.1	0.0	0.0	0.3	0.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	24.3	0.0	15.7	32.5	6.3	0.0	0.0	11.3	11.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	24.3	0.0	15.7	32.5	6.3	0.0	0.0	11.3	11.3
LOS by Move:	A	A	A	C	A	B	C	A	A	A	B	B
HCM2kAvgQ:	0	0	0	4	0	0	2	3	0	0	5	5

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	329	0	32	57	204	0	0	129	120
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	329	0	32	57	204	0	0	129	120
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	329	0	32	57	204	0	0	129	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	329	0	32	57	204	0	0	129	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	329	0	32	57	204	0	0	129	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	329	0	32	57	204	0	0	129	120

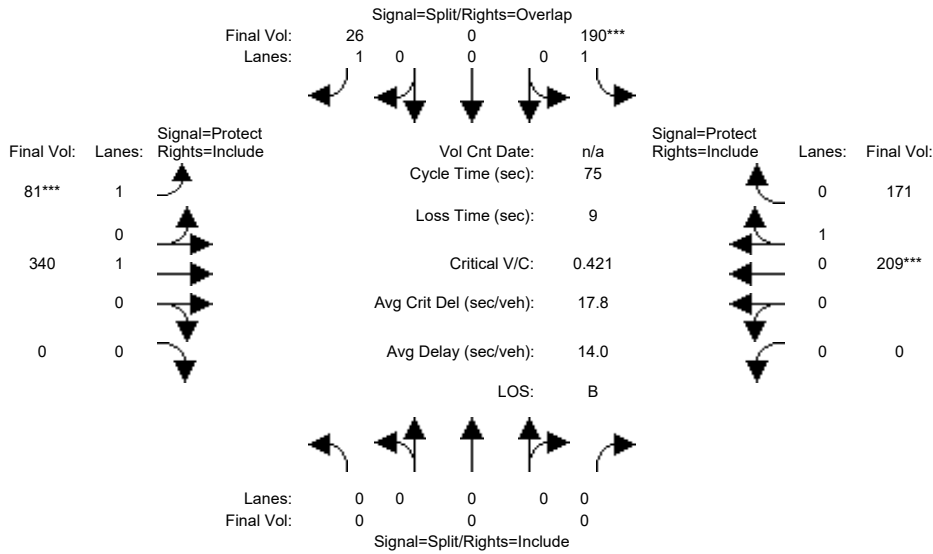
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.52	0.48
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	902	839

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.19	0.00	0.02	0.03	0.11	0.00	0.00	0.14	0.14
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	24.9	0.0	31.9	7.0	26.1	0.0	0.0	19.1	19.1
Volume/Cap:	0.00	0.00	0.00	0.45	0.00	0.04	0.28	0.25	0.00	0.00	0.45	0.45
Uniform Del:	0.0	0.0	0.0	12.6	0.0	6.7	24.2	10.7	0.0	0.0	16.2	16.2
IncrementDel:	0.0	0.0	0.0	0.4	0.0	0.0	0.7	0.2	0.0	0.0	0.6	0.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	13.1	0.0	6.7	24.9	10.9	0.0	0.0	16.8	16.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	13.1	0.0	6.7	24.9	10.9	0.0	0.0	16.8	16.8
LOS by Move:	A	A	A	B	A	A	C	B	A	A	B	B
HCM2kAvgQ:	0	0	0	5	0	0	1	2	0	0	4	4

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #25: (54) East Bayshore Road and Clarke Avenue



Street Name:	East Bayshore Road						Clarke Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	190	0	26	81	340	0	0	209	171
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	190	0	26	81	340	0	0	209	171
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	190	0	26	81	340	0	0	209	171
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	190	0	26	81	340	0	0	209	171
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	190	0	26	81	340	0	0	209	171
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	190	0	26	81	340	0	0	209	171

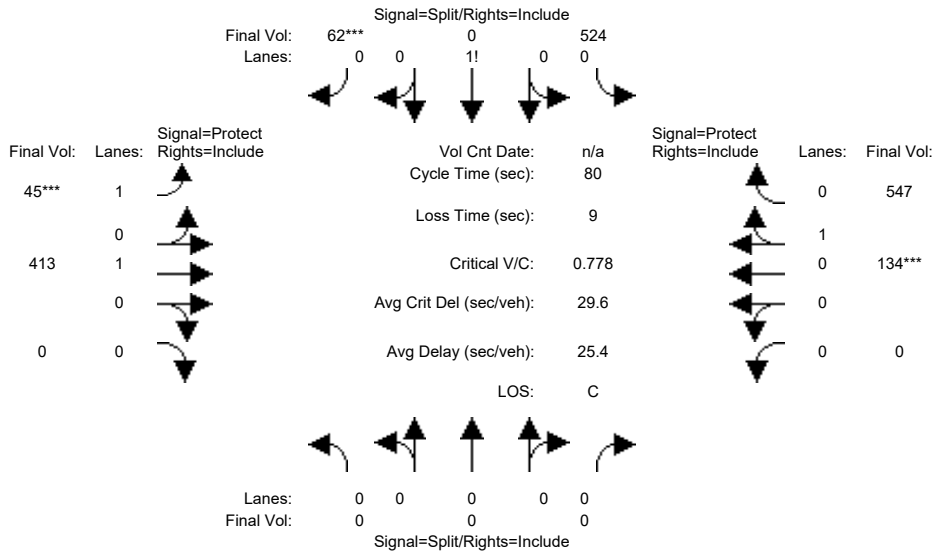
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.93	1.00	0.83	0.93	0.98	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.55	0.45
Final Sat.:	0	0	0	1769	0	1583	1769	1862	0	0	962	787

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.11	0.00	0.02	0.05	0.18	0.00	0.00	0.22	0.22
Crit Moves:				****			****			****		
Green Time:	0.0	0.0	0.0	19.1	0.0	27.3	8.2	46.9	0.0	0.0	38.7	38.7
Volume/Cap:	0.00	0.00	0.00	0.42	0.00	0.05	0.42	0.29	0.00	0.00	0.42	0.42
Uniform Del:	0.0	0.0	0.0	23.3	0.0	15.4	31.2	6.5	0.0	0.0	11.2	11.2
IncrementDel:	0.0	0.0	0.0	0.6	0.0	0.0	1.5	0.1	0.0	0.0	0.3	0.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	23.9	0.0	15.5	32.7	6.6	0.0	0.0	11.5	11.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	23.9	0.0	15.5	32.7	6.6	0.0	0.0	11.5	11.5
LOS by Move:	A	A	A	C	A	B	C	A	A	A	B	B
HCM2kAvgQ:	0	0	0	4	0	0	2	4	0	0	6	6

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	524	0	62	45	413	0	0	134	547
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	524	0	62	45	413	0	0	134	547
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	524	0	62	45	413	0	0	134	547
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	524	0	62	45	413	0	0	134	547
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	524	0	62	45	413	0	0	134	547
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	0	0	524	0	62	45	413	0	0	134	547

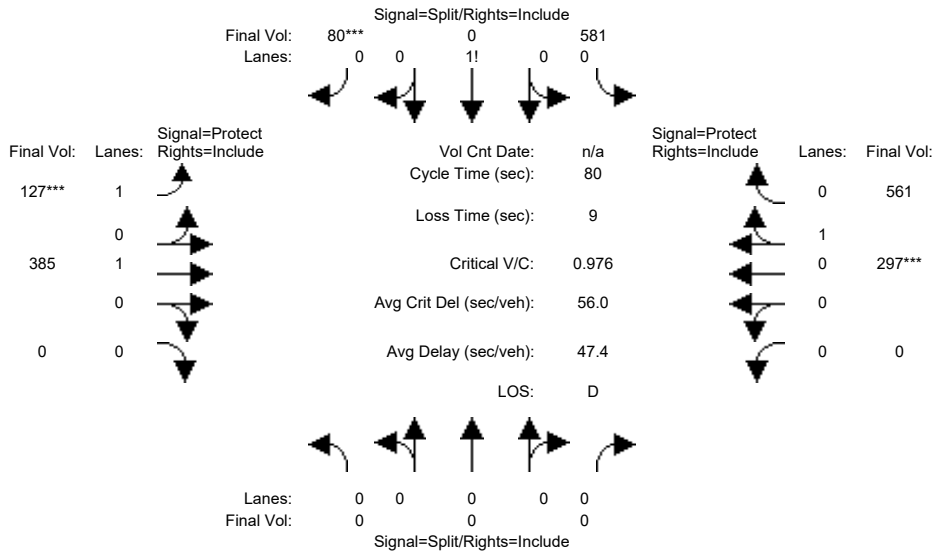
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.89	0.00	0.11	1.00	1.00	0.00	0.00	0.20	0.80
Final Sat.:	0	0	0	1699	0	201	1900	1900	0	0	374	1526

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.31	0.00	0.31	0.02	0.22	0.00	0.00	0.36	0.36
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	29.6	0.0	29.6	7.0	41.4	0.0	0.0	34.4	34.4
Volume/Cap:	0.00	0.00	0.00	0.83	0.00	0.83	0.27	0.42	0.00	0.00	0.83	0.83
Uniform Del:	0.0	0.0	0.0	23.0	0.0	23.0	34.1	11.9	0.0	0.0	20.3	20.3
IncrementDel:	0.0	0.0	0.0	8.5	0.0	8.5	0.9	0.3	0.0	0.0	7.4	7.4
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	31.4	0.0	31.4	35.0	12.2	0.0	0.0	27.6	27.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	31.4	0.0	31.4	35.0	12.2	0.0	0.0	27.6	27.6
LOS by Move:	A	A	A	C	A	C	C	B	A	A	C	C
HCM2kAvgQ:	0	0	0	16	0	16	1	6	0	0	17	17

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	581	0	80	127	385	0	0	297	561
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	581	0	80	127	385	0	0	297	561
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	581	0	80	127	385	0	0	297	561
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	581	0	80	127	385	0	0	297	561
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	581	0	80	127	385	0	0	297	561
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	581	0	80	127	385	0	0	297	561

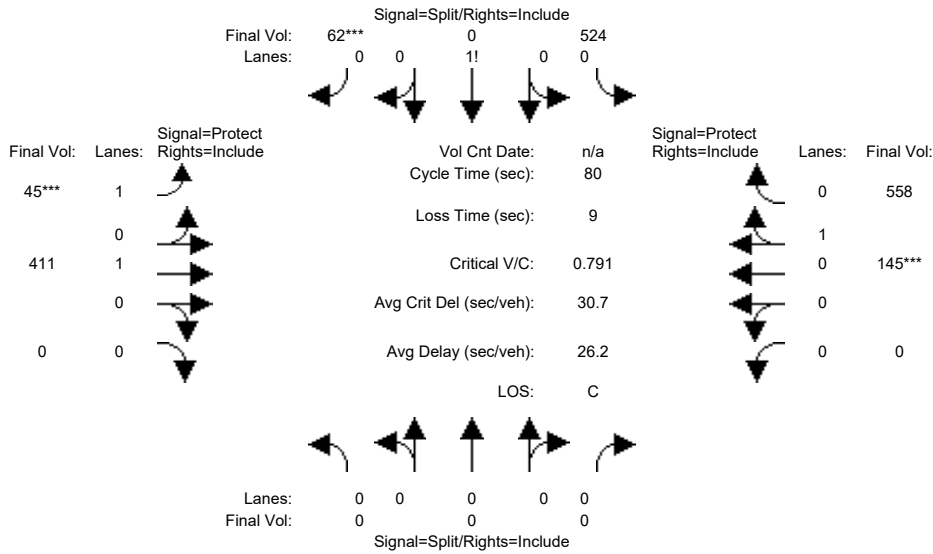
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.88	0.00	0.12	1.00	1.00	0.00	0.00	0.35	0.65
Final Sat.:	0	0	0	1670	0	230	1900	1900	0	0	658	1242

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.35	0.00	0.35	0.07	0.20	0.00	0.00	0.45	0.45
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	27.8	0.0	27.8	7.0	43.2	0.0	0.0	36.2	36.2
Volume/Cap:	0.00	0.00	0.00	1.00	0.00	1.00	0.76	0.38	0.00	0.00	1.00	1.00
Uniform Del:	0.0	0.0	0.0	26.1	0.0	26.1	35.7	10.6	0.0	0.0	21.9	21.9
IncrementDel:	0.0	0.0	0.0	34.8	0.0	34.8	18.7	0.2	0.0	0.0	30.5	30.5
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	60.9	0.0	60.9	54.4	10.9	0.0	0.0	52.5	52.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	60.9	0.0	60.9	54.4	10.9	0.0	0.0	52.5	52.5
LOS by Move:	A	A	A	E	A	E	D	B	A	A	D	D
HCM2kAvgQ:	0	0	0	24	0	24	5	6	0	0	29	29

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Pugas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	524	0	62	45	411	0	0	145	558
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	524	0	62	45	411	0	0	145	558
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	524	0	62	45	411	0	0	145	558
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	524	0	62	45	411	0	0	145	558
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	524	0	62	45	411	0	0	145	558
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	524	0	62	45	411	0	0	145	558

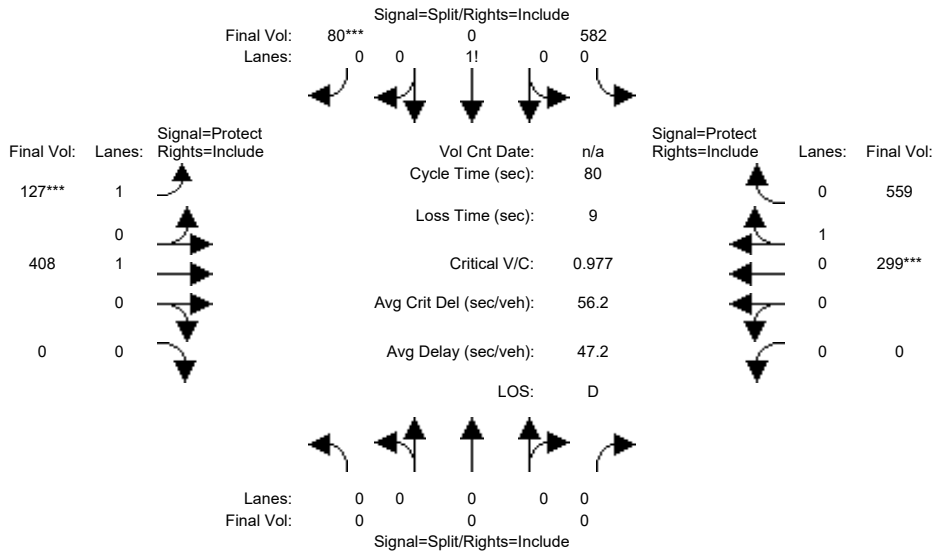
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.89	0.00	0.11	1.00	1.00	0.00	0.00	0.21	0.79
Final Sat.:	0	0	0	1699	0	201	1900	1900	0	0	392	1508

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.31	0.00	0.31	0.02	0.22	0.00	0.00	0.37	0.37
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	29.1	0.0	29.1	7.0	41.9	0.0	0.0	34.9	34.9
Volume/Cap:	0.00	0.00	0.00	0.85	0.00	0.85	0.27	0.41	0.00	0.00	0.85	0.85
Uniform Del:	0.0	0.0	0.0	23.4	0.0	23.4	34.1	11.6	0.0	0.0	20.2	20.2
IncrementDel:	0.0	0.0	0.0	9.6	0.0	9.6	0.9	0.3	0.0	0.0	8.2	8.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	33.1	0.0	33.1	35.0	11.9	0.0	0.0	28.4	28.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.1	0.0	33.1	35.0	11.9	0.0	0.0	28.4	28.4
LOS by Move:	A	A	A	C	A	C	C	B	A	A	C	C
HCM2kAvgQ:	0	0	0	16	0	16	1	6	0	0	18	18

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #31: (55) Pulgas Avenue and East Bayshore Road



Street Name:	Puglas Avenue						East Bayshore Road					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	0	0	0	10	0	10	7	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	0	0	582	0	80	127	408	0	0	299	559
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	582	0	80	127	408	0	0	299	559
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	582	0	80	127	408	0	0	299	559
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	0	0	582	0	80	127	408	0	0	299	559
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	582	0	80	127	408	0	0	299	559
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	582	0	80	127	408	0	0	299	559

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	0.88	0.00	0.12	1.00	1.00	0.00	0.00	0.35	0.65
Final Sat.:	0	0	0	1670	0	230	1900	1900	0	0	662	1238

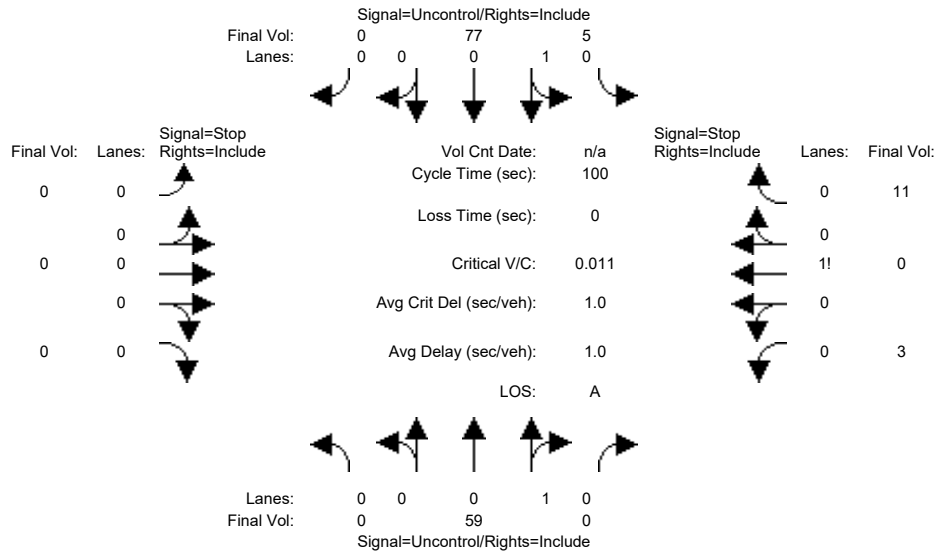
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.35	0.00	0.35	0.07	0.21	0.00	0.00	0.45	0.45
Crit Moves:						****	****				****	
Green Time:	0.0	0.0	0.0	27.9	0.0	27.9	7.0	43.1	0.0	0.0	36.1	36.1
Volume/Cap:	0.00	0.00	0.00	1.00	0.00	1.00	0.76	0.40	0.00	0.00	1.00	1.00
Uniform Del:	0.0	0.0	0.0	26.1	0.0	26.1	35.7	10.8	0.0	0.0	21.9	21.9
IncrementDel:	0.0	0.0	0.0	35.0	0.0	35.0	18.7	0.3	0.0	0.0	30.7	30.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	61.0	0.0	61.0	54.4	11.1	0.0	0.0	52.7	52.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	61.0	0.0	61.0	54.4	11.1	0.0	0.0	52.7	52.7
LOS by Move:	A	A	A	E	A	E	D	B	A	A	D	D
HCM2kAvgQ:	0	0	0	24	0	24	5	6	0	0	29	29

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton No Project AM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 12 columns representing movements and 2 rows of critical gap data including Critical Gp and FollowUpTim.

Table with 12 columns representing movements and 4 rows of capacity data including Cnflct Vol, Potent Cap., Move Cap., and Volume/Cap.

Table with 12 columns representing movements and 10 rows of level of service data including 2Way95thQ, Control Del, LOS by Move, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*
Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	8.8

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=14]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=155]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11

Major Street Volume: 141  
 Minor Approach Volume: 14  
 Minor Approach Volume Threshold: 742

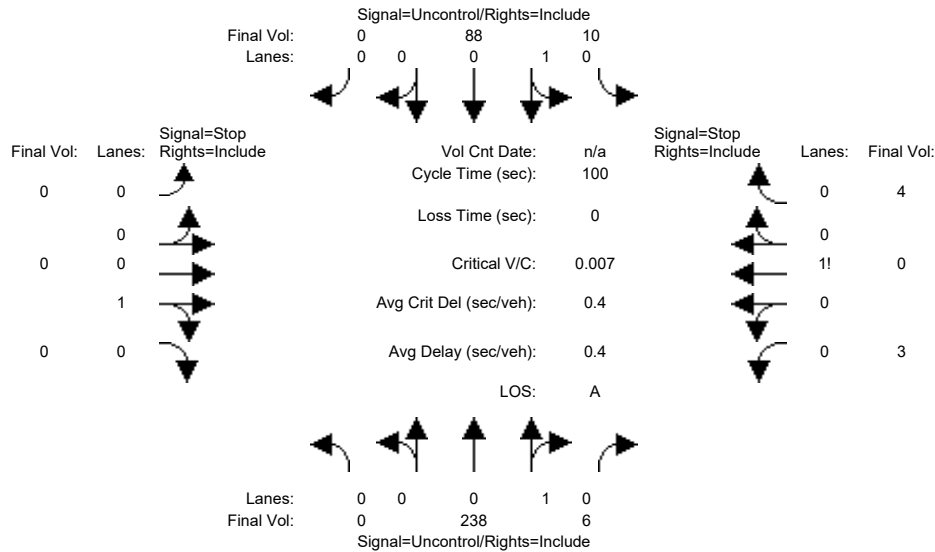
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton No Project PM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 12 columns representing movements and 2 rows of critical gap data including Critical Gap and FollowUp Time.

Table with 12 columns representing movements and 5 rows of capacity data including Conflict Vol, Potent Cap, Move Cap, and Volume/Cap.

Table with 12 columns representing movements and 10 rows of level of service data including 2Way95thQ, Control Del, LOS by Move, Shared Cap, Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	10.0

Approach[westbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=0.0]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=7]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=349]  
FAIL - Total volume less than 650 for intersection  
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #32 (51) East Bayshore Road and Holland Street  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4

Major Street Volume: 342  
Minor Approach Volume: 7  
Minor Approach Volume Threshold: 506

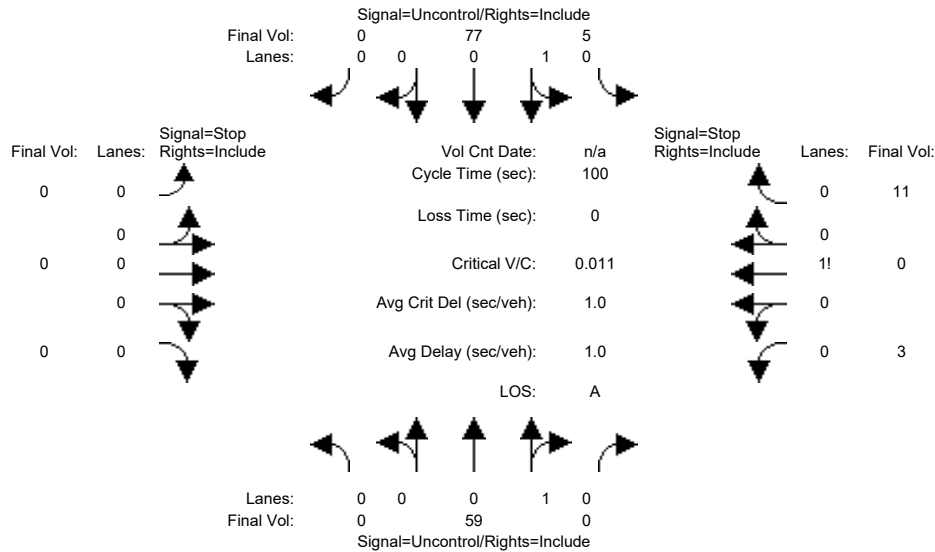
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton WITH Project AM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 12 columns representing movements and 2 rows of critical gap data including Critical Gp and FollowUpTim.

Table with 12 columns representing movements and 4 rows of capacity data including Cnflct Vol, Potent Cap., Move Cap., and Volume/Cap.

Table with 12 columns representing movements and 10 rows of level of service data including 2Way95thQ, Control Del, LOS by Move, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*
Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	8.8

Approach[westbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=0.0]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=14]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=155]  
FAIL - Total volume less than 650 for intersection  
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #32 (51) East Bayshore Road and Holland Street  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 1 0 0	0 1 0 0 0	0 0 0 0 0	0 0 1! 0 0
Initial Vol:	0 59 0	5 77 0	0 0 0 0	3 0 11

Major Street Volume: 141  
Minor Approach Volume: 14  
Minor Approach Volume Threshold: 742

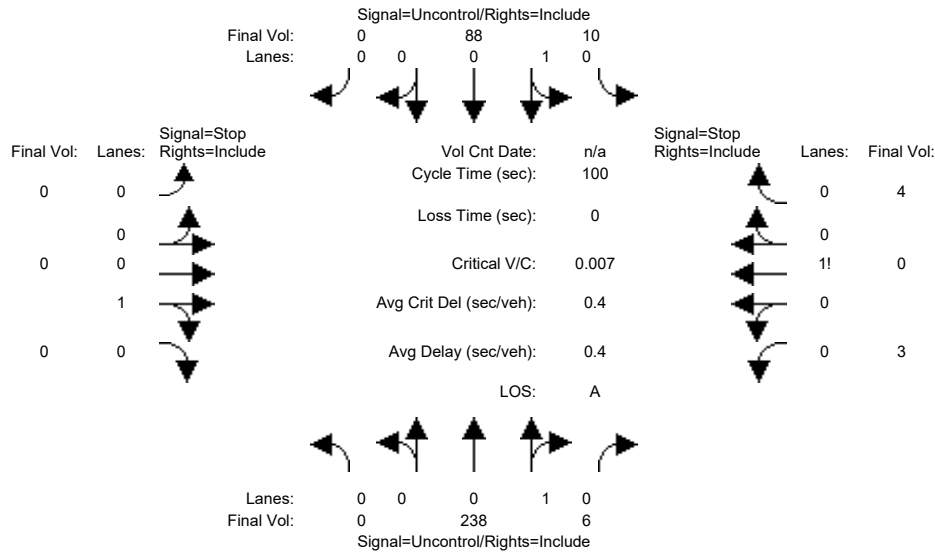
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton WITH Project PM

Intersection #32: (51) East Bayshore Road and Holland Street



Street Name: East Bayshore Road Holland Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume).

Table for Critical Gap Module with 12 columns and 2 rows (Critical Gp, FollowUpTim).

Table for Capacity Module with 12 columns and 4 rows (Cnflct Vol, Potent Cap., Move Cap., Volume/Cap.).

Table for Level Of Service Module with 12 columns and 10 rows (2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS).

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #32 (51) East Bayshore Road and Holland Street
\*\*\*\*\*
Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4
ApproachDel:	xxxxxxx	xxxxxxx	xxxxxxx	10.0

Approach[westbound][lanes=1][control=Stop Sign]  
 Signal Warrant Rule #1: [vehicle-hours=0.0]  
 FAIL - Vehicle-hours less than 4 for one lane approach.  
 Signal Warrant Rule #2: [approach volume=7]  
 FAIL - Approach volume less than 100 for one lane approach.  
 Signal Warrant Rule #3: [approach count=3][total volume=349]  
 FAIL - Total volume less than 650 for intersection  
 with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
 Intersection #32 (51) East Bayshore Road and Holland Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	0 0 0 1 0	0 1 0 0 0	0 0 0 1 0	0 0 1! 0 0
Initial Vol:	0 238 6	10 88 0	0 0 0 0	3 0 4

Major Street Volume: 342  
 Minor Approach Volume: 7  
 Minor Approach Volume Threshold: 506

SIGNAL WARRANT DISCLAIMER

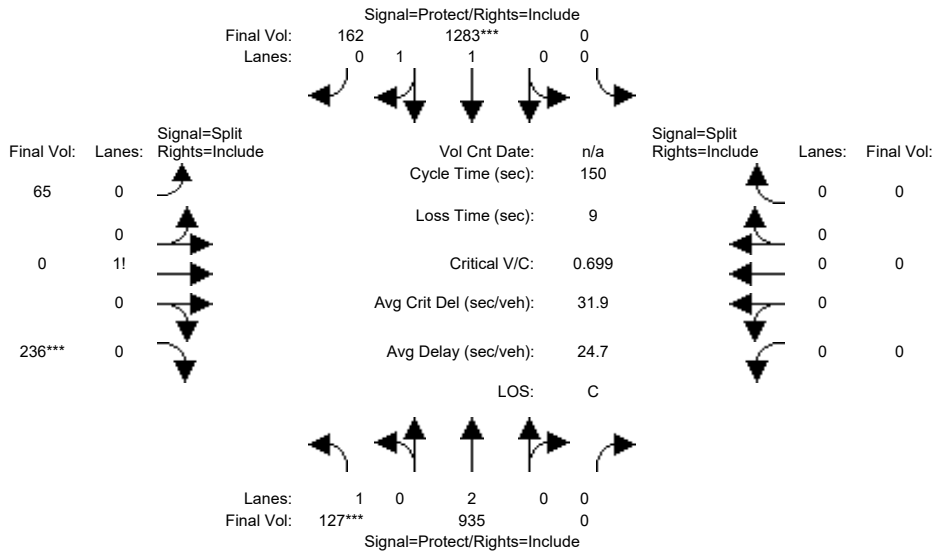
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	127	935	0	0	1283	162	65	0	236	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	127	935	0	0	1283	162	65	0	236	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	127	935	0	0	1283	162	65	0	236	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	127	935	0	0	1283	162	65	0	236	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	127	935	0	0	1283	162	65	0	236	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	127	935	0	0	1283	162	65	0	236	0	0	0

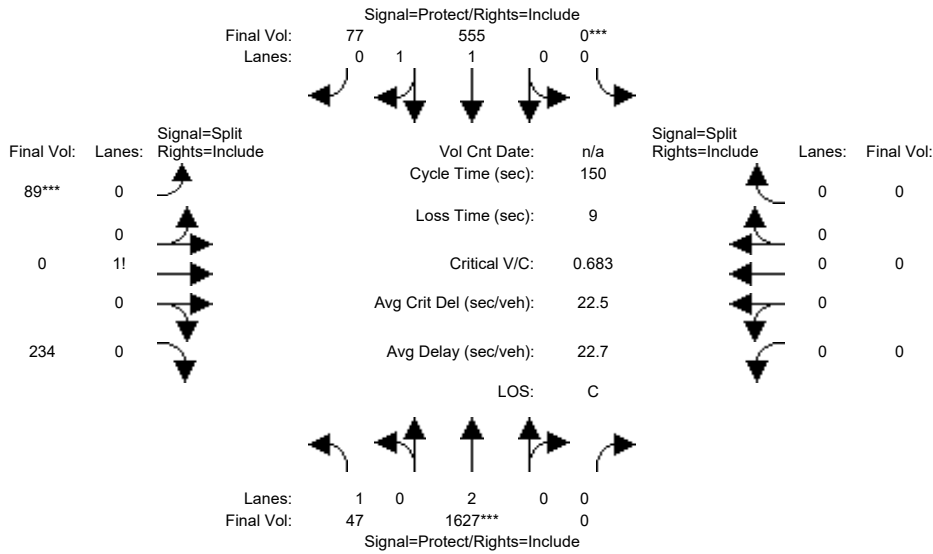
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.88	1.00	0.88	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.78	0.22	0.22	0.00	0.78	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3151	398	363	0	1317	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.07	0.26	0.00	0.00	0.41	0.41	0.18	0.00	0.18	0.00	0.00	0.00
Crit Moves:	***				****				****			
Green Time:	15.1	103	0.0	0.0	87.4	87.4	38.5	0.0	38.5	0.0	0.0	0.0
Volume/Cap:	0.70	0.38	0.00	0.00	0.70	0.70	0.70	0.00	0.70	0.00	0.00	0.00
Uniform Del:	65.2	10.1	0.0	0.0	22.0	22.0	50.5	0.0	50.5	0.0	0.0	0.0
IncrementDel:	11.4	0.1	0.0	0.0	1.1	1.1	5.0	0.0	5.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	76.6	10.2	0.0	0.0	23.1	23.1	55.5	0.0	55.5	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	76.6	10.2	0.0	0.0	23.1	23.1	55.5	0.0	55.5	0.0	0.0	0.0
LOS by Move:	E	B	A	A	C	C	E	A	E	A	A	A
HCM2kAvgQ:	7	9	0	0	25	25	13	0	13	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	47	1627	0	0	555	77	89	0	234	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	47	1627	0	0	555	77	89	0	234	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	47	1627	0	0	555	77	89	0	234	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	47	1627	0	0	555	77	89	0	234	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	47	1627	0	0	555	77	89	0	234	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	47	1627	0	0	555	77	89	0	234	0	0	0

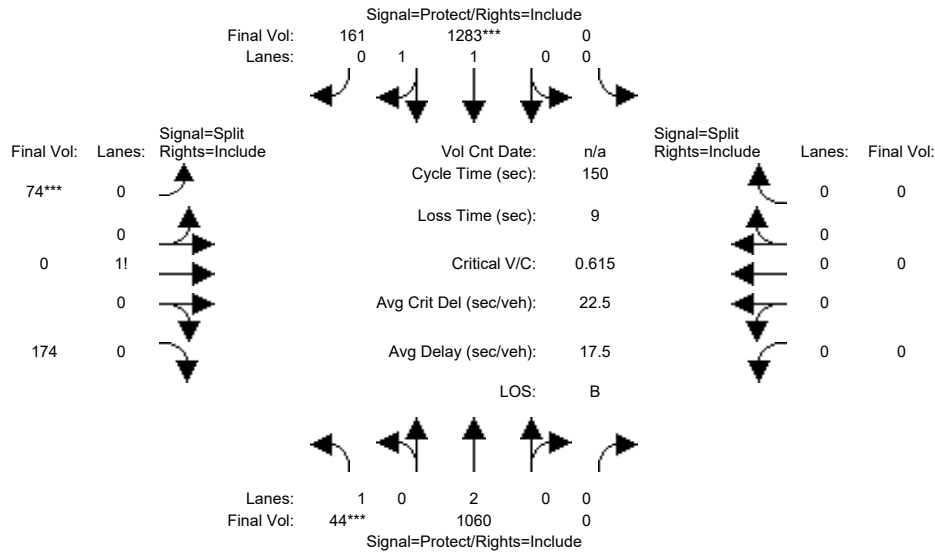
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.89	1.00	0.89	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.76	0.24	0.28	0.00	0.72	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3113	432	466	0	1224	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.03	0.45	0.00	0.00	0.18	0.18	0.19	0.00	0.19	0.00	0.00	0.00
Crit Moves:	****			****			****					
Green Time:	20.5	99.0	0.0	0.0	78.5	78.5	42.0	0.0	42.0	0.0	0.0	0.0
Volume/Cap:	0.19	0.68	0.00	0.00	0.34	0.34	0.68	0.00	0.68	0.00	0.00	0.00
Uniform Del:	57.4	15.8	0.0	0.0	20.8	20.8	48.1	0.0	48.1	0.0	0.0	0.0
IncrementDel:	0.4	0.8	0.0	0.0	0.1	0.1	4.1	0.0	4.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	57.7	16.6	0.0	0.0	20.9	20.9	52.2	0.0	52.2	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.7	16.6	0.0	0.0	20.9	20.9	52.2	0.0	52.2	0.0	0.0	0.0
LOS by Move:	E	B	A	A	C	C	D	A	D	A	A	A
HCM2kAvgQ:	2	24	0	0	9	9	14	0	14	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	44	1060	0	0	1283	161	74	0	174	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	44	1060	0	0	1283	161	74	0	174	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	44	1060	0	0	1283	161	74	0	174	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	44	1060	0	0	1283	161	74	0	174	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	44	1060	0	0	1283	161	74	0	174	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	44	1060	0	0	1283	161	74	0	174	0	0	0

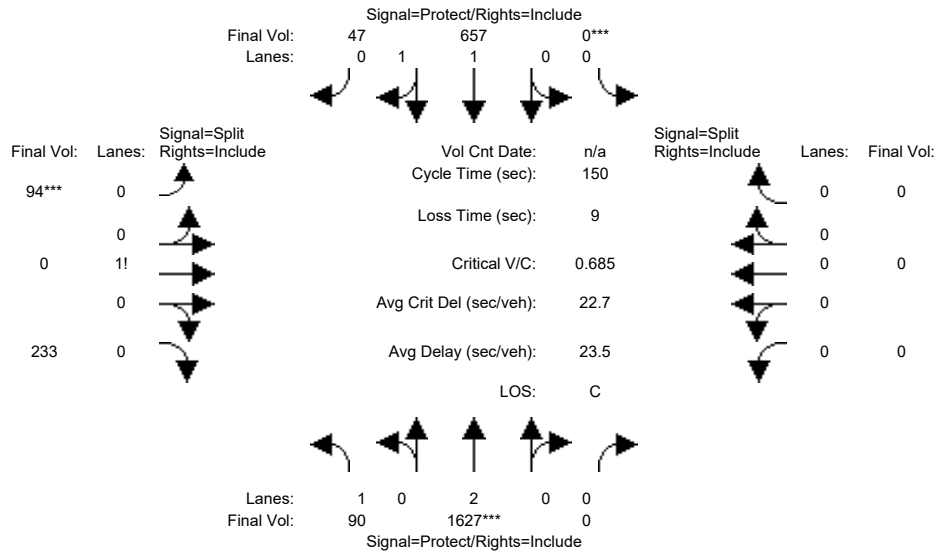
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.93	0.93	0.89	1.00	0.89	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.78	0.22	0.30	0.00	0.70	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3153	396	505	0	1188	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.02	0.29	0.00	0.00	0.41	0.41	0.15	0.00	0.15	0.00	0.00	0.00
Crit Moves:	***			****			****					
Green Time:	7.0	106	0.0	0.0	98.5	98.5	35.5	0.0	35.5	0.0	0.0	0.0
Volume/Cap:	0.52	0.42	0.00	0.00	0.62	0.62	0.62	0.00	0.62	0.00	0.00	0.00
Uniform Del:	69.9	9.3	0.0	0.0	14.9	14.9	51.2	0.0	51.2	0.0	0.0	0.0
IncrementDel:	5.8	0.1	0.0	0.0	0.5	0.5	3.0	0.0	3.0	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	75.7	9.4	0.0	0.0	15.4	15.4	54.2	0.0	54.2	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	75.7	9.4	0.0	0.0	15.4	15.4	54.2	0.0	54.2	0.0	0.0	0.0
LOS by Move:	E	A	A	A	B	B	D	A	D	A	A	A
HCM2kAvgQ:	3	10	0	0	20	20	11	0	11	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #33: (39.2) University Avenue and Kavanaugh Drive



Street Name:	University Avenue						Kavanaugh Drive					
	North Bound			South Bound			East Bound			West Bound		
Approach:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	0	0	10	10	10	0	10	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	90	1627	0	0	657	47	94	0	233	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	90	1627	0	0	657	47	94	0	233	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	90	1627	0	0	657	47	94	0	233	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	90	1627	0	0	657	47	94	0	233	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	1627	0	0	657	47	94	0	233	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	90	1627	0	0	657	47	94	0	233	0	0	0

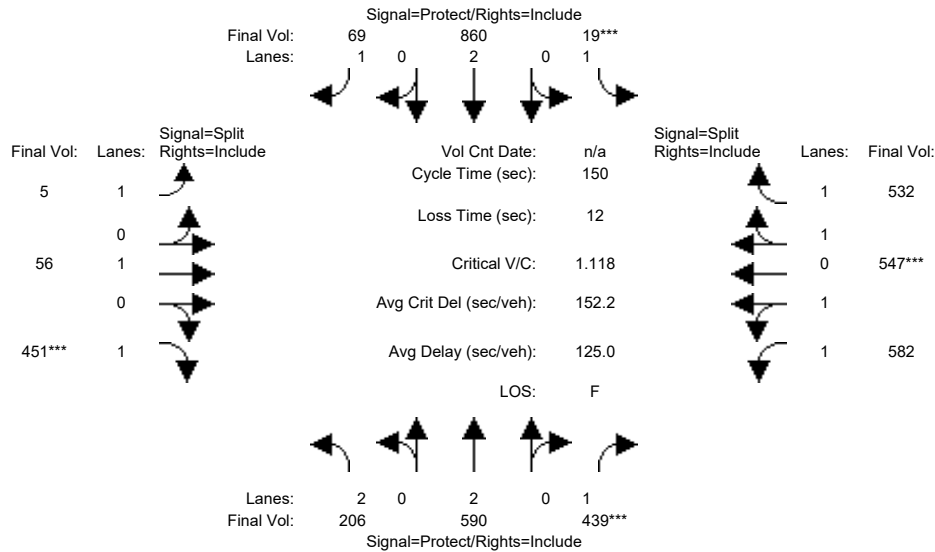
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.94	0.94	0.89	1.00	0.89	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.87	0.13	0.29	0.00	0.71	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	3335	239	487	0	1207	0	0	0

Capacity Analysis Module:												
Vol/Sat:	0.05	0.45	0.00	0.00	0.20	0.20	0.19	0.00	0.19	0.00	0.00	0.00
Crit Moves:	****		****				****					
Green Time:	19.9	98.7	0.0	0.0	78.8	78.8	42.3	0.0	42.3	0.0	0.0	0.0
Volume/Cap:	0.38	0.68	0.00	0.00	0.38	0.38	0.68	0.00	0.68	0.00	0.00	0.00
Uniform Del:	59.3	16.0	0.0	0.0	21.1	21.1	47.9	0.0	47.9	0.0	0.0	0.0
IncrementDel:	1.0	0.8	0.0	0.0	0.1	0.1	4.1	0.0	4.1	0.0	0.0	0.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	60.3	16.8	0.0	0.0	21.2	21.2	52.0	0.0	52.0	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	60.3	16.8	0.0	0.0	21.2	21.2	52.0	0.0	52.0	0.0	0.0	0.0
LOS by Move:	E	B	A	A	C	C	D	A	D	A	A	A
HCM2kAvgQ:	4	24	0	0	10	10	14	0	14	0	0	0

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:

Base Vol:	206	590	439	19	860	69	5	56	451	582	547	532
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	206	590	439	19	860	69	5	56	451	582	547	532
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	206	590	439	19	860	69	5	56	451	582	547	532
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	206	590	439	19	860	69	5	56	451	582	547	532
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	206	590	439	19	860	69	5	56	451	582	547	532
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	206	590	439	19	860	69	5	56	451	582	547	532

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.75	0.67	0.75	0.75	0.67	0.75	0.79	0.67	0.70	0.70	0.70
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.40	1.32	1.28
Final Sat.:	2749	2834	1268	1417	2834	1268	1417	1492	1268	1858	1747	1699

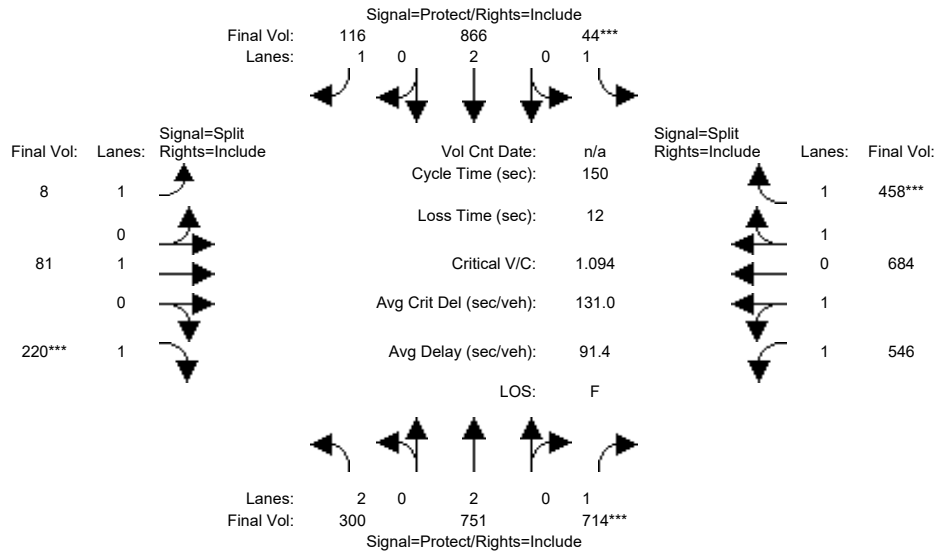
Capacity Analysis Module:

Vol/Sat:	0.07	0.21	0.35	0.01	0.30	0.05	0.00	0.04	0.36	0.31	0.31	0.31
Crit Moves:			****	****					****	****	****	****
Green Time:	10.6	43.7	43.7	10.0	43.0	43.0	44.9	44.9	44.9	39.5	39.5	39.5
Volume/Cap:	1.06	0.72	1.19	0.20	1.06	0.19	0.01	0.13	1.19	1.19	1.19	1.19
Uniform Del:	69.7	47.6	53.2	66.2	53.5	40.3	37.0	38.3	52.6	55.3	55.3	55.3
IncrementDel:	80.6	3.0	109.3	1.1	48.0	0.3	0.0	0.1	108.7	92.8	92.8	92.8
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	150.3	50.6	162.4	67.3	101	40.6	37.0	38.4	161.3	148.0	148	148.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	150.3	50.6	162.4	67.3	101	40.6	37.0	38.4	161.3	148.0	148	148.0
LOS by Move:	F	D	F	E	F	D	D	D	F	F	F	F
HCM2kAvgQ:	8	14	31	1	28	2	0	2	32	31	31	31

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	11	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:

Base Vol:	300	751	714	44	866	116	8	81	220	546	684	458
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	300	751	714	44	866	116	8	81	220	546	684	458
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	300	751	714	44	866	116	8	81	220	546	684	458
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	300	751	714	44	866	116	8	81	220	546	684	458
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	300	751	714	44	866	116	8	81	220	546	684	458
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	300	751	714	44	866	116	8	81	220	546	684	458

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.78	0.80	0.72	0.80	0.80	0.72	0.80	0.85	0.72	0.76	0.76	0.76
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.29	1.62	1.09
Final Sat.:	2959	3050	1365	1525	3050	1365	1525	1606	1365	1862	2333	1562

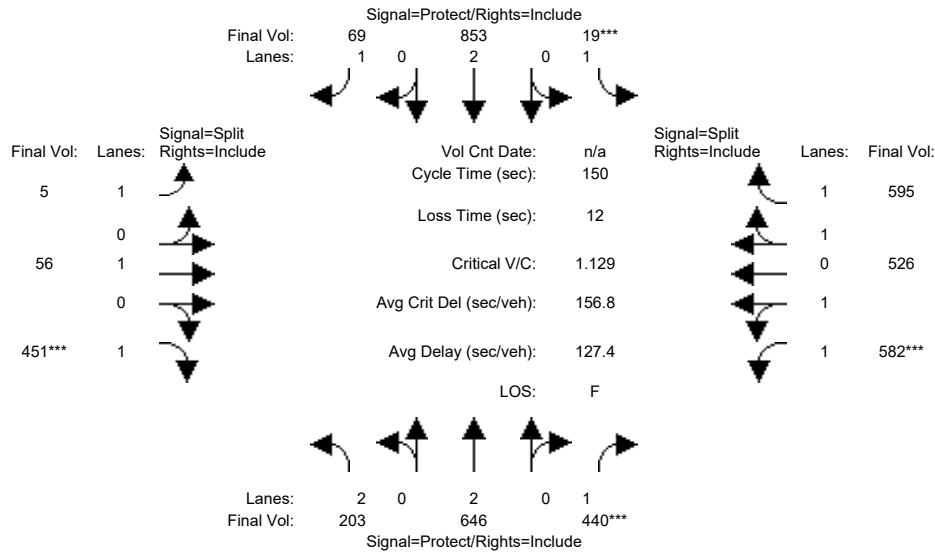
Capacity Analysis Module:

Vol/Sat:	0.10	0.25	0.52	0.03	0.28	0.09	0.01	0.05	0.16	0.29	0.29	0.29
Crit Moves:			****	****					****			****
Green Time:	20.7	68.5	68.5	10.0	57.8	57.8	21.1	21.1	21.1	38.4	38.4	38.4
Volume/Cap:	0.74	0.54	1.15	0.43	0.74	0.22	0.04	0.36	1.15	1.15	1.15	1.15
Uniform Del:	62.1	29.4	40.7	67.3	39.5	30.9	55.7	58.3	64.4	55.8	55.8	55.8
IncrcmntDel:	6.9	0.4	83.4	2.9	2.5	0.2	0.1	1.0	109.6	74.0	74.0	74.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	68.9	29.8	124.1	70.2	42.0	31.2	55.7	59.3	174.1	129.8	130	129.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	68.9	29.8	124.1	70.2	42.0	31.2	55.7	59.3	174.1	129.8	130	129.8
LOS by Move:	E	C	F	E	D	C	E	E	F	F	F	F
HCM2kAvgQ:	8	13	46	2	19	4	0	4	16	30	30	30

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:

Base Vol:	203	646	440	19	853	69	5	56	451	582	526	595
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	203	646	440	19	853	69	5	56	451	582	526	595
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	203	646	440	19	853	69	5	56	451	582	526	595
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	203	646	440	19	853	69	5	56	451	582	526	595
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	203	646	440	19	853	69	5	56	451	582	526	595
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	203	646	440	19	853	69	5	56	451	582	526	595

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.72	0.75	0.67	0.75	0.75	0.67	0.75	0.79	0.67	0.69	0.69	0.69
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.37	1.23	1.40
Final Sat.:	2749	2834	1268	1417	2834	1268	1417	1492	1268	1805	1631	1845

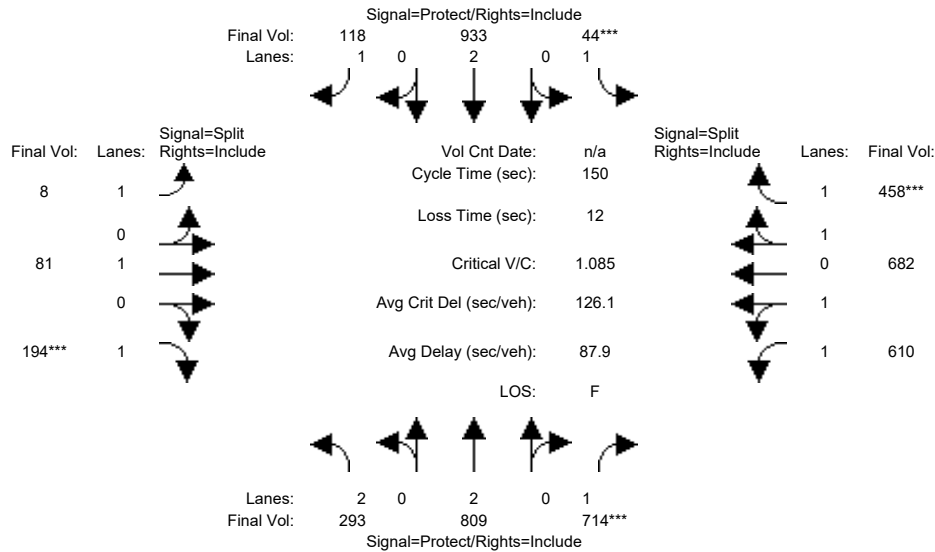
Capacity Analysis Module:

Vol/Sat:	0.07	0.23	0.35	0.01	0.30	0.05	0.00	0.04	0.36	0.32	0.32	0.32
Crit Moves:			****	****					****	****		
Green Time:	10.5	43.3	43.3	10.0	42.8	42.8	44.4	44.4	44.4	40.3	40.3	40.3
Volume/Cap:	1.05	0.79	1.20	0.20	1.05	0.19	0.01	0.13	1.20	1.20	1.20	1.20
Uniform Del:	69.7	49.1	53.3	66.2	53.6	40.5	37.3	38.6	52.8	54.9	54.9	54.9
IncrementDel:	79.9	5.2	114.0	1.1	46.9	0.3	0.0	0.1	113.5	97.7	97.7	97.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	149.7	54.3	167.3	67.3	101	40.8	37.3	38.7	166.3	152.6	153	152.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	149.7	54.3	167.3	67.3	101	40.8	37.3	38.7	166.3	152.6	153	152.6
LOS by Move:	F	D	F	E	F	D	D	D	F	F	F	F
HCM2kAvgQ:	8	16	32	1	28	2	0	2	32	32	32	32

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #45: (43) University/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	11	9	9	10	8	8	9	9	9	8	8	8
Y+R:	3.5	5.0	5.0	4.0	5.0	5.0	4.6	4.6	4.6	4.6	4.6	4.6

Volume Module:

Base Vol:	293	809	714	44	933	118	8	81	194	610	682	458
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	293	809	714	44	933	118	8	81	194	610	682	458
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	293	809	714	44	933	118	8	81	194	610	682	458
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	293	809	714	44	933	118	8	81	194	610	682	458
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	293	809	714	44	933	118	8	81	194	610	682	458
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	293	809	714	44	933	118	8	81	194	610	682	458

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.78	0.80	0.72	0.80	0.80	0.72	0.80	0.85	0.72	0.76	0.76	0.76
Lanes:	2.00	2.00	1.00	1.00	2.00	1.00	1.00	1.00	1.00	1.39	1.56	1.05
Final Sat.:	2959	3050	1365	1525	3050	1365	1525	1606	1365	2009	2246	1508

Capacity Analysis Module:

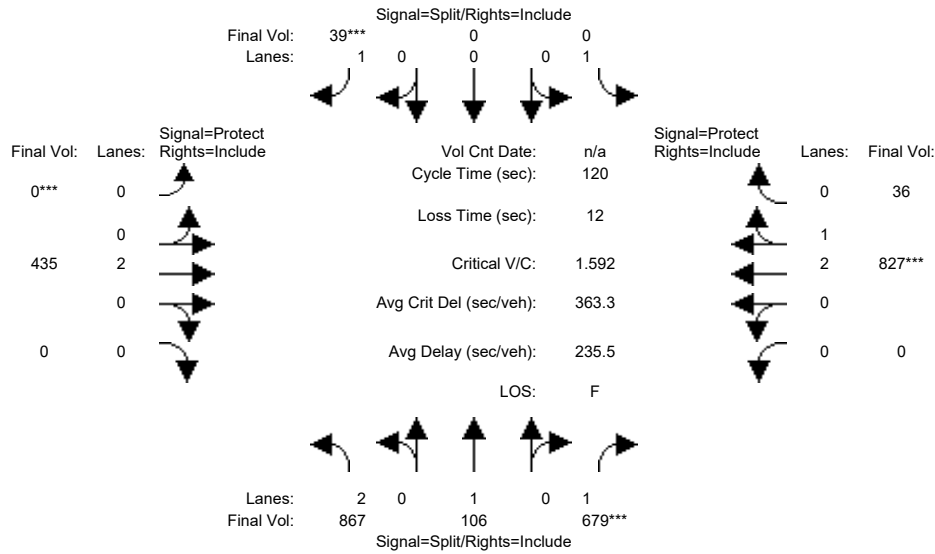
Vol/Sat:	0.10	0.27	0.52	0.03	0.31	0.09	0.01	0.05	0.14	0.30	0.30	0.30
Crit Moves:			****	****					****			****
Green Time:	19.3	69.1	69.1	10.0	59.8	59.8	18.8	18.8	18.8	40.1	40.1	40.1
Volume/Cap:	0.77	0.58	1.14	0.43	0.77	0.22	0.04	0.40	1.14	1.14	1.14	1.14
Uniform Del:	63.2	29.7	40.4	67.3	39.1	29.7	57.7	60.4	65.6	54.9	54.9	54.9
IncrementDel:	9.1	0.6	79.4	2.9	3.0	0.2	0.1	1.3	110.0	69.6	69.6	69.6
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	72.3	30.3	119.9	70.2	42.1	29.9	57.8	61.8	175.6	124.5	125	124.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	72.3	30.3	119.9	70.2	42.1	29.9	57.8	61.8	175.6	124.5	125	124.5
LOS by Move:	E	C	F	E	D	C	E	E	F	F	F	F
HCM2kAvgQ:	8	14	46	2	21	4	0	4	15	31	31	31

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	8	8	8	12	12	12	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:												
Base Vol:	867	106	679	0	0	39	0	435	0	0	827	36
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	867	106	679	0	0	39	0	435	0	0	827	36
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	867	106	679	0	0	39	0	435	0	0	827	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	867	106	679	0	0	39	0	435	0	0	827	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	867	106	679	0	0	39	0	435	0	0	827	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	867	106	679	0	0	39	0	435	0	0	827	36

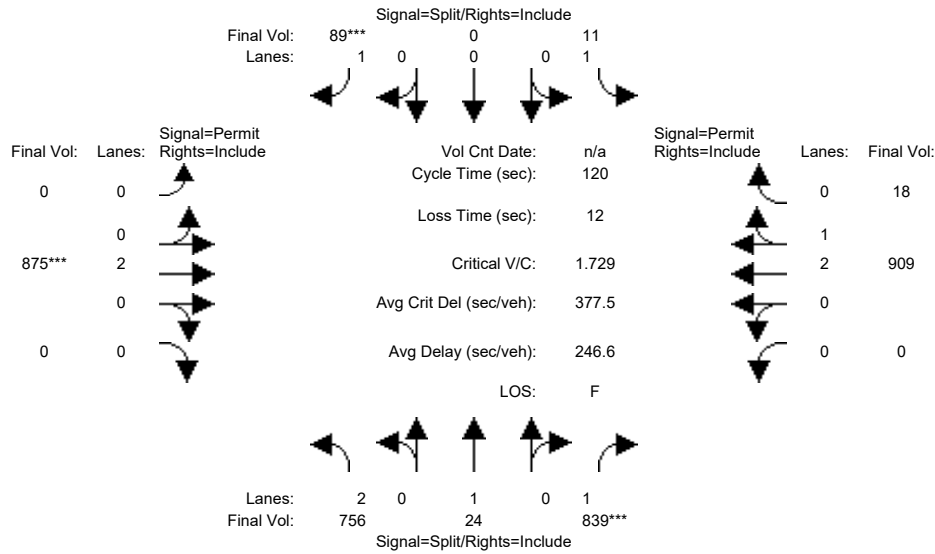
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.39	0.43	0.36	0.43	0.43	0.36	0.43	0.41	0.43	0.43	0.39	0.39
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.87	0.13
Final Sat.:	1495	811	690	811	0	690	0	1541	0	0	2110	92

Capacity Analysis Module:												
Vol/Sat:	0.58	0.13	0.98	0.00	0.00	0.06	0.00	0.28	0.00	0.00	0.39	0.39
Crit Moves:			****			****	****				****	
Green Time:	68.7	68.7	68.7	0.0	0.0	12.0	0.0	27.3	0.0	0.0	27.3	27.3
Volume/Cap:	1.01	0.23	1.72	0.00	0.00	0.57	0.00	1.24	0.00	0.00	1.72	1.72
Uniform Del:	25.7	12.6	25.7	0.0	0.0	51.5	0.0	46.3	0.0	0.0	46.3	46.3
IncrcmntDel:	34.1	0.3	334.9	0.0	0.0	10.5	0.0	130	0.0	0.0	333	332.7
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	59.8	12.9	360.6	0.0	0.0	62.0	0.0	176	0.0	0.0	379	379.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	59.8	12.9	360.6	0.0	0.0	62.0	0.0	176	0.0	0.0	379	379.0
LOS by Move:	E	B	F	A	A	E	A	F	A	A	F	F
HCM2kAvgQ:	23	2	60	0	0	2	0	16	0	0	29	29

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	8	8	8	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	3.6	3.6	3.6	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:

Base Vol:	756	24	839	11	0	89	0	875	0	0	909	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	756	24	839	11	0	89	0	875	0	0	909	18
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	756	24	839	11	0	89	0	875	0	0	909	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	756	24	839	11	0	89	0	875	0	0	909	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	756	24	839	11	0	89	0	875	0	0	909	18
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	756	24	839	11	0	89	0	875	0	0	909	18

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.48	0.53	0.45	0.50	0.53	0.45	0.53	0.50	0.53	0.53	0.48	0.48
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.94	0.06
Final Sat.:	1838	998	848	948	0	848	0	1895	0	0	2662	53

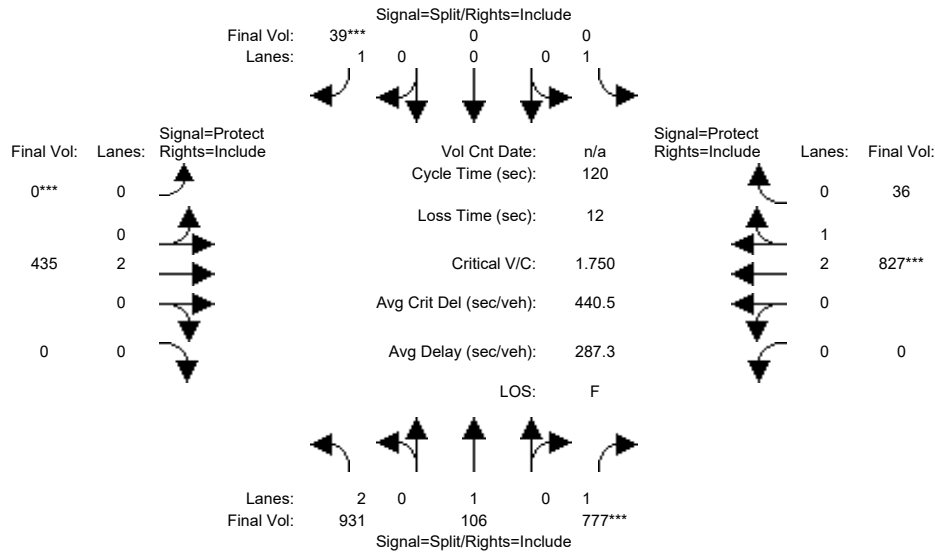
Capacity Analysis Module:

Vol/Sat:	0.41	0.02	0.99	0.01	0.00	0.10	0.00	0.46	0.00	0.00	0.34	0.34
Crit Moves:			****			****		****				
Green Time:	68.2	68.2	68.2	8.0	0.0	8.0	0.0	31.8	0.0	0.0	31.8	31.8
Volume/Cap:	0.72	0.04	1.74	0.17	0.00	1.57	0.00	1.74	0.00	0.00	1.29	1.29
Uniform Del:	19.0	11.5	25.9	52.9	0.0	56.0	0.0	44.1	0.0	0.0	44.1	44.1
IncrcmntDel:	2.5	0.0	342.2	1.3	0.0	327.4	0.0	342	0.0	0.0	140	139.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	21.5	11.5	368.1	54.2	0.0	383.4	0.0	386	0.0	0.0	184	184.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.5	11.5	368.1	54.2	0.0	383.4	0.0	386	0.0	0.0	184	184.0
LOS by Move:	C	B	F	D	A	F	A	F	A	A	F	F
HCM2kAvgQ:	12	0	75	1	0	9	0	42	0	0	24	24

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	8	8	8	12	12	12	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:

Base Vol:	931	106	777	0	0	39	0	435	0	0	827	36
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	931	106	777	0	0	39	0	435	0	0	827	36
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	931	106	777	0	0	39	0	435	0	0	827	36
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	931	106	777	0	0	39	0	435	0	0	827	36
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	931	106	777	0	0	39	0	435	0	0	827	36
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	931	106	777	0	0	39	0	435	0	0	827	36

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.39	0.43	0.36	0.43	0.43	0.36	0.43	0.41	0.43	0.43	0.39	0.39
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.87	0.13
Final Sat.:	1495	811	690	811	0	690	0	1541	0	0	2110	92

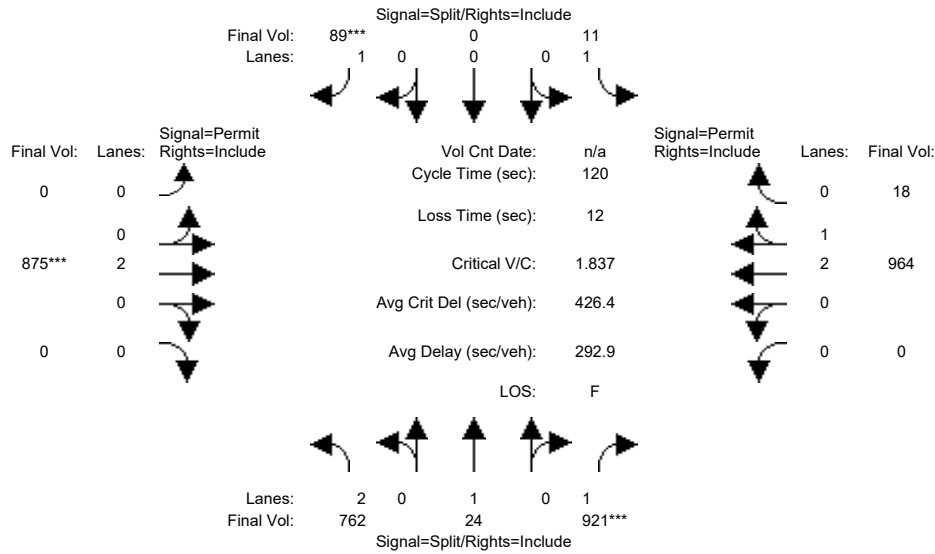
Capacity Analysis Module:

Vol/Sat:	0.62	0.13	1.13	0.00	0.00	0.06	0.00	0.28	0.00	0.00	0.39	0.39
Crit Moves:			****			****	****				****	
Green Time:	71.2	71.2	71.2	0.0	0.0	12.0	0.0	24.8	0.0	0.0	24.8	24.8
Volume/Cap:	1.05	0.22	1.90	0.00	0.00	0.57	0.00	1.37	0.00	0.00	1.90	1.90
Uniform Del:	24.4	11.4	24.4	0.0	0.0	51.5	0.0	47.6	0.0	0.0	47.6	47.6
IncrcmntDel:	43.9	0.2	413.4	0.0	0.0	10.5	0.0	184	0.0	0.0	412	412.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	68.3	11.6	437.8	0.0	0.0	62.0	0.0	232	0.0	0.0	460	460.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	68.3	11.6	437.8	0.0	0.0	62.0	0.0	232	0.0	0.0	460	460.1
LOS by Move:	E	B	F	A	A	E	A	F	A	A	F	F
HCM2kAvgQ:	25	2	74	0	0	2	0	18	0	0	31	31

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #46: (44) Capitol/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	8	8	8	8	8	8	10	10	10
Y+R:	4.2	4.2	4.2	3.6	3.6	3.6	4.1	4.1	4.1	4.1	4.1	4.1

Volume Module:

Base Vol:	762	24	921	11	0	89	0	875	0	0	964	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	762	24	921	11	0	89	0	875	0	0	964	18
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	762	24	921	11	0	89	0	875	0	0	964	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	762	24	921	11	0	89	0	875	0	0	964	18
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	762	24	921	11	0	89	0	875	0	0	964	18
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	762	24	921	11	0	89	0	875	0	0	964	18

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.48	0.53	0.45	0.50	0.53	0.45	0.53	0.50	0.53	0.53	0.48	0.48
Lanes:	2.00	1.00	1.00	1.00	0.00	1.00	0.00	2.00	0.00	0.00	2.95	0.05
Final Sat.:	1838	998	848	948	0	848	0	1895	0	0	2665	50

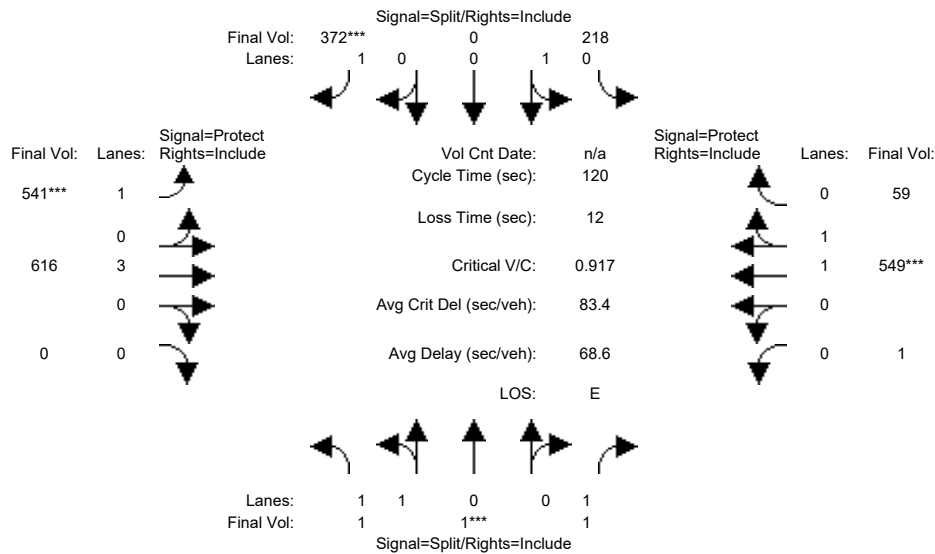
Capacity Analysis Module:

Vol/Sat:	0.41	0.02	1.09	0.01	0.00	0.10	0.00	0.46	0.00	0.00	0.36	0.36
Crit Moves:			****			****		****				
Green Time:	70.2	70.2	70.2	8.0	0.0	8.0	0.0	29.8	0.0	0.0	29.8	29.8
Volume/Cap:	0.71	0.04	1.86	0.17	0.00	1.57	0.00	1.86	0.00	0.00	1.46	1.46
Uniform Del:	17.7	10.6	24.9	52.9	0.0	56.0	0.0	45.1	0.0	0.0	45.1	45.1
IncrcmntDel:	2.2	0.0	393.6	1.3	0.0	327.4	0.0	394	0.0	0.0	213	213.1
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	19.9	10.6	418.5	54.2	0.0	383.4	0.0	439	0.0	0.0	258	258.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	19.9	10.6	418.5	54.2	0.0	383.4	0.0	439	0.0	0.0	258	258.1
LOS by Move:	B	B	F	D	A	F	A	F	A	A	F	F
HCM2kAvgQ:	11	0	86	1	0	9	0	44	0	0	29	29

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	10	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:												
Base Vol:	1	1	1	218	0	372	541	616	0	1	549	59
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	1	218	0	372	541	616	0	1	549	59
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	1	1	218	0	372	541	616	0	1	549	59
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	1	1	218	0	372	541	616	0	1	549	59
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	1	1	218	0	372	541	616	0	1	549	59
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	1	1	218	0	372	541	616	0	1	549	59

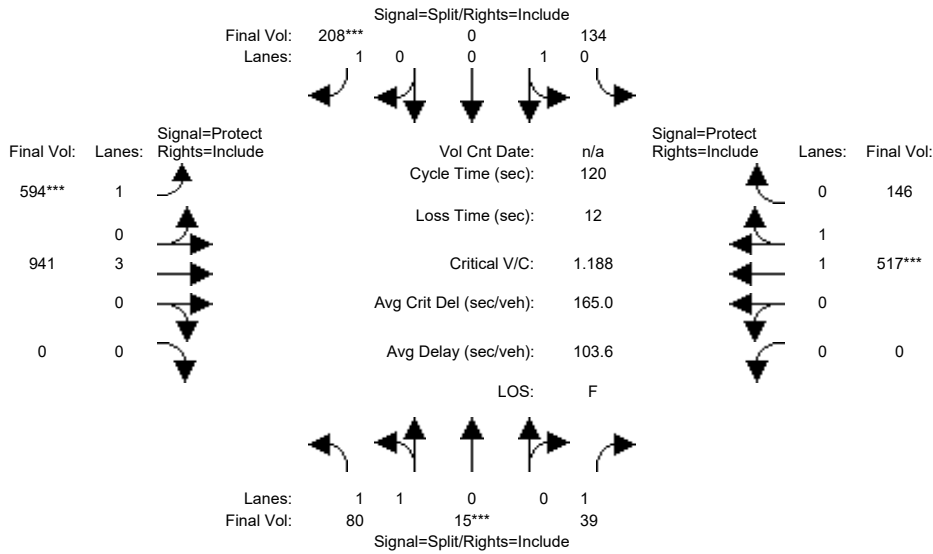
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	0.83	0.72	0.81	0.85	0.72	0.81	0.77	0.85	0.80	0.80	0.80
Lanes:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.01	1.80	0.19
Final Sat.:	1576	1576	1373	1537	0	1373	1534	4409	0	5	2725	293

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.14	0.00	0.27	0.35	0.14	0.00	0.20	0.20	0.20
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	32.5	0.0	32.5	42.3	27.2	0.0	39.3	24.2	24.2
Volume/Cap:	0.01	0.01	0.01	0.52	0.00	1.00	1.00	0.62	0.00	0.62	1.00	1.00
Uniform Del:	51.4	51.4	51.4	37.2	0.0	43.7	38.8	41.7	0.0	34.0	47.9	47.9
IncrcmntDel:	0.0	0.0	0.0	1.2	0.0	46.7	38.7	1.2	0.0	1.2	36.5	36.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Delay/Veh:	51.4	51.4	51.4	38.4	0.0	90.4	77.6	42.9	0.0	35.2	84.4	84.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.4	51.4	51.4	38.4	0.0	90.4	77.6	42.9	0.0	35.2	84.4	84.4
LOS by Move:	D	D	D	D	A	F	E	D	A	D	F	F
HCM2kAvgQ:	0	0	0	7	0	19	26	8	0	11	17	17

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	7	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:												
Base Vol:	80	15	39	134	0	208	594	941	0	0	517	146
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	80	15	39	134	0	208	594	941	0	0	517	146
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	15	39	134	0	208	594	941	0	0	517	146
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	80	15	39	134	0	208	594	941	0	0	517	146
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	80	15	39	134	0	208	594	941	0	0	517	146
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	80	15	39	134	0	208	594	941	0	0	517	146

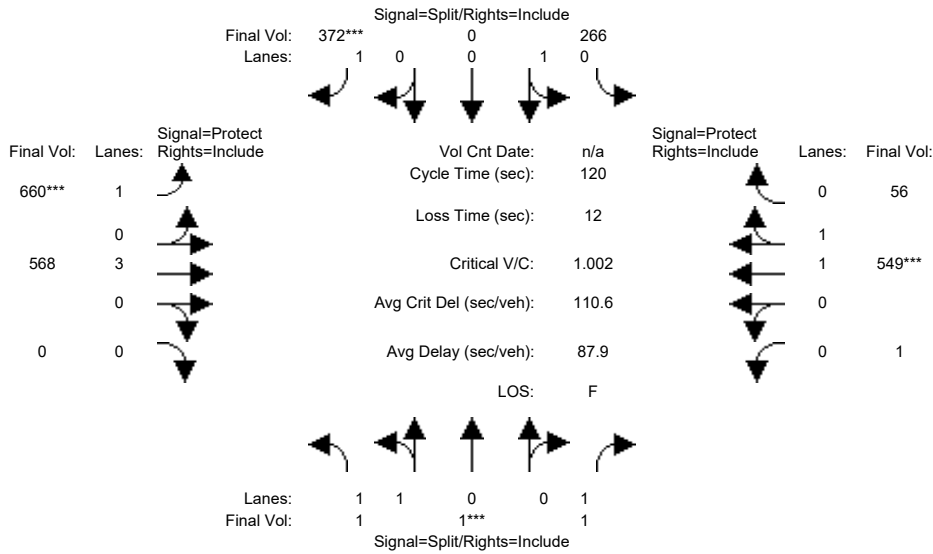
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.60	0.60	0.54	0.60	0.63	0.54	0.60	0.57	0.63	0.63	0.58	0.58
Lanes:	1.68	0.32	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.56	0.44
Final Sat.:	1935	363	1017	1140	0	1017	1137	3268	0	0	1715	484

Capacity Analysis Module:												
Vol/Sat:	0.04	0.04	0.04	0.12	0.00	0.20	0.52	0.29	0.00	0.00	0.30	0.30
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	19.7	0.0	19.7	50.3	79.3	0.0	0.0	29.0	29.0
Volume/Cap:	0.55	0.55	0.51	0.72	0.00	1.25	1.25	0.44	0.00	0.00	1.25	1.25
Uniform Del:	53.6	53.6	53.4	47.5	0.0	50.2	34.9	9.7	0.0	0.0	45.5	45.5
IncrcmntDel:	3.8	3.8	5.7	12.5	0.0	150.9	127.5	0.1	0.0	0.0	126	125.9
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	57.3	57.3	59.1	60.0	0.0	201.1	162.3	9.8	0.0	0.0	171	171.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	57.3	59.1	60.0	0.0	201.1	162.3	9.8	0.0	0.0	171	171.4
LOS by Move:	E	E	E	E	A	F	F	A	A	A	F	F
HCM2kAvgQ:	3	3	2	6	0	15	38	6	0	0	24	24

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	10	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:												
Base Vol:	1	1	1	266	0	372	660	568	0	1	549	56
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	1	1	1	266	0	372	660	568	0	1	549	56
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	1	1	266	0	372	660	568	0	1	549	56
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	1	1	1	266	0	372	660	568	0	1	549	56
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	1	1	266	0	372	660	568	0	1	549	56
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	1	1	1	266	0	372	660	568	0	1	549	56

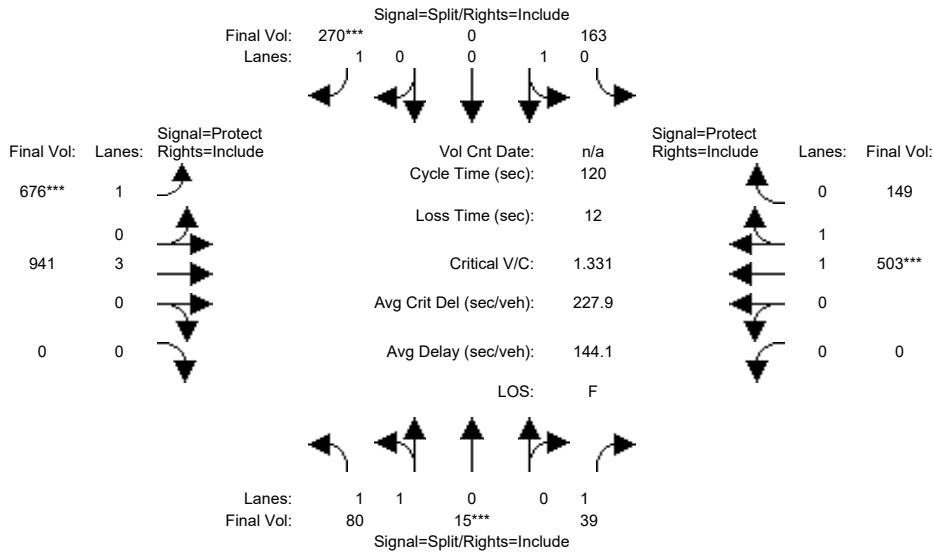
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.83	0.83	0.72	0.81	0.85	0.72	0.81	0.77	0.85	0.80	0.80	0.80
Lanes:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.01	1.81	0.18
Final Sat.:	1576	1576	1373	1537	0	1373	1534	4409	0	5	2741	280

Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.17	0.00	0.27	0.43	0.13	0.00	0.20	0.20	0.20
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	29.8	0.0	29.8	47.2	27.1	0.0	42.1	22.0	22.0
Volume/Cap:	0.01	0.01	0.01	0.70	0.00	1.09	1.09	0.57	0.00	0.57	1.09	1.09
Uniform Del:	51.4	51.4	51.4	41.0	0.0	45.1	36.4	41.3	0.0	31.6	49.0	49.0
IncrcmntDel:	0.0	0.0	0.0	5.6	0.0	75.9	64.4	0.8	0.0	0.7	65.9	65.9
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Delay/Veh:	51.4	51.4	51.4	46.6	0.0	121.1	100.8	42.1	0.0	32.3	115	114.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.4	51.4	51.4	46.6	0.0	121.1	100.8	42.1	0.0	32.3	115	114.9
LOS by Move:	D	D	D	D	A	F	F	D	A	C	F	F
HCM2kAvgQ:	0	0	0	10	0	21	35	7	0	10	19	19

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #47: (45) Cooley/Donohoe



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	9	9	9	10	10	10	7	10	10	10	10	10
Y+R:	4.6	4.6	4.6	4.6	4.6	4.6	4.0	5.0	5.0	5.0	5.0	5.0

Volume Module:

Base Vol:	80	15	39	163	0	270	676	941	0	0	503	149
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	80	15	39	163	0	270	676	941	0	0	503	149
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	15	39	163	0	270	676	941	0	0	503	149
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	80	15	39	163	0	270	676	941	0	0	503	149
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	80	15	39	163	0	270	676	941	0	0	503	149
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	80	15	39	163	0	270	676	941	0	0	503	149

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.60	0.60	0.54	0.60	0.63	0.54	0.60	0.57	0.63	0.63	0.58	0.58
Lanes:	1.68	0.32	1.00	1.00	0.00	1.00	1.00	3.00	0.00	0.00	1.54	0.46
Final Sat.:	1935	363	1017	1140	0	1017	1137	3268	0	0	1695	502

Capacity Analysis Module:

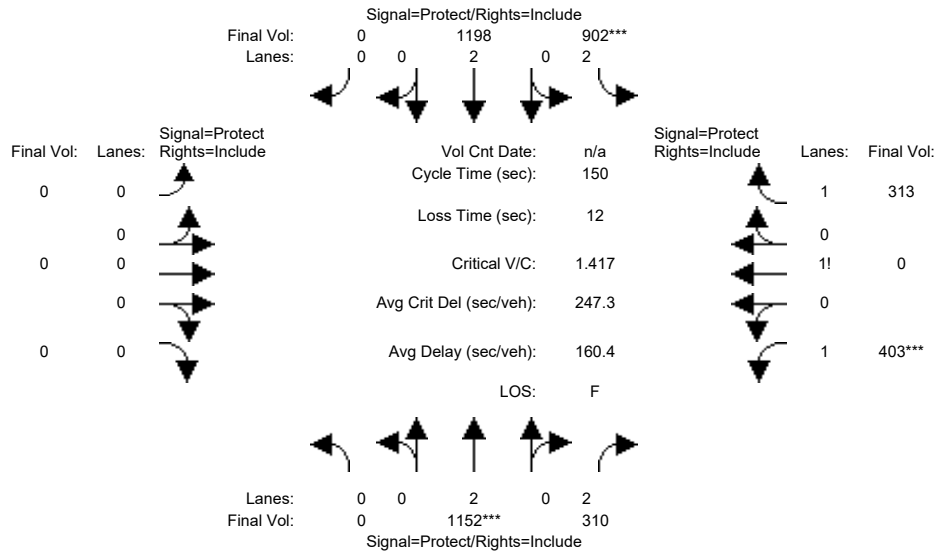
Vol/Sat:	0.04	0.04	0.04	0.14	0.00	0.27	0.59	0.29	0.00	0.00	0.30	0.30
Crit Moves:	****	****	****	****	****	****	****	****	****	****	****	****
Green Time:	9.0	9.0	9.0	22.7	0.0	22.7	50.9	76.3	0.0	0.0	25.4	25.4
Volume/Cap:	0.55	0.55	0.51	0.76	0.00	1.40	1.40	0.45	0.00	0.00	1.40	1.40
Uniform Del:	53.6	53.6	53.4	46.0	0.0	48.6	34.6	11.2	0.0	0.0	47.3	47.3
IncrcmntDel:	3.8	3.8	5.7	14.1	0.0	209.1	193.1	0.2	0.0	0.0	193	193.5
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Delay/Veh:	57.3	57.3	59.1	60.2	0.0	257.7	227.6	11.3	0.0	0.0	241	240.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	57.3	59.1	60.2	0.0	257.7	227.6	11.3	0.0	0.0	241	240.8
LOS by Move:	E	E	E	E	A	F	F	B	A	A	F	F
HCM2kAvgQ:	3	3	2	7	0	21	50	7	0	0	27	27

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #48: (46) University/US 101 SB Ramps



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:

Base Vol:	0	1152	310	902	1198	0	0	0	0	403	0	313
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1152	310	902	1198	0	0	0	0	403	0	313
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1152	310	902	1198	0	0	0	0	403	0	313
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1152	310	902	1198	0	0	0	0	403	0	313
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1152	310	902	1198	0	0	0	0	403	0	313
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1152	310	902	1198	0	0	0	0	403	0	313

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.56	0.53	0.42	0.51	0.53	0.56	0.56	0.56	0.56	0.51	0.56	0.51
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.56	0.00	1.44
Final Sat.:	0	2011	1583	1950	2011	0	0	0	0	1503	0	1382

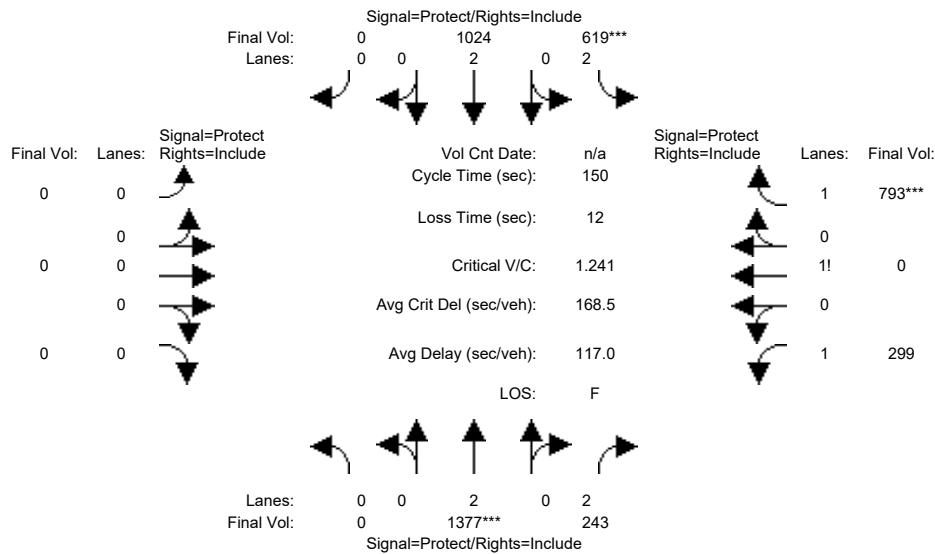
Capacity Analysis Module:

Vol/Sat:	0.00	0.57	0.20	0.46	0.60	0.00	0.00	0.00	0.00	0.27	0.00	0.23
Crit Moves:		****		****						****		
Green Time:	0.0	60.7	60.7	49.0	110	0.0	0.0	0.0	0.0	28.4	0.0	28.4
Volume/Cap:	0.00	1.42	0.48	1.42	0.82	0.00	0.00	0.00	0.00	1.42	0.00	1.20
Uniform Del:	0.0	44.7	33.1	50.5	13.4	0.0	0.0	0.0	0.0	60.8	0.0	60.8
IncrementDel:	0.0	195	0.6	196.7	3.6	0.0	0.0	0.0	0.0	199.0	0.0	104.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	239	33.7	247.3	17.1	0.0	0.0	0.0	0.0	259.8	0.0	164.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	239	33.7	247.3	17.1	0.0	0.0	0.0	0.0	259.8	0.0	164.9
LOS by Move:	A	F	C	F	B	A	A	A	A	F	A	F
HCM2kAvgQ:	0	51	6	39	21	0	0	0	0	23	0	17

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #48: (46) University/US 101 SB Ramps



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	1377	243	619	1024	0	0	0	0	299	0	793
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1377	243	619	1024	0	0	0	0	299	0	793
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1377	243	619	1024	0	0	0	0	299	0	793
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1377	243	619	1024	0	0	0	0	299	0	793
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1377	243	619	1024	0	0	0	0	299	0	793
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1377	243	619	1024	0	0	0	0	299	0	793

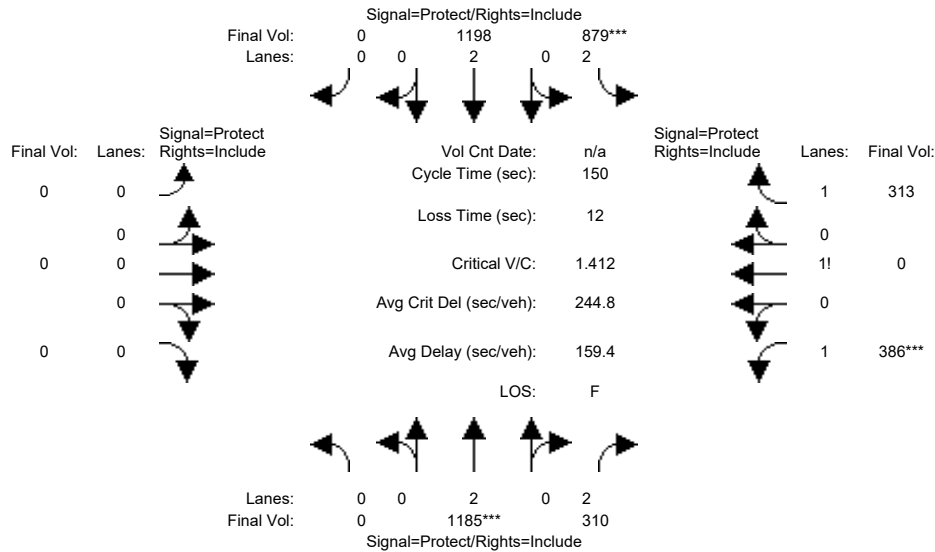
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.69	0.55	0.67	0.69	0.73	0.73	0.73	0.73	0.64	0.73	0.64
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.27	0.00	1.73
Final Sat.:	0	2635	2075	2556	2635	0	0	0	0	1552	0	2103

Capacity Analysis Module:												
Vol/Sat:	0.00	0.52	0.12	0.24	0.39	0.00	0.00	0.00	0.00	0.19	0.00	0.38
Crit Moves:	****			****						****		
Green Time:	0.0	63.2	63.2	29.3	92.4	0.0	0.0	0.0	0.0	45.6	0.0	45.6
Volume/Cap:	0.00	1.24	0.28	1.24	0.63	0.00	0.00	0.00	0.00	0.63	0.00	1.24
Uniform Del:	0.0	43.4	28.5	60.4	18.1	0.0	0.0	0.0	0.0	45.0	0.0	52.2
IncrementDel:	0.0	116	0.2	124.6	0.8	0.0	0.0	0.0	0.0	0.8	0.0	118.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	160	28.6	185.0	18.9	0.0	0.0	0.0	0.0	45.8	0.0	170.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	160	28.6	185.0	18.9	0.0	0.0	0.0	0.0	45.8	0.0	170.3
LOS by Move:	A	F	C	F	B	A	A	A	A	D	A	F
HCM2kAvgQ:	0	52	4	25	16	0	0	0	0	10	0	34

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #48: (46) University/US 101 SB Ramps



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:

Base Vol:	0	1185	310	879	1198	0	0	0	0	386	0	313
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1185	310	879	1198	0	0	0	0	386	0	313
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1185	310	879	1198	0	0	0	0	386	0	313
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1185	310	879	1198	0	0	0	0	386	0	313
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1185	310	879	1198	0	0	0	0	386	0	313
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1185	310	879	1198	0	0	0	0	386	0	313

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.56	0.53	0.42	0.51	0.53	0.56	0.56	0.56	0.56	0.51	0.56	0.51
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.55	0.00	1.45
Final Sat.:	0	2011	1583	1950	2011	0	0	0	0	1491	0	1391

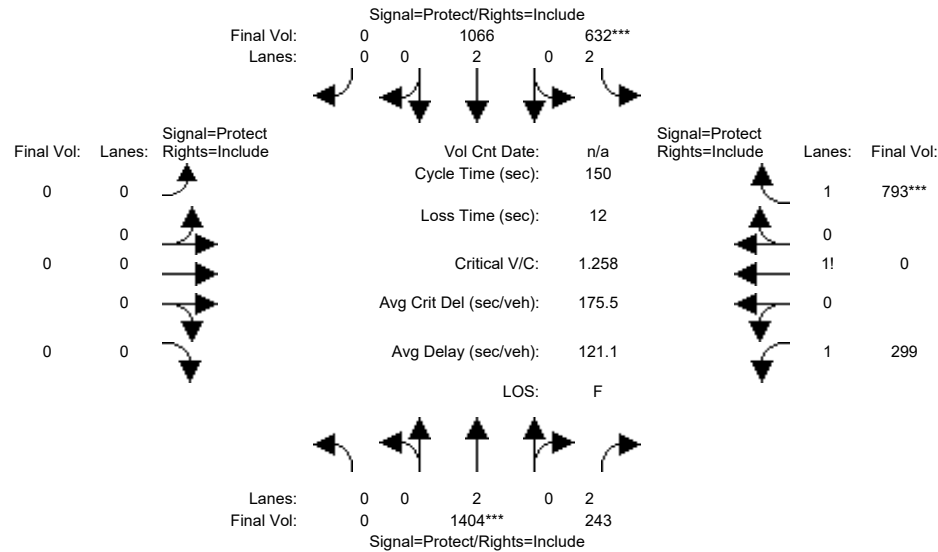
Capacity Analysis Module:

Vol/Sat:	0.00	0.59	0.20	0.45	0.60	0.00	0.00	0.00	0.00	0.26	0.00	0.23
Crit Moves:		****		****						****		
Green Time:	0.0	62.6	62.6	47.9	110	0.0	0.0	0.0	0.0	27.5	0.0	27.5
Volume/Cap:	0.00	1.41	0.47	1.41	0.81	0.00	0.00	0.00	0.00	1.41	0.00	1.23
Uniform Del:	0.0	43.7	31.7	51.1	12.9	0.0	0.0	0.0	0.0	61.2	0.0	61.2
IncrementDel:	0.0	192	0.5	194.7	3.4	0.0	0.0	0.0	0.0	197.0	0.0	117.2
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	236	32.2	245.8	16.3	0.0	0.0	0.0	0.0	258.3	0.0	178.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	236	32.2	245.8	16.3	0.0	0.0	0.0	0.0	258.3	0.0	178.5
LOS by Move:	A	F	C	F	B	A	A	A	A	F	A	F
HCM2kAvgQ:	0	52	6	38	21	0	0	0	0	22	0	17

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #48: (46) University/US 101 SB Ramps



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	12	12	12	4	10	10	0	0	0	6	6	6
Y+R:	4.5	4.5	4.5	3.5	4.5	4.5	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:

Base Vol:	0	1404	243	632	1066	0	0	0	0	299	0	793
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	1404	243	632	1066	0	0	0	0	299	0	793
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	1404	243	632	1066	0	0	0	0	299	0	793
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	1404	243	632	1066	0	0	0	0	299	0	793
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1404	243	632	1066	0	0	0	0	299	0	793
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	1404	243	632	1066	0	0	0	0	299	0	793

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.73	0.69	0.55	0.67	0.69	0.73	0.73	0.73	0.73	0.64	0.73	0.64
Lanes:	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	1.27	0.00	1.73
Final Sat.:	0	2635	2075	2556	2635	0	0	0	0	1552	0	2103

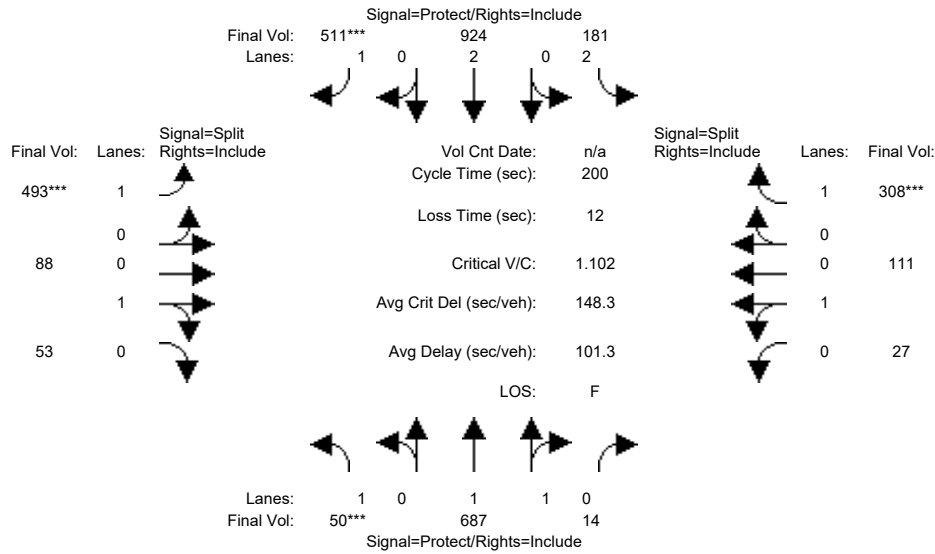
Capacity Analysis Module:

Vol/Sat:	0.00	0.53	0.12	0.25	0.40	0.00	0.00	0.00	0.00	0.19	0.00	0.38
Crit Moves:		****		****								****
Green Time:	0.0	63.5	63.5	29.5	93.0	0.0	0.0	0.0	0.0	45.0	0.0	45.0
Volume/Cap:	0.00	1.26	0.28	1.26	0.65	0.00	0.00	0.00	0.00	0.64	0.00	1.26
Uniform Del:	0.0	43.2	28.2	60.3	18.2	0.0	0.0	0.0	0.0	45.5	0.0	52.5
IncrementDel:	0.0	123	0.2	131.4	1.0	0.0	0.0	0.0	0.0	0.8	0.0	125.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	167	28.4	191.6	19.1	0.0	0.0	0.0	0.0	46.4	0.0	177.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	167	28.4	191.6	19.1	0.0	0.0	0.0	0.0	46.4	0.0	177.8
LOS by Move:	A	F	C	F	B	A	A	A	A	D	A	F
HCM2kAvgQ:	0	54	4	25	17	0	0	0	0	10	0	35

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	10	10	10
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:

Base Vol:	50	687	14	181	924	511	493	88	53	27	111	308
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	50	687	14	181	924	511	493	88	53	27	111	308
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	50	687	14	181	924	511	493	88	53	27	111	308
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	50	687	14	181	924	511	493	88	53	27	111	308
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	50	687	14	181	924	511	493	88	53	27	111	308
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	50	687	14	181	924	511	493	88	53	27	111	308

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.74	0.72	0.74	0.66	0.74	0.74	0.74	0.77	0.77	0.66
Lanes:	1.00	1.96	0.04	2.00	2.00	1.00	1.00	0.62	0.38	0.20	0.80	1.00
Final Sat.:	1408	2751	56	2731	2816	1260	1408	873	526	287	1180	1260

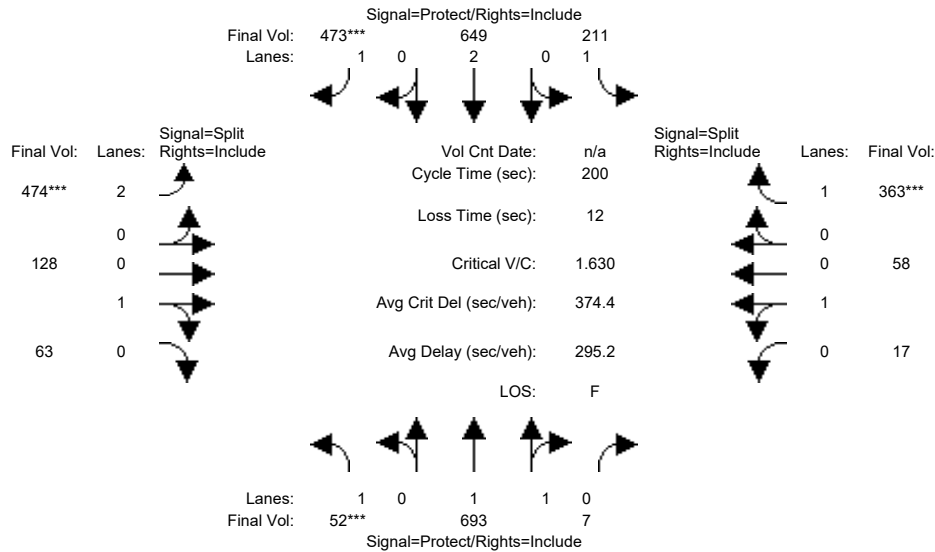
Capacity Analysis Module:

Vol/Sat:	0.04	0.25	0.25	0.07	0.33	0.41	0.35	0.10	0.10	0.09	0.09	0.24
Crit Moves:	****					****	****					****
Green Time:	7.0	63.5	63.5	16.9	73.4	73.4	63.4	63.4	63.4	44.2	44.2	44.2
Volume/Cap:	1.01	0.79	0.79	0.79	0.89	1.11	1.11	0.32	0.32	0.43	0.43	1.11
Uniform Del:	96.5	62.0	62.0	89.8	59.6	63.3	68.3	51.9	51.9	66.9	66.9	77.9
IncrementDel:	132.5	4.7	4.7	16.2	10.1	73.7	74.4	0.4	0.4	0.9	0.9	85.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	229.0	66.7	66.7	106.0	69.7	137.0	142.7	52.3	52.3	67.8	67.8	163.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	229.0	66.7	66.7	106.0	69.7	137.0	142.7	52.3	52.3	67.8	67.8	163.0
LOS by Move:	F	E	E	F	E	F	F	D	D	E	E	F
HCM2kAvgQ:	5	22	22	7	30	40	39	6	6	7	7	25

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	11	11	11
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:

Base Vol:	52	693	7	211	649	473	474	128	63	17	58	363
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	52	693	7	211	649	473	474	128	63	17	58	363
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	693	7	211	649	473	474	128	63	17	58	363
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	52	693	7	211	649	473	474	128	63	17	58	363
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	693	7	211	649	473	474	128	63	17	58	363
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	52	693	7	211	649	473	474	128	63	17	58	363

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.42	0.42	0.42	0.42	0.42	0.38	0.41	0.42	0.42	0.44	0.44	0.38
Lanes:	1.00	1.98	0.02	1.00	2.00	1.00	2.00	0.67	0.33	0.23	0.77	1.00
Final Sat.:	803	1589	16	803	1606	719	1558	539	265	190	647	719

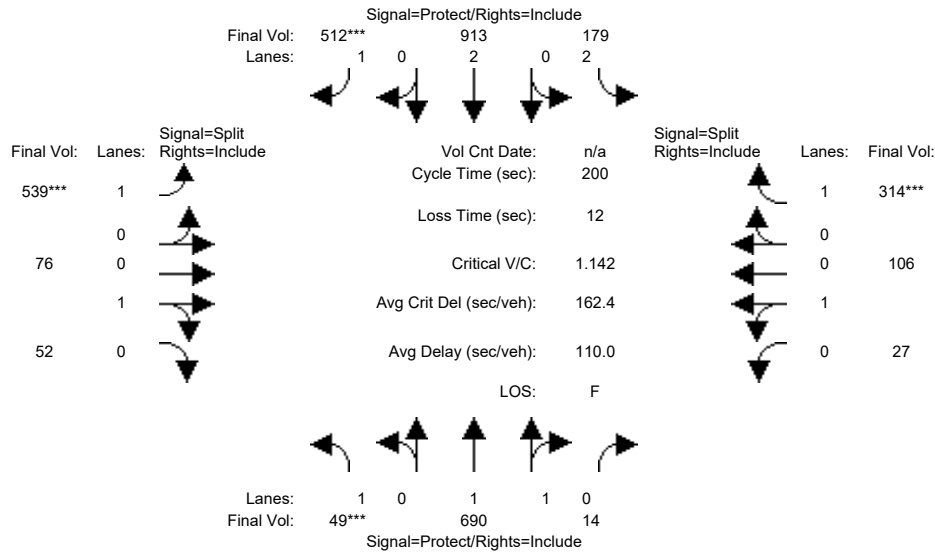
Capacity Analysis Module:

Vol/Sat:	0.06	0.44	0.44	0.26	0.40	0.66	0.30	0.24	0.24	0.09	0.09	0.51
Crit Moves:	****					****	****					****
Green Time:	7.9	55.4	55.4	33.3	80.8	80.8	37.3	37.3	37.3	62.0	62.0	62.0
Volume/Cap:	1.63	1.58	1.58	1.58	1.00	1.63	1.63	1.27	1.27	0.29	0.29	1.63
Uniform Del:	96.0	72.3	72.3	83.3	59.6	59.6	81.3	81.3	81.3	52.3	52.3	69.0
IncrementDel:	389.7	270	269.8	291.8	35.5	298.7	298.7	165	164.5	0.6	0.6	303.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	485.7	342	342.1	375.1	95.1	358.3	380.0	246	245.9	52.9	52.9	372.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	485.7	342	342.1	375.1	95.1	358.3	380.0	246	245.9	52.9	52.9	372.1
LOS by Move:	F	F	F	F	F	F	F	F	F	D	D	F
HCM2kAvgQ:	7	40	40	24	26	51	28	19	19	4	4	40

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	10	10	10
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:												
Base Vol:	49	690	14	179	913	512	539	76	52	27	106	314
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	690	14	179	913	512	539	76	52	27	106	314
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	49	690	14	179	913	512	539	76	52	27	106	314
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	49	690	14	179	913	512	539	76	52	27	106	314
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	49	690	14	179	913	512	539	76	52	27	106	314
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	49	690	14	179	913	512	539	76	52	27	106	314

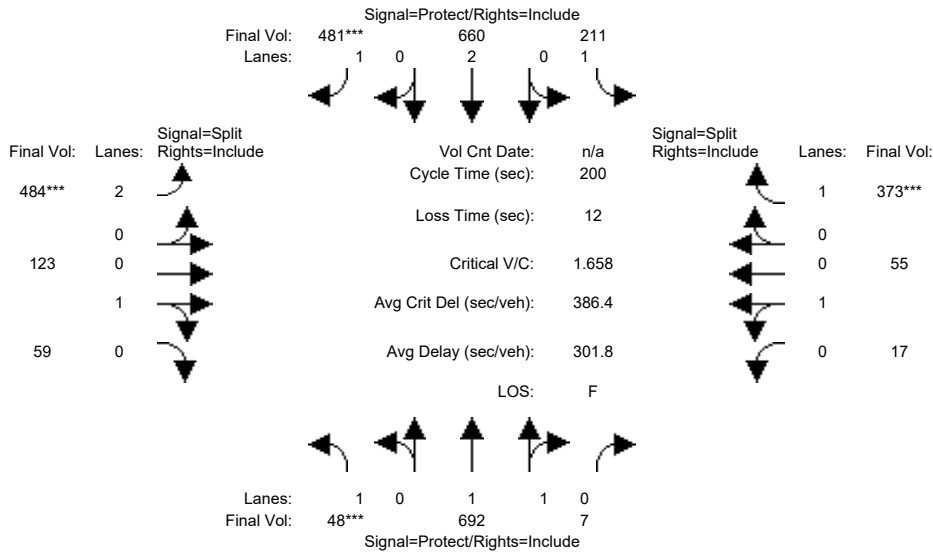
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.74	0.74	0.72	0.74	0.66	0.74	0.73	0.73	0.77	0.77	0.66
Lanes:	1.00	1.96	0.04	2.00	2.00	1.00	1.00	0.59	0.41	0.20	0.80	1.00
Final Sat.:	1408	2752	56	2731	2816	1260	1408	826	565	298	1169	1260

Capacity Analysis Module:												
Vol/Sat:	0.03	0.25	0.25	0.07	0.32	0.41	0.38	0.09	0.09	0.09	0.09	0.25
Crit Moves:	****					****	****					****
Green Time:	7.0	61.7	61.7	16.1	70.8	70.8	66.7	66.7	66.7	43.4	43.4	43.4
Volume/Cap:	0.99	0.81	0.81	0.81	0.92	1.15	1.15	0.28	0.28	0.42	0.42	1.15
Uniform Del:	96.5	63.8	63.8	90.5	61.7	64.6	66.6	48.9	48.9	67.4	67.4	78.3
IncrementDel:	126.0	5.9	5.9	20.1	12.7	89.6	88.7	0.3	0.3	0.9	0.9	100.3
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	222.5	69.7	69.7	110.5	74.4	154.2	155.4	49.2	49.2	68.3	68.3	178.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	222.5	69.7	69.7	110.5	74.4	154.2	155.4	49.2	49.2	68.3	68.3	178.6
LOS by Move:	F	E	E	F	E	F	F	D	D	E	E	F
HCM2kAvgQ:	5	22	22	7	31	42	44	6	6	7	7	27

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #49: (47) University/Woodland



Approach:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	7	10	10	7	10	10	9	9	9	11	11	11
Y+R:	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	3.6	3.6	3.6

Volume Module:

Base Vol:	48	692	7	211	660	481	484	123	59	17	55	373
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	48	692	7	211	660	481	484	123	59	17	55	373
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	48	692	7	211	660	481	484	123	59	17	55	373
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	48	692	7	211	660	481	484	123	59	17	55	373
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	48	692	7	211	660	481	484	123	59	17	55	373
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	48	692	7	211	660	481	484	123	59	17	55	373

Saturation Flow Module:

Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.42	0.42	0.42	0.42	0.42	0.38	0.41	0.42	0.42	0.44	0.44	0.38
Lanes:	1.00	1.98	0.02	1.00	2.00	1.00	2.00	0.68	0.32	0.24	0.76	1.00
Final Sat.:	803	1589	16	803	1606	719	1558	543	261	197	638	719

Capacity Analysis Module:

Vol/Sat:	0.06	0.44	0.44	0.26	0.41	0.67	0.31	0.23	0.23	0.09	0.09	0.52
Crit Moves:	****					****	****					****
Green Time:	7.2	54.9	54.9	33.1	80.7	80.7	37.5	37.5	37.5	62.6	62.6	62.6
Volume/Cap:	1.66	1.59	1.59	1.59	1.02	1.66	1.66	1.21	1.21	0.28	0.28	1.66
Uniform Del:	96.4	72.6	72.6	83.5	59.6	59.6	81.3	81.3	81.3	51.6	51.6	68.7
IncrementDel:	409.5	275	275.3	297.2	39.9	311.1	311.0	140	140.1	0.6	0.6	315.1
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	505.9	348	347.8	380.7	99.5	370.7	392.2	221	221.4	52.2	52.2	383.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	505.9	348	347.8	380.7	99.5	370.7	392.2	221	221.4	52.2	52.2	383.8
LOS by Move:	F	F	F	F	F	F	F	F	F	D	D	F
HCM2kAvgQ:	7	40	40	24	26	53	28	17	17	3	3	41

Note: Queue reported is the number of cars per lane.



Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton No Project AM

Intersection #52: (52) Saratoga Avenue and Newbridge Street

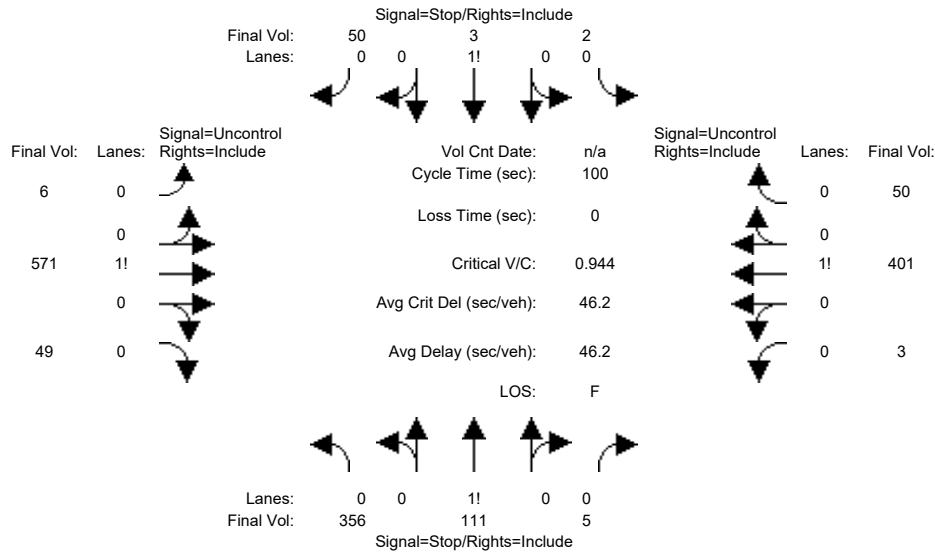


Table with columns for Street Name (Saratoga Avenue, Newbridge Street) and Approach (North Bound, South Bound, East Bound, West Bound). Rows include Movement (L, T, R) and lane counts.

Volume Module table showing Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume for each approach and movement.

Critical Gap Module table showing Critical Gap and FollowUpTim for each approach and movement.

Capacity Module table showing Cnflct Vol, Potent Cap., Move Cap., Total Cap, and Volume/Cap for each approach and movement.

Level Of Service Module table showing 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS for each approach and movement.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	356 111 5	2 3 50	6 571 49	3 401 50
ApproachDel:	155.9	11.7	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=20.4]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=472]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1607]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=55]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1607]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #52 (52) Saratoga Avenue and Newbridge Street

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0
Initial Vol:	356 111 5	2 3 50	6 571 49	3 401 50

Major Street Volume: 1080

Minor Approach Volume: 472

Minor Approach Volume Threshold: 199

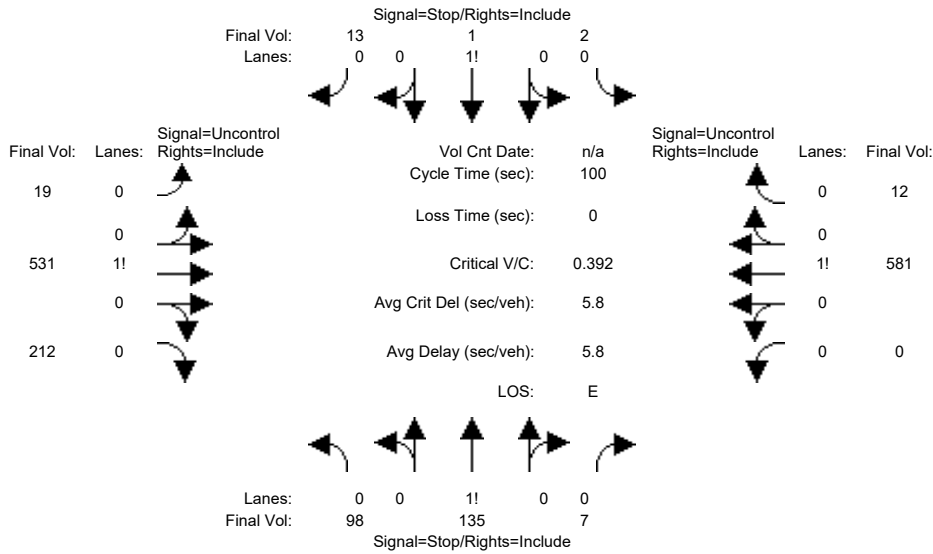
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton No Project PM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name: Saratoga Avenue Newbridge Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and 10 rows of volume data including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 12 columns representing movements and 2 rows of critical gap data including Critical Gap and FollowUp Time.

Table with 12 columns representing movements and 6 rows of capacity data including Conflict Vol, Potent Cap, Move Cap, Total Cap, and Volume/Cap.

Table with 12 columns representing movements and 8 rows of level of service data including 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap, Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	98 135 7	2 1 13	19 531 212	0 581 12
ApproachDel:	37.2	13.7	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=2.5]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=240]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1611]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.1]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=16]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1611]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*

Intersection #52 (52) Saratoga Avenue and Newbridge Street

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	98 135 7	2 1 13	19 531 212	0 581 12

Major Street Volume: 1355

Minor Approach Volume: 240

Minor Approach Volume Threshold: 138

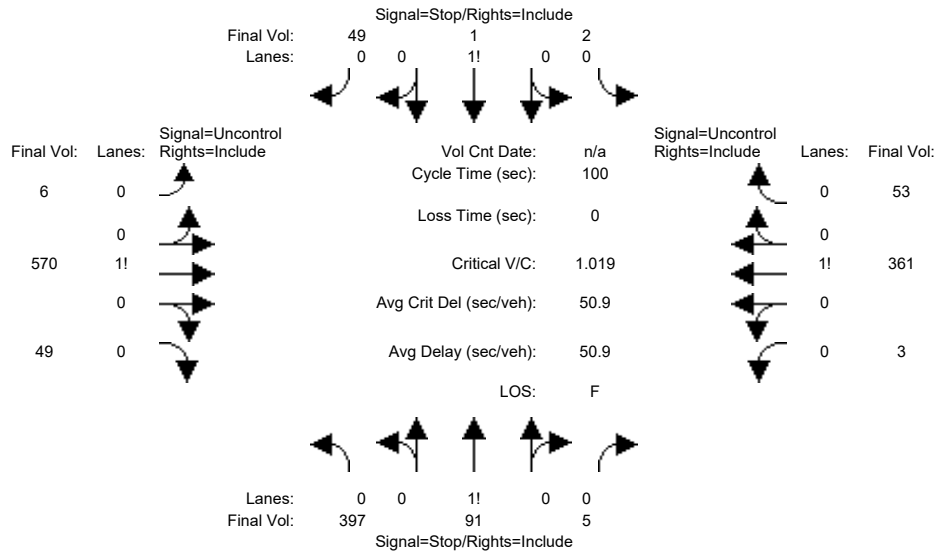
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton WITH Project AM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name: Saratoga Avenue Newbridge Street
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 13 columns representing volume modules for Saratoga Avenue and Newbridge Street, including Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, and Final Volume.

Table with 13 columns representing critical gap modules, including Critical Gap and FollowUp Time for each approach.

Table with 13 columns representing capacity modules, including Conflict Vol, Potent Cap., Move Cap., Total Cap., and Volume/Cap for each approach.

Table with 13 columns representing level of service modules, including 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., Shared Queue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

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Intersection #52 (52) Saratoga Avenue and Newbridge Street
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0	1! 0	0	0	1! 0	0	0	1! 0	0	0	1! 0
Initial Vol:	397	91	5	2	1	49	6	570	49	3	361	53
ApproachDel:	162.4			11.2			xxxxxx			xxxxxx		

Approach[northbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=22.2]

SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=493]

SUCCEED - Approach volume greater than or equal to 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1587]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]

Signal Warrant Rule #1: [vehicle-hours=0.2]

FAIL - Vehicle-hours less than 4 for one lane approach.

Signal Warrant Rule #2: [approach volume=52]

FAIL - Approach volume less than 100 for one lane approach.

Signal Warrant Rule #3: [approach count=4][total volume=1587]

SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

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Intersection #52 (52) Saratoga Avenue and Newbridge Street

\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Uncontrolled			Uncontrolled		
Lanes:	0	0	1! 0	0	0	1! 0	0	0	1! 0	0	0	1! 0
Initial Vol:	397	91	5	2	1	49	6	570	49	3	361	53

Major Street Volume: 1042

Minor Approach Volume: 493

Minor Approach Volume Threshold: 208

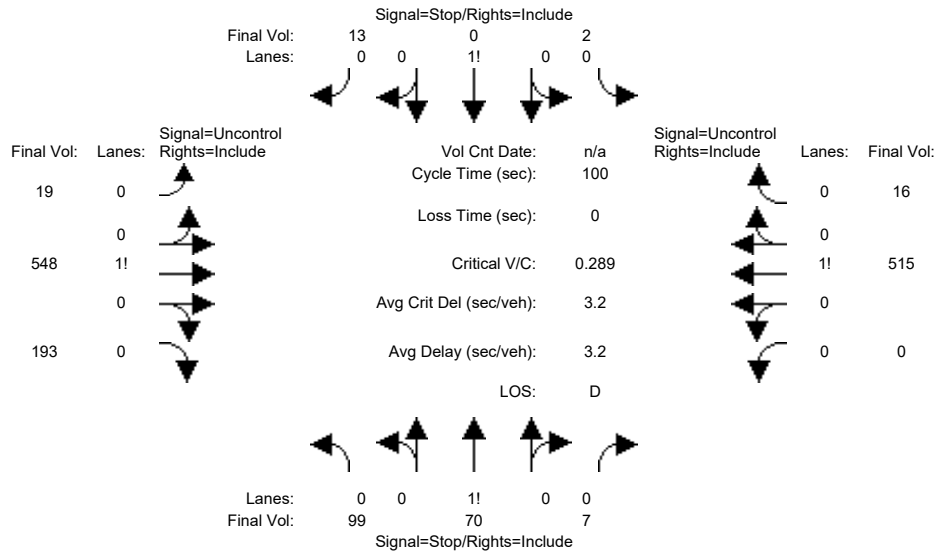
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report  
 2000 HCM Unsignalized (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #52: (52) Saratoga Avenue and Newbridge Street



Street Name:	Saratoga Avenue						Newbridge Street					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R

Volume Module:	North Bound			South Bound			East Bound			West Bound		
Base Vol:	99	70	7	2	0	13	19	548	193	0	515	16
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	99	70	7	2	0	13	19	548	193	0	515	16
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	99	70	7	2	0	13	19	548	193	0	515	16
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	99	70	7	2	0	13	19	548	193	0	515	16
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	99	70	7	2	0	13	19	548	193	0	515	16

Critical Gap Module:	North Bound			South Bound			East Bound			West Bound		
Critical Gp:	7.1	6.5	6.2	7.1	6.5	6.2	4.1	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
FollowUpTim:	3.5	4.0	3.3	3.5	4.0	3.3	2.2	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx

Capacity Module:	North Bound			South Bound			East Bound			West Bound		
Cnflct Vol:	1212	1214	645	1244	1302	523	531	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Potent Cap.:	160	183	476	152	162	558	1047	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Move Cap.:	154	180	476	103	159	558	1047	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Total Cap:	343	356	xxxxxx	289	335	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Volume/Cap:	0.29	0.20	0.01	0.01	0.00	0.02	0.02	xxxx	xxxx	xxxx	xxxx	xxxx

Level Of Service Module:	North Bound			South Bound			East Bound			West Bound		
2Way95thQ:	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx	0.1	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
Control Del:	xxxxx	xxxx	xxxxxx	xxxxx	xxxx	xxxxxx	8.5	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
LOS by Move:	*	*	*	*	*	*	A	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	352	xxxxxx	xxxx	496	xxxxxx	xxxx	xxxx	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	2.7	xxxxxx	xxxxxx	0.1	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	25.0	xxxxxx	xxxxxx	12.5	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	D	*	*	B	*	*	*	*	*	*	*
ApproachDel:		25.0			12.5		xxxxxxx			xxxxxxx		
ApproachLOS:		D			B			*			*	

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #52 (52) Saratoga Avenue and Newbridge Street  
 \*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	99 70 7	2 0 13	19 548 193	0 515 16
ApproachDel:	25.0	12.5	xxxxxx	xxxxxx

Approach[northbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=1.2]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=176]  
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=4][total volume=1482]  
SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

Approach[southbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=0.1]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=15]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=4][total volume=1482]  
SUCCEED - Total volume greater than or equal to 800 for intersection with four or more approaches.

SIGNAL WARRANT DISCLAIMER

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The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #52 (52) Saratoga Avenue and Newbridge Street  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Stop Sign	Stop Sign	Uncontrolled	Uncontrolled
Lanes:	0 0 1! 0 0	0 0 1! 0 0	0 0 1! 0 0	0 0 0 1 0
Initial Vol:	99 70 7	2 0 13	19 548 193	0 515 16

Major Street Volume: 1291  
Minor Approach Volume: 176  
Minor Approach Volume Threshold: 151

SIGNAL WARRANT DISCLAIMER

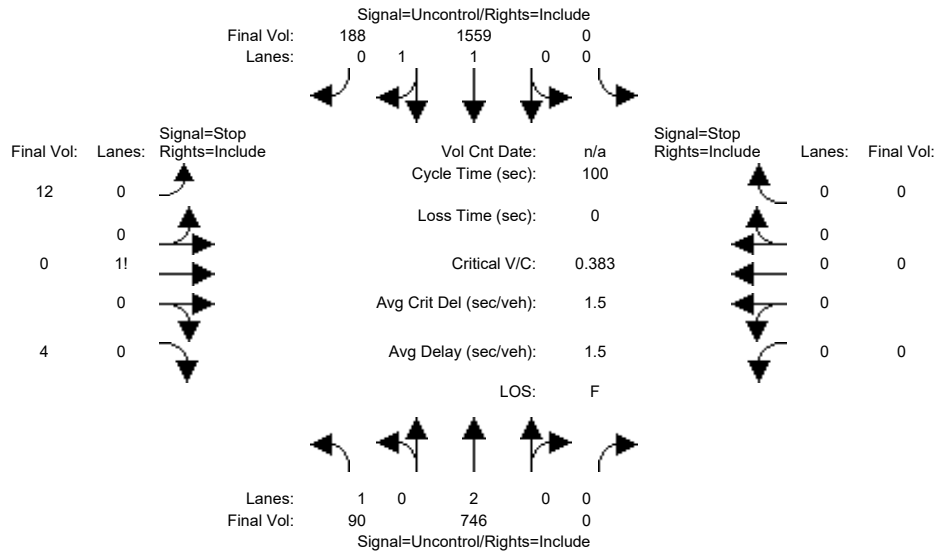
This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton No Project AM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module metrics: Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Final Volume.

Table for Critical Gap Module with 12 columns and 2 rows: Critical Gp, FollowUpTim.

Table for Capacity Module with 12 columns and 4 rows: Cnflct Vol, Potent Cap., Move Cap., Volume/Cap.

Table for Level Of Service Module with 12 columns and 10 rows: 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #300 (37) University Ave & Adams Dr
\*\*\*\*\*
Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 746 0	0 1559 188	12 0 4	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	143.7	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=0.6]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=16]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=2599]  
SUCCEED - Total volume greater than or equal to 650 for intersection  
with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #300 (37) University Ave & Adams Dr  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 746 0	0 1559 188	12 0 4	0 0 0 0

Major Street Volume: 2583  
Minor Approach Volume: 16  
Minor Approach Volume Threshold: -42 [less than minimum of 100]

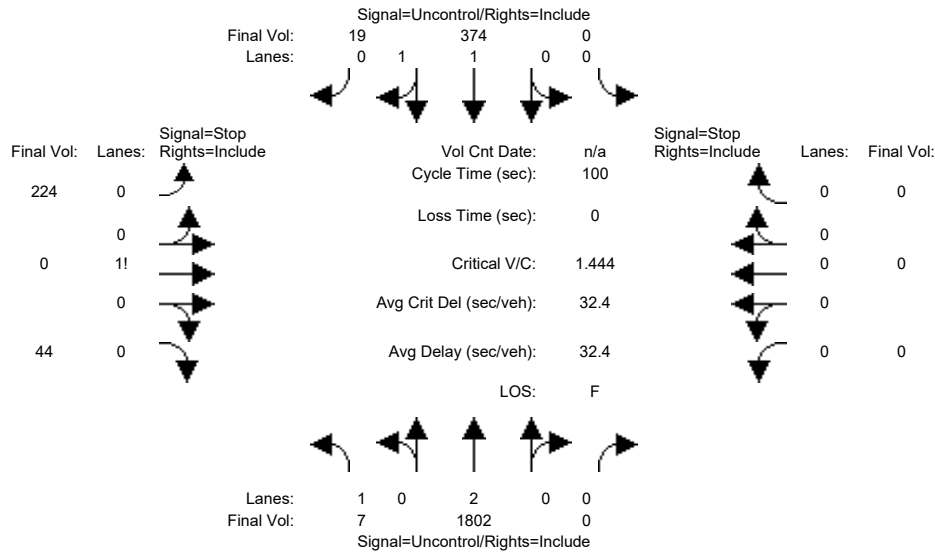
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

The peak hour warrant analysis in this report is not intended to replace a rigorous and complete traffic signal warrant analysis by the responsible jurisdiction. Consideration of the other signal warrants, which is beyond the scope of this software, may yield different results.

Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton No Project PM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module (Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, FinalVolume).

Table for Critical Gap Module with columns for movement and rows for Critical Gap and FollowUpTim.

Table for Capacity Module with columns for movement and rows for Cnflct Vol, Potent Cap., Move Cap., and Volume/Cap.

Table for Level Of Service Module with columns for movement and rows for 2Way95thQ, Control Del, LOS by Move, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, and ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #300 (37) University Ave & Adams Dr
\*\*\*\*\*
Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 19	224 0 44	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	298.6	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=22.2]  
SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=268]  
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=2470]  
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #300 (37) University Ave & Adams Dr  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 19	224 0 44	0 0 0 0

Major Street Volume: 2202  
Minor Approach Volume: 268  
Minor Approach Volume Threshold: 13 [less than minimum of 100]

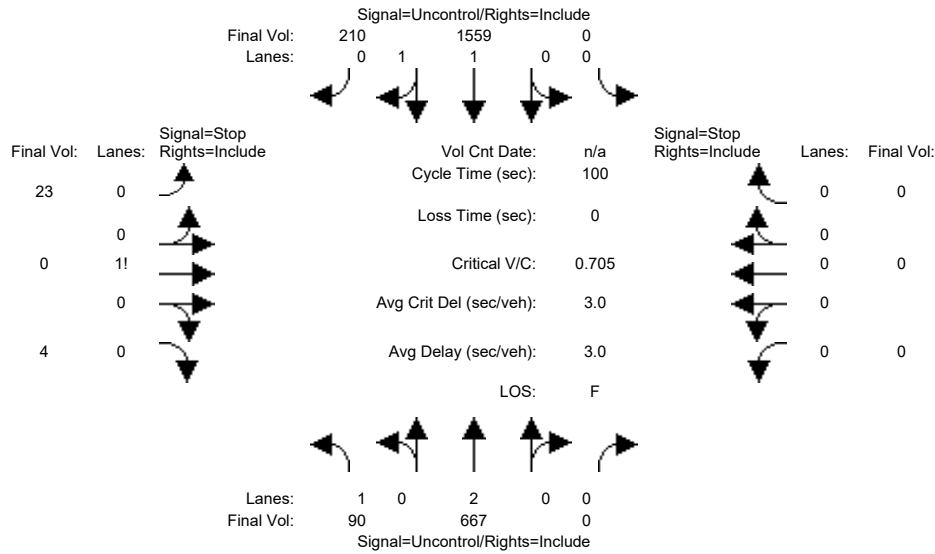
SIGNAL WARRANT DISCLAIMER

This peak hour signal warrant analysis should be considered solely as an "indicator" of the likelihood of an unsignalized intersection warranting a traffic signal in the future. Intersections that exceed this warrant are probably more likely to meet one or more of the other volume based signal warrant (such as the 4-hour or 8-hour warrants).

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Level Of Service Computation Report
2000 HCM Unsignalized (Future Volume Alternative)
Cumulative + Dumbarton WITH Project AM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr
Approach: North Bound South Bound East Bound West Bound
Movement: L - T - R L - T - R L - T - R L - T - R

Table with 12 columns representing movements and rows for Volume Module metrics: Base Vol, Growth Adj, Initial Bse, Added Vol, PasserByVol, Initial Fut, User Adj, PHF Adj, PHF Volume, Reduct Vol, Final Volume.

Table for Critical Gap Module with 12 columns and 2 rows: Critical Gp, FollowUpTim.

Table for Capacity Module with 12 columns and 4 rows: Cnflict Vol, Potent Cap., Move Cap., Volume/Cap.

Table for Level Of Service Module with 12 columns and 10 rows: 2Way95thQ, Control Del, LOS by Move, Movement, Shared Cap., SharedQueue, Shrd ConDel, Shared LOS, ApproachDel, ApproachLOS.

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*
Intersection #300 (37) University Ave & Adams Dr
\*\*\*\*\*
Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 667 0	0 1559 210	23 0 4	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	224.7	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=1.7]  
FAIL - Vehicle-hours less than 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=27]  
FAIL - Approach volume less than 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=2553]  
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #300 (37) University Ave & Adams Dr  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant NOT Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1! 0 0	0 0 0 0 0
Initial Vol:	90 667 0	0 1559 210	23 0 4	0 0 0 0

Major Street Volume: 2526  
Minor Approach Volume: 27  
Minor Approach Volume Threshold: -34 [less than minimum of 100]

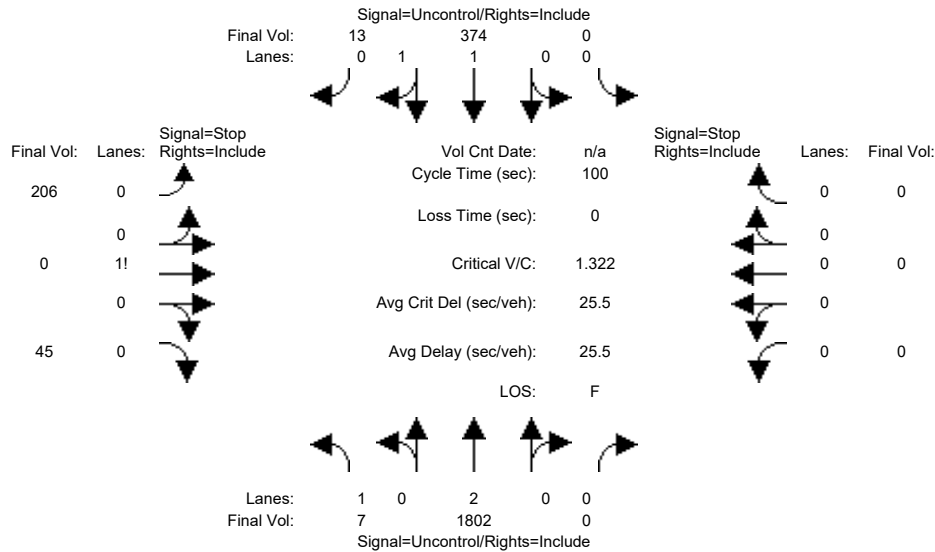
SIGNAL WARRANT DISCLAIMER

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Level Of Service Computation Report  
2000 HCM Unsignalized (Future Volume Alternative)  
Cumulative + Dumbarton WITH Project PM

Intersection #300: (37) University Ave & Adams Dr



Street Name: University Ave Adams Dr  
 Approach: North Bound South Bound East Bound West Bound  
 Movement: L - T - R L - T - R L - T - R L - T - R

Volume Module:

Base Vol:	7	1802	0	0	374	13	206	0	45	0	0	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	1802	0	0	374	13	206	0	45	0	0	0
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	1802	0	0	374	13	206	0	45	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	7	1802	0	0	374	13	206	0	45	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	7	1802	0	0	374	13	206	0	45	0	0	0

Critical Gap Module:

Critical Gp:	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.8	6.5	6.9	xxxxx	xxxx	xxxxx
FollowUpTim:	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3	xxxxx	xxxx	xxxxx

Capacity Module:

Cnflct Vol:	387	xxxx	xxxxx	xxxx	xxxx	xxxxx	1296	2197	194	xxxx	xxxx	xxxxx
Potent Cap.:	1183	xxxx	xxxxx	xxxx	xxxx	xxxxx	157	46	822	xxxx	xxxx	xxxxx
Move Cap.:	1183	xxxx	xxxxx	xxxx	xxxx	xxxxx	156	45	822	xxxx	xxxx	xxxxx
Volume/Cap:	0.01	xxxx	xxxx	xxxx	xxxx	xxxx	1.32	0.00	0.05	xxxx	xxxx	xxxx

Level Of Service Module:

2Way95thQ:	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	8.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxxx	xxxx	xxxxx	xxxxxx	xxxx	xxxxx
LOS by Move:	A	*	*	*	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT	LT - LTR - RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	182	xxxxxx	xxxx	xxxx	xxxxxx
SharedQueue:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	14.9	xxxxxx	xxxxxx	xxxx	xxxxxx
Shrd ConDel:	xxxxxx	xxxx	xxxxxx	xxxxxx	xxxx	xxxxxx	xxxxxx	249	xxxxxx	xxxxxx	xxxx	xxxxxx
Shared LOS:	*	*	*	*	*	*	*	F	*	*	*	*
ApproachDel:	xxxxxxx		xxxxxxx					248.8		xxxxxxx		
ApproachLOS:	*		*					F		*		*

Note: Queue reported is the number of cars per lane.

Peak Hour Delay Signal Warrant Report

\*\*\*\*\*  
 Intersection #300 (37) University Ave & Adams Dr  
 \*\*\*\*\*  
 Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 13	206 0 45	0 0 0 0
ApproachDel:	xxxxxxx	xxxxxxx	248.8	xxxxxxx

Approach[eastbound][lanes=1][control=Stop Sign]  
Signal Warrant Rule #1: [vehicle-hours=17.3]  
SUCCEED - Vehicle-hours greater than or equal to 4 for one lane approach.  
Signal Warrant Rule #2: [approach volume=251]  
SUCCEED - Approach volume greater than or equal to 100 for one lane approach.  
Signal Warrant Rule #3: [approach count=3][total volume=2447]  
SUCCEED - Total volume greater than or equal to 650 for intersection with less than four approaches.

SIGNAL WARRANT DISCLAIMER

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Peak Hour Volume Signal Warrant Report [Urban]

\*\*\*\*\*  
Intersection #300 (37) University Ave & Adams Dr  
\*\*\*\*\*

Future Volume Alternative: Peak Hour Warrant Met

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Uncontrolled	Uncontrolled	Stop Sign	Stop Sign
Lanes:	1 0 2 0 0	0 0 1 1 0	0 0 1 0 0	0 0 0 0 0
Initial Vol:	7 1802 0	0 374 13	206 0 45	0 0 0 0

Major Street Volume: 2196  
Minor Approach Volume: 251  
Minor Approach Volume Threshold: 14 [less than minimum of 100]

SIGNAL WARRANT DISCLAIMER

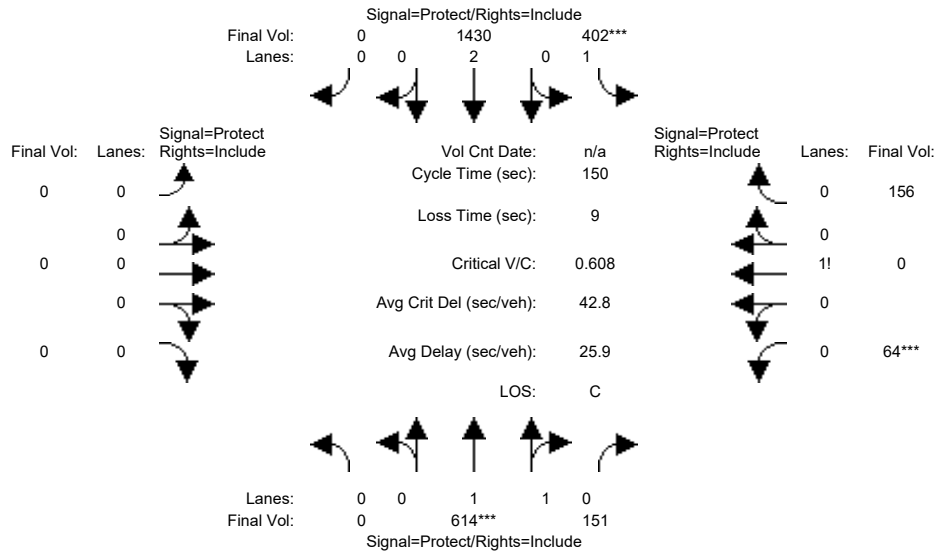
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Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project AM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	7	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	614	151	402	1430	0	0	0	0	64	0	156
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	614	151	402	1430	0	0	0	0	64	0	156
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	614	151	402	1430	0	0	0	0	64	0	156
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	614	151	402	1430	0	0	0	0	64	0	156
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	614	151	402	1430	0	0	0	0	64	0	156
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	614	151	402	1430	0	0	0	0	64	0	156

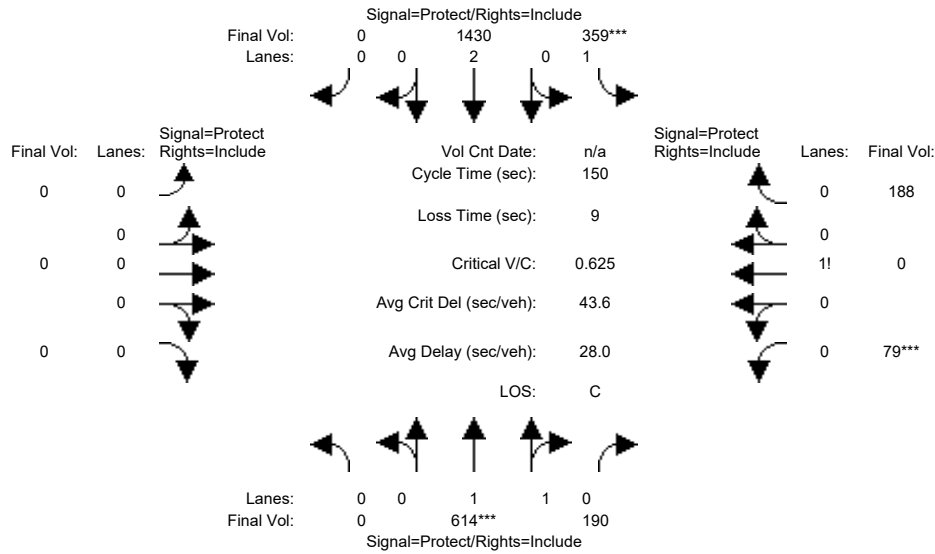
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	0.95	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	1.61	0.39	1.00	2.00	0.00	0.00	0.00	0.00	0.29	0.00	0.71
Final Sat.:	0	2811	691	1805	3610	0	0	0	0	493	0	1201

Capacity Analysis Module:												
Vol/Sat:	0.00	0.22	0.22	0.22	0.40	0.00	0.00	0.00	0.00	0.13	0.00	0.13
Crit Moves:	****			****						****		
Green Time:	0.0	53.9	53.9	55.0	109	0.0	0.0	0.0	0.0	32.1	0.0	32.1
Volume/Cap:	0.00	0.61	0.61	0.61	0.55	0.00	0.00	0.00	0.00	0.61	0.00	0.61
Uniform Del:	0.0	39.4	39.4	38.7	9.3	0.0	0.0	0.0	0.0	53.3	0.0	53.3
IncrementDel:	0.0	0.9	0.9	1.6	0.2	0.0	0.0	0.0	0.0	3.0	0.0	3.0
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	40.2	40.2	40.3	9.6	0.0	0.0	0.0	0.0	56.2	0.0	56.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	40.2	40.2	40.3	9.6	0.0	0.0	0.0	0.0	56.2	0.0	56.2
LOS by Move:	A	D	D	D	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	15	15	15	15	0	0	0	0	10	0	10

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton No Project PM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:												
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	7	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	614	190	359	1430	0	0	0	0	79	0	188
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	614	190	359	1430	0	0	0	0	79	0	188
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	614	190	359	1430	0	0	0	0	79	0	188
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	614	190	359	1430	0	0	0	0	79	0	188
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	614	190	359	1430	0	0	0	0	79	0	188
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	614	190	359	1430	0	0	0	0	79	0	188

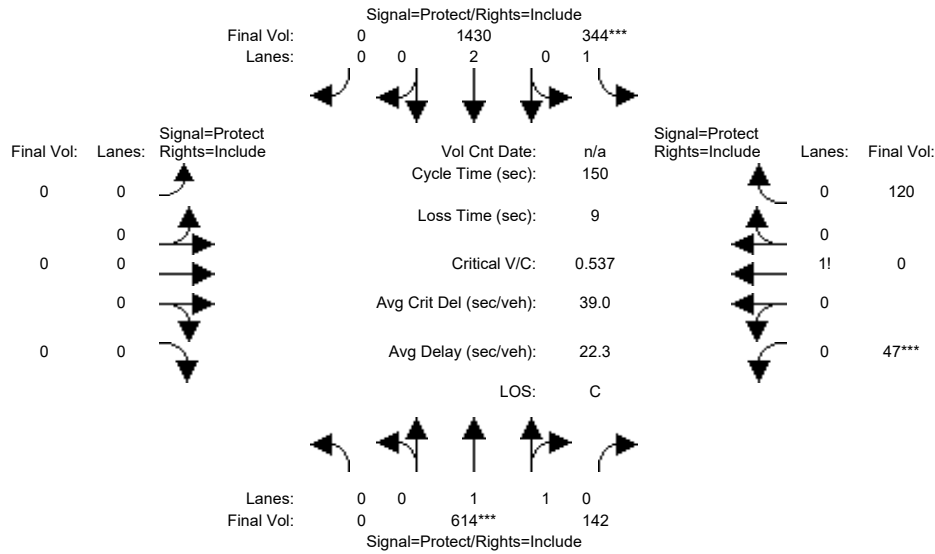
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	0.95	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	1.53	0.47	1.00	2.00	0.00	0.00	0.00	0.00	0.30	0.00	0.70
Final Sat.:	0	2660	823	1805	3610	0	0	0	0	501	0	1193

Capacity Analysis Module:												
Vol/Sat:	0.00	0.23	0.23	0.20	0.40	0.00	0.00	0.00	0.00	0.16	0.00	0.16
Crit Moves:	****			****						****		
Green Time:	0.0	55.4	55.4	47.7	103	0.0	0.0	0.0	0.0	37.8	0.0	37.8
Volume/Cap:	0.00	0.62	0.62	0.62	0.58	0.00	0.00	0.00	0.00	0.62	0.00	0.62
Uniform Del:	0.0	38.8	38.8	43.5	12.1	0.0	0.0	0.0	0.0	49.8	0.0	49.8
IncrementDel:	0.0	1.0	1.0	2.2	0.3	0.0	0.0	0.0	0.0	2.9	0.0	2.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	39.7	39.7	45.7	12.4	0.0	0.0	0.0	0.0	52.7	0.0	52.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	39.7	39.7	45.7	12.4	0.0	0.0	0.0	0.0	52.7	0.0	52.7
LOS by Move:	A	D	D	D	B	A	A	A	A	D	A	D
HCM2kAvgQ:	0	16	16	14	18	0	0	0	0	11	0	11

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project AM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	7	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	614	142	344	1430	0	0	0	0	47	0	120
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	614	142	344	1430	0	0	0	0	47	0	120
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	614	142	344	1430	0	0	0	0	47	0	120
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	614	142	344	1430	0	0	0	0	47	0	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	614	142	344	1430	0	0	0	0	47	0	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	614	142	344	1430	0	0	0	0	47	0	120

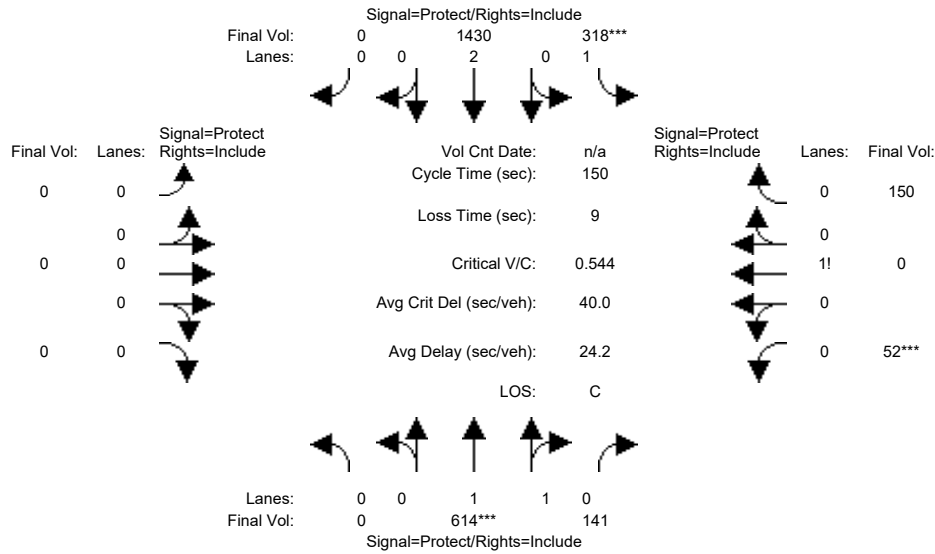
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	0.95	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	1.62	0.38	1.00	2.00	0.00	0.00	0.00	0.00	0.28	0.00	0.72
Final Sat.:	0	2850	659	1805	3610	0	0	0	0	476	0	1216

Capacity Analysis Module:												
Vol/Sat:	0.00	0.22	0.22	0.19	0.40	0.00	0.00	0.00	0.00	0.10	0.00	0.10
Crit Moves:	****			****						****		
Green Time:	0.0	60.2	60.2	53.2	113	0.0	0.0	0.0	0.0	27.6	0.0	27.6
Volume/Cap:	0.00	0.54	0.54	0.54	0.52	0.00	0.00	0.00	0.00	0.54	0.00	0.54
Uniform Del:	0.0	34.3	34.3	38.6	7.4	0.0	0.0	0.0	0.0	55.4	0.0	55.4
IncrementDel:	0.0	0.4	0.4	0.9	0.2	0.0	0.0	0.0	0.0	1.9	0.0	1.9
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	34.7	34.7	39.5	7.6	0.0	0.0	0.0	0.0	57.3	0.0	57.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	34.7	34.7	39.5	7.6	0.0	0.0	0.0	0.0	57.3	0.0	57.3
LOS by Move:	A	C	C	D	A	A	A	A	A	E	A	E
HCM2kAvgQ:	0	14	14	13	14	0	0	0	0	7	0	7

Note: Queue reported is the number of cars per lane.

Level Of Service Computation Report  
 2000 HCM Operations (Future Volume Alternative)  
 Cumulative + Dumbarton WITH Project PM

Intersection #800: (36) University Avenue and Purdue Avenue (New Signal)



Street Name:	University Avenue						Purdue Avenue					
	North Bound			South Bound			East Bound			West Bound		
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Min. Green:	10	10	10	7	10	10	0	0	0	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0

Volume Module:												
Base Vol:	0	614	141	318	1430	0	0	0	0	52	0	150
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	614	141	318	1430	0	0	0	0	52	0	150
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	614	141	318	1430	0	0	0	0	52	0	150
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	614	141	318	1430	0	0	0	0	52	0	150
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	614	141	318	1430	0	0	0	0	52	0	150
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Volume:	0	614	141	318	1430	0	0	0	0	52	0	150

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.92	0.92	0.95	0.95	1.00	1.00	1.00	1.00	0.89	1.00	0.89
Lanes:	0.00	1.63	0.37	1.00	2.00	0.00	0.00	0.00	0.00	0.26	0.00	0.74
Final Sat.:	0	2854	655	1805	3610	0	0	0	0	434	0	1253

Capacity Analysis Module:												
Vol/Sat:	0.00	0.22	0.22	0.18	0.40	0.00	0.00	0.00	0.00	0.12	0.00	0.12
Crit Moves:	****			****						****		
Green Time:	0.0	59.4	59.4	48.6	108	0.0	0.0	0.0	0.0	33.0	0.0	33.0
Volume/Cap:	0.00	0.54	0.54	0.54	0.55	0.00	0.00	0.00	0.00	0.54	0.00	0.54
Uniform Del:	0.0	34.9	34.9	41.6	9.7	0.0	0.0	0.0	0.0	51.8	0.0	51.8
IncrementDel:	0.0	0.4	0.4	1.1	0.3	0.0	0.0	0.0	0.0	1.7	0.0	1.7
InitQueueDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	1.00
Delay/Veh:	0.0	35.3	35.3	42.7	10.0	0.0	0.0	0.0	0.0	53.5	0.0	53.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	35.3	35.3	42.7	10.0	0.0	0.0	0.0	0.0	53.5	0.0	53.5
LOS by Move:	A	D	D	D	B	A	A	A	A	D	A	D
HCM2kAvgQ:	0	14	14	12	16	0	0	0	0	9	0	9

Note: Queue reported is the number of cars per lane.

**Appendix D**  
**Trip Generation Analysis**



## Memorandum

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**Date:** October 13, 2021

**To:** Ms. Kirsten Chapman, ICF

**From:** Gary Black  
Shikha Jain

**Subject:** Trip Generation for the Proposed Facebook Willow Village Campus in Menlo Park, California

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Hexagon Transportation Consultants, Inc. has developed trip generation estimates for the proposed Facebook Willow Village Campus in Menlo Park, California. The project site, which is approximately 59 acres in area, is located on Willow Road between the Joint Powers Board (JPB) Rail Corridor in the north and O'Brien Drive in the south. The site is accessed via Hamilton Avenue and two driveways that connect directly to Willow Road. Existing uses on the site include approximately one million square feet of industrial, office, and warehouse space. The project proposes to replace the existing uses with a mixed-use village that include residential, retail, recreational, hotel, and office uses.

### Trip Generation

Trip generation estimates for the mixed-use development are based on standard trip generation rates published in the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition manual. A variety of trip reduction credits were applied to the project's gross trip generation estimates based on the project's mixed-use nature, physical design features, and geographic location. The resulting trip generation was then subject to a 20% site-wide TDM trip reduction requirement to derive a site-wide trip cap.

Net project trip generation on the surrounding roadway network was estimated by further crediting potential pass-by trips and trips generated by the existing land uses on site.

### Gross Project Trip Generation

A description of the source of trip generation rates for each land-use is provided below:

- **Facebook Office.** Initial trip estimates for Facebook office uses are based on ITE Land Use code 710: General Office Building.
- **Residential.** The trip estimate is based on the ITE Land Use code 221: Multifamily Housing (Mid-Rise), which includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three to ten levels. Some of the apartments are designated as senior housing, which could have a lower trip rate. Thus, the trip generation estimate for the apartments is conservative.
- **Retail.** Trip estimates are based on ITE Land Use code 820: Shopping Center, which includes several types of retail uses like restaurants, movie theaters, bowling alleys etc. that are typically present in shopping centers.
- **Hotel.** Trip estimates are based on ITE Land Use code 310: Hotel.

- **Public Park.** Trip estimates are based on ITE Land Use code 488: Soccer Complex due to the programmatic design of the park, which will have play structures and open field areas for warm-ups or casual play.
- **Community Space.** Trip estimates are based on ITE Land Use code 495: Recreational Community Center

**Internal Capture**

Since this project is mixed-use in nature, a portion of the trips generated by the project will both begin and end within the development, also called as internal capture. Internal capture trip estimates were made for each of the Project’s land uses based on the specific mix of uses, sizes, and location within the Project utilizing a combination of two internal capture methodologies: the Transportation Research Board (TRB) *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*, and US EPA *Mixed Use Trip Generation Model v.4 (MXD)*, 2010.

NCHRP Report 684 includes an assessment of on-site land-use categories including retail, office, residential, restaurants, theaters, and hotels within the site land use mix when generating internal capture. The EPA MXD method does not explicitly differentiate subcategories such as restaurants, theaters, and hotels but it does account for location factors influencing the project, including regional location, transit availability, density of development, walkability factors, and the sociodemographic profile of site residents and businesses. Given the strengths and weaknesses of both methodologies, an integrated approach for internal capture was developed as described in *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo, American Planning Association, May 2013*. In accordance with the PAS memo, the full EPA MXD methodology and NCHRP 684 methodology were applied to get internal capture from each method. The results of the two methods were then combined in terms of percentages of trips remaining internal to the development site using proportioning factors provided in the PAS Memo (see Appendix A).

Local area characteristics inputs into the EPA MXD model are described in Table 1.

**Table 1  
Input for EPA MXD Model V4**

Factor	Input Value	Source
Project Acreage	59 acres	Project Plan
Number of intersections within or on the perimeter of the MXD	6	Project Plan
Is transit present within the site or across the street	Yes	Project Plan
Is the site a Central Business District or TOD	No	--
Employment within one mile of the MXD	20,851	<a href="http://onthemap.ces.census.gov/">http://onthemap.ces.census.gov/</a>
Employment within a 30 min transit trip	43,479	<a href="http://onthemap.ces.census.gov/">http://onthemap.ces.census.gov/</a>

**External Walk, Bike, and Transit**

External walk, bike, and transit trip reduction is based on trips to the site using these alternative modes of transportation. This reduction is dependent on local area characteristics like availability of transit near the site, intersection density, etc. EPA MXD accounts for local area characteristics (see Table 1) to provide trip reductions based on external walking, biking, and transit.

The internal capture and external walk, bike and transit reductions were credited against the initial trip generation estimates (using ITE rates) to derive the gross project trip generation. Some of the external walk, bike, and transit (tram) trips would be to the other facilities of the Facebook campus. The gross project trip generation would be subject to the 20% site-wide TDM requirement, discussed below.

As shown in Table 2, the project trips generated by the proposed land uses after internal capture and external walk, bike, and transit reductions are 34,254 daily trips, including 3,123 AM peak hour trips (2,223 inbound trips and 900 outbound trips), and 3,834 PM peak hour trips (1,241 inbound trips and 2,593 outbound trips).



**Table 2**  
**Trip Generation Estimates**

Land Use	Size	Daily			AM Peak Hour			PM Peak Hour				
		Rate	Trips	Rate	In	Out	Total	Rate	In	Out	Total	
<b>Proposed Use</b>	<b>ITE Code <sup>1</sup></b>											
Facebook Office Buildings	710 6,950 emp	3.28	22,796	0.37	2,135	437	2,572	0.40	556	2,224	2,780	
Internal Capture <sup>2</sup>			(1,603)		(59)	(15)	(74)		(21)	(71)	(92)	
External Walk, Bike, and Transit <sup>3</sup>			(2,420)		(151)	(31)	(182)		(45)	(183)	(228)	
<b>Facebook Office trips before active TDM measures:</b>			<b>18,773</b>		<b>1,925</b>	<b>391</b>	<b>2,316</b>		<b>490</b>	<b>1,970</b>	<b>2,460</b>	
Multifamily Housing (Mid-Rise)	221 1,730 du	5.44	9,411	0.36	162	461	623	0.44	464	297	761	
Internal Capture <sup>2</sup>			(662)		(4)	(13)	(17)		(56)	(27)	(83)	
External Walk, Bike, and Transit <sup>3</sup>			(999)		(12)	(33)	(45)		(35)	(23)	(58)	
<b>Residential trips before active TDM measures:</b>			<b>7,750</b>		<b>146</b>	<b>415</b>	<b>561</b>		<b>373</b>	<b>247</b>	<b>620</b>	
General Retail	820 200 ksf	37.75	7,550	0.94	117	71	188	3.81	366	396	762	
Internal Capture <sup>2</sup>			(531)		(7)	(4)	(11)		(36)	(54)	(90)	
External Walk, Bike, and Transit <sup>3</sup>			(802)		(8)	(5)	(13)		(28)	(29)	(57)	
<b>Retail trips before active TDM measures:</b>			<b>6,217</b>		<b>102</b>	<b>62</b>	<b>164</b>		<b>302</b>	<b>313</b>	<b>615</b>	
Hotel	310 193 rms	8.36	1,613	0.47	54	37	91	0.60	59	57	116	
Internal Capture <sup>2</sup>			(113)		(2)	(4)	(6)		(7)	(4)	(11)	
External Walk, Bike, and Transit <sup>3</sup>			(171)		(4)	(2)	(6)		(4)	(5)	(9)	
<b>Hotel trips before active TDM measures:</b>			<b>1,329</b>		<b>48</b>	<b>31</b>	<b>79</b>		<b>48</b>	<b>48</b>	<b>96</b>	
Soccer Complex <sup>4</sup>	488 3 fields	71.33	214	0.99	2	1	3	16.43	32	17	49	
Internal Capture <sup>3</sup>			(15)		0	0	0		(1)	(1)	(2)	
External Walk, Bike, and Transit <sup>4</sup>			(23)		0	0	0		(3)	(1)	(4)	
<b>Public Park trips before active TDM measures:</b>			<b>176</b>		<b>2</b>	<b>1</b>	<b>3</b>		<b>28</b>	<b>15</b>	<b>43</b>	
<b>Project Trips Before active TDM measures</b>			<b>34,245</b>		<b>2,223</b>	<b>900</b>	<b>3,123</b>		<b>1,241</b>	<b>2,593</b>	<b>3,834</b>	
Facebook Office Active TDM Reduction <sup>5</sup>			(536)		(555)	(91)	(646)		(105)	(685)	(790)	
Non-Office Uses Active TDM Reduction <sup>5</sup>			(446)		(30)	(51)	(81)		(75)	(62)	(137)	
<b>Project Trips After Active TDM Reduction</b>			<b>33,263</b>		<b>1,638</b>	<b>758</b>	<b>2,396</b>		<b>1,061</b>	<b>1,846</b>	<b>2,907</b>	
Retail Pass-By Reduction (34%) <sup>6</sup>			(1,026)		0	0	0		(92)	(96)	(188)	
<b>New Project Trips Generated on Roadway Network</b>			<b>32,237</b>		<b>1,638</b>	<b>758</b>	<b>2,396</b>		<b>969</b>	<b>1,750</b>	<b>2,719</b>	
<b>Other Trip Adjustments</b>												
Existing Uses <sup>7</sup>			(11,700)		(699)	(286)	(985)		(250)	(555)	(805)	
<b>Net Project Trips on Project Network</b>			<b>20,537</b>		<b>939</b>	<b>472</b>	<b>1,411</b>		<b>719</b>	<b>1,195</b>	<b>1,914</b>	

**Notes:**  
emp = employees; ksf = 1,000 square feet; du = dwelling unit; rms = rooms  
<sup>1</sup> Daily, AM, and PM peak hour average rates published in *ITE Trip Generation Manual, 10th Edition, 2017* were used for each land use.  
<sup>2</sup> Internal Capture developed using *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* and *US EPA Mixed Use Trip Generation Model v.4, 2010* per the methodology described in *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo*, American Planning Association, May 2013.  
<sup>3</sup> External walk, bike, and transit reduction developed using *US EPA Mixed Use Trip Generation Model v.4, 2010*.  
<sup>4</sup> ITE Trip Generation Manual, 10th Edition, 2017 provides trip rates per field for a soccer complex. The park is planned for 4 acres. Number of soccer fields on 4 acres of land was estimated based on the size of a standard soccer field.  
<sup>5</sup> Daily TDM reduction based on Willow Village Adjustment Request: Transportation Demand Management. Peak Hour TDM reduction based on proposed peak hour trip caps for Facebook, and a 10% TDM reduction for non-Facebook uses.  
<sup>6</sup> Pass-by-trip reduction is based on the average pass-by-trip reduction rate published in the ITE Trip Generation Handbook, 3rd Edition. Hexagon assumes no pass-by-trip reduction during the AM peak hour and half of the PM peak pass-by-trip reduction for daily trip generation.  
<sup>7</sup> Existing use Trip Estimates based on driveway counts conducted over three days in September 2019 per *Facebook Willow Traffic Counts Memorandum*, Fehr & Peers, March 26, 2020. 8-9 AM in the AM peak period and 4-5 PM in the PM peak period have been considered as peak hours since they have the highest trips.

## Transportation Demand Management (TDM)

The City of Menlo Park requires all new developments to reduce their trip generation by 20 percent via TDM strategies. The TDM reduction is applied to the trip generation after the internal capture and the proposed project location and ambient mode split have been accounted for. This method of accounting for the 20 percent reduction is applied to the peak hour trips. For daily trips, the project has requested an exemption to have the 20 percent reduction applied to the trip generation before the internal capture and other trip reductions.

Per the Willow Village VMT and Trip Generation Analyses Assumptions Memorandum developed by Fehr & Peers dated August 9th, 2021, the Facebook offices will be capping their trips to a much lower trip generation level during the AM and PM peak hours by using aggressive TDM measures. These TDM measures are estimated to achieve a reduction of 20 percent from ITE trip rates on daily trips. During the AM and PM peak hours, the project proposes TDM greater than 20 percent from ITE trip rates after accounting for internal capture and external walk, bike and transit trips. Accordingly, a lower TDM trip reduction is needed for the other proposed land uses on the site to achieve an overall TDM reduction of 20 percent for the proposed project. A TDM trip reduction of 3 percent was assumed for the other proposed land uses for daily trips and a TDM trip reduction of 10 percent was assumed for the other proposed land uses for peak hour trips.

After accounting for the Facebook trip cap and the TDM reduction for all other proposed land uses, the main campus is estimated to generate 33,263 daily trips, including 2,396 AM peak hour trips (1,638 inbound trips and 758 outbound trips), and 2,907 PM peak hour trips (1,061 inbound trips and 1,846 outbound trips).

## Net Project Trip Generation

Net project trip generation estimates the number of new project trips generated onto the surrounding roadway network. The following categories of trips are credited from the site-specific trip cap to derive the net project trip generation.

### Pass-By

The retail uses would attract some of their customers from people who are passing by the site on Willow Road or Bayfront Expressway heading towards their destination. These customers would not need to make a separate vehicle trip to come to the Project Site. Such vehicle trips are categorized as pass-by trips as they are not new trips generated on the roadway network and should be credited from the project trip generation. A pass-by trip reduction for retail trips was applied based on the average pass-by reduction rate published in the ITE Trip Generation Handbook, 3rd Edition. Pass-by data are typically available only for the PM peak hour. Hexagon assumed no pass-by trip reduction for the AM peak hour and half of the PM peak pass-by trip reduction for daily trip generation.

### Existing Uses

Trips associated with the existing uses on the Project Site were credited against the new trip generation. The trips generated by the existing buildings on the site were estimated based on driveway counts conducted over three days in September 2019 per Facebook Willow Traffic Counts Memorandum, Fehr & Peers, March 26, 2020. The existing uses on the site generated an average of 11,700 trips daily, including 985 trips in the AM peak hour (699 inbound and 286 outbound trips), and 805 trips in the PM peak hour (250 inbound and 555 outbound trips).

As shown in Table 2, the net proposed project trips generated by the main campus on the roadway network would be 20,537 daily trips, including 1,411 AM peak hour trips (939 inbound trips and 472 outbound trips), and 1,914 PM peak hour trips (719 inbound trips and 1,195 outbound trips). As shown in Table 11, the net trips generated by the Hamilton Parcel are estimated to be 218 daily trips, including 6 AM peak hour trips (3 inbound trips and 3 outbound trips), and 18 PM peak hour trips (9 inbound trips and 9 outbound trips).



HEXAGON TRANSPORTATION CONSULTANTS, INC.



## Appendix A Internal Capture Reduction Calculations

**Table A-1: Internal Capture Proportioning Factors**

	<b>AM Peak Traffic</b>	<b>PM Peak Traffic</b>	<b>Average Daily Traffic</b>
NCHRP 684	10.1%	36.5%	0.0%
EPA MXD	89.9%	63.5%	100.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development*, PAS Memo, American Planning Association, May 2013.

**Table A-2: Trip Generation Estimates**

Land Use	Size	Daily		AM Peak Hour			PM Peak Hour					
		Rate	Trips	Rate	In	Out	Total	Rate	In	Out	Total	
<b>Proposed Use</b>	<b>ITE Code <sup>1</sup></b>											
Facebook Office Buildings	710	6,950 emp	3.28	22,796	0.37	2,135	437	2,572	0.40	556	2,224	2,780
Internal Capture % (NCHRP)						3%	8%			4%	2%	
Internal Capture Reduction (NCHRP)						(58)	(37)	(95)		(20)	(48)	(68)
Internal Capture (MXD)				(1,603)		(59)	(12)	(71)		(21)	(84)	(105)
Internal Capture <sup>2</sup>				(1,603)		(59)	(15)	(74)		(21)	(71)	(92)
External Walk, Bike, and Transit <sup>3</sup>				(2,420)		(151)	(31)	(182)		(45)	(183)	(228)
<b>Facebook Office trips before active TDM measures:</b>				<b>18,773</b>		<b>1,925</b>	<b>391</b>	<b>2,316</b>		<b>490</b>	<b>1,970</b>	<b>2,460</b>
Multifamily Housing (Mid-Rise)	221	1,730 du	5.44	9,411	0.36	162	461	623	0.44	464	297	761
Internal Capture % (NCHRP)						2%	3%			26%	19%	
Internal Capture Reduction (NCHRP)						(3)	(14)	(17)		(122)	(56)	(178)
Internal Capture (MXD)				(662)		(4)	(13)	(17)		(18)	(11)	(29)
Internal Capture <sup>2</sup>				(662)		(4)	(13)	(17)		(56)	(27)	(83)
External Walk, Bike, and Transit <sup>3</sup>				(999)		(12)	(33)	(45)		(35)	(23)	(58)
<b>Residential trips before active TDM measures:</b>				<b>7,750</b>		<b>146</b>	<b>415</b>	<b>561</b>		<b>373</b>	<b>247</b>	<b>620</b>
General Retail	820	200 ksf	37.75	7,550	0.94	117	71	188	3.81	366	396	762
Internal Capture % (NCHRP)						40%	34%			20%	31%	
Internal Capture Reduction (NCHRP)						(47)	(24)	(71)		(73)	(121)	(194)
Internal Capture (MXD)				(531)		(3)	(2)	(5)		(14)	(15)	(29)
Internal Capture <sup>2</sup>				(531)		(7)	(4)	(11)		(36)	(54)	(90)
External Walk, Bike, and Transit <sup>3</sup>				(802)		(8)	(5)	(13)		(28)	(29)	(57)
<b>Retail trips before active TDM measures:</b>				<b>6,217</b>		<b>102</b>	<b>62</b>	<b>164</b>		<b>302</b>	<b>313</b>	<b>615</b>
Hotel	310	193 rms	8.36	1,613	0.47	54	37	91	0.60	59	57	116
Internal Capture % (NCHRP)						0%	89%			29%	12%	
Internal Capture Reduction (NCHRP)						0	(33)	(33)		(17)	(7)	(24)
Internal Capture (MXD)				(113)		(2)	(1)	(3)		(2)	(2)	(4)
Internal Capture <sup>2</sup>				(113)		(2)	(4)	(6)		(7)	(4)	(11)
External Walk, Bike, and Transit <sup>3</sup>				(171)		(4)	(2)	(6)		(4)	(5)	(9)
<b>Hotel trips before active TDM measures:</b>				<b>1,329</b>		<b>48</b>	<b>31</b>	<b>79</b>		<b>48</b>	<b>48</b>	<b>96</b>
Soccer Complex <sup>4</sup>	488	3 fields	71.33	214	0.99	2	1	3	16.43	32	17	49
Internal Capture % (NCHRP)						0%	0%			0%	0%	
Internal Capture Reduction (NCHRP)						0	0	0		0	0	0
Internal Capture (MXD)				(15)		0	0	0		(1)	(1)	(2)
Internal Capture <sup>3</sup>				(15)		0	0	0		(1)	(1)	(2)
External Walk, Bike, and Transit <sup>4</sup>				(23)		0	0	0		(3)	(1)	(4)
<b>Public Park trips before active TDM measures:</b>				<b>176</b>		<b>2</b>	<b>1</b>	<b>3</b>		<b>28</b>	<b>15</b>	<b>43</b>
<b>Project Trips Before active TDM measures</b>				<b>34,245</b>		<b>2,223</b>	<b>900</b>	<b>3,123</b>		<b>1,241</b>	<b>2,593</b>	<b>3,834</b>
Facebook Office Active TDM Reduction <sup>5</sup>				(536)		(555)	(91)	(646)		(105)	(685)	(790)
Non-Office Uses Active TDM Reduction <sup>5</sup>				(446)		(30)	(51)	(81)		(75)	(62)	(137)
<b>Project Trips After Active TDM Reduction</b>				<b>33,263</b>		<b>1,638</b>	<b>758</b>	<b>2,396</b>		<b>1,061</b>	<b>1,846</b>	<b>2,907</b>
Retail Pass-By Reduction (34%) <sup>6</sup>				(1,026)		0	0	0		(92)	(96)	(188)
<b>New Project Trips Generated on Roadway Network</b>				<b>32,237</b>		<b>1,638</b>	<b>758</b>	<b>2,396</b>		<b>969</b>	<b>1,750</b>	<b>2,719</b>
<b>Other Trip Adjustments</b>												
Existing Uses <sup>7</sup>				(11,700)		(699)	(286)	(985)		(250)	(555)	(805)
<b>Net Project Trips on Project Network</b>				<b>20,537</b>		<b>939</b>	<b>472</b>	<b>1,411</b>		<b>719</b>	<b>1,195</b>	<b>1,914</b>

**Notes:**

emp = employees; ksf = 1,000 square feet; du = dwelling unit; rms = rooms

<sup>1</sup> Daily, AM, and PM peak hour average rates published in *ITE Trip Generation Manual, 10th Edition, 2017* were used for each land use.

<sup>2</sup> Internal Capture developed using *National Cooperative Highway Research Program (NCHRP) Report 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments and US EPA Mixed Use Trip Generation Model v.4, 2010* per the methodology described in *Getting Trip Generation Right: Eliminating the Bias Against Mixed-Use Development, PAS Memo*, American Planning Association, May 2013.

<sup>3</sup> External walk, bike, and transit reduction developed using *US EPA Mixed Use Trip Generation Model v.4, 2010*.

<sup>4</sup> ITE Trip Generation Manual, 10th Edition, 2017 provides trip rates per field for a soccer complex. The park is planned for 4 acres. Number of soccer fields on 4 acres of land was estimated based on the size of a standard soccer field.

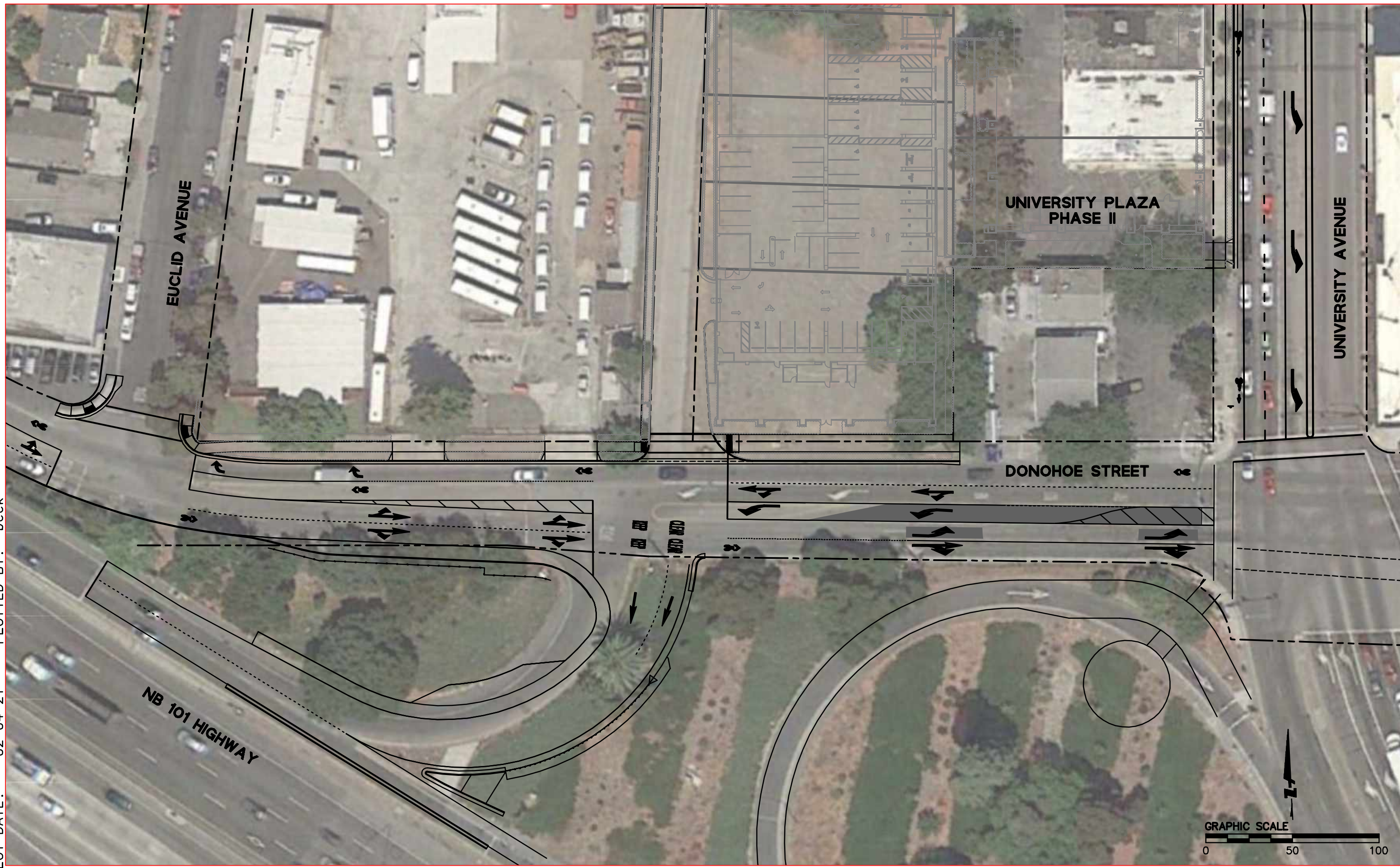
<sup>5</sup> Daily TDM reduction based on Willow Village Adjustment Request: Transportation Demand Management. *Peak Hour TDM reduction based on proposed peak hour trip caps for Facebook, and a 10% TDM reduction for non-Facebook uses.*

<sup>6</sup> Pass-by trip reduction is based on the average pass-by trip reduction rate published in the ITE Trip Generation Handbook, 3rd Edition. Hexagon assumes no pass-by trip reduction during the AM peak hour and half of the PM peak pass-by reduction for daily trip generation.

<sup>7</sup> Existing use Trip Estimates based on driveway counts conducted over three days in September 2019 per *Facebook Willow Traffic Counts Memorandum*, Fehr & Peers, March 26, 2020. 8-9 AM in the AM peak period and 4-5 PM in the PM peak period have been considered as peak hours since they have the highest trips.

**Appendix E**  
**Planned Donohoe Street Improvements**

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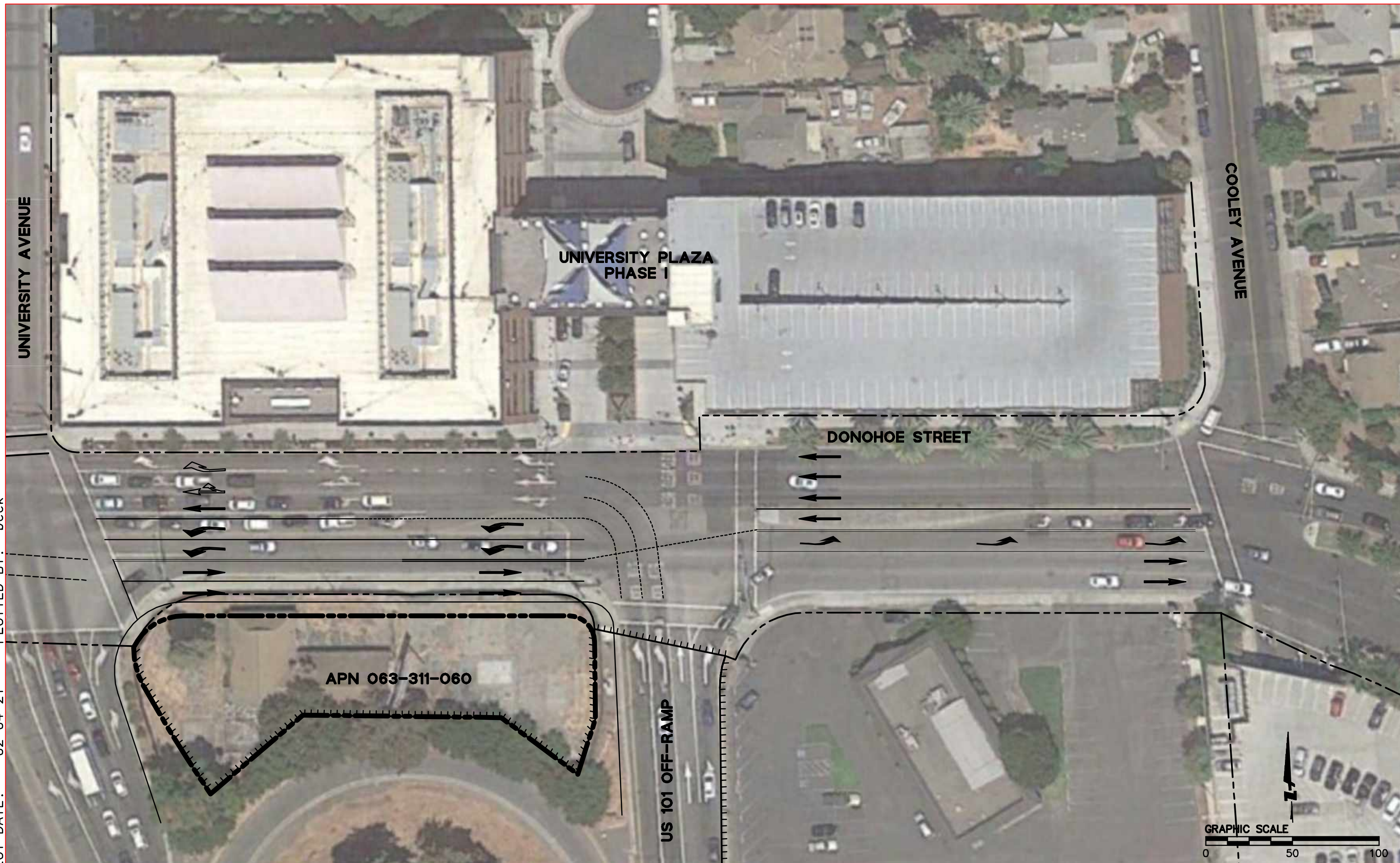




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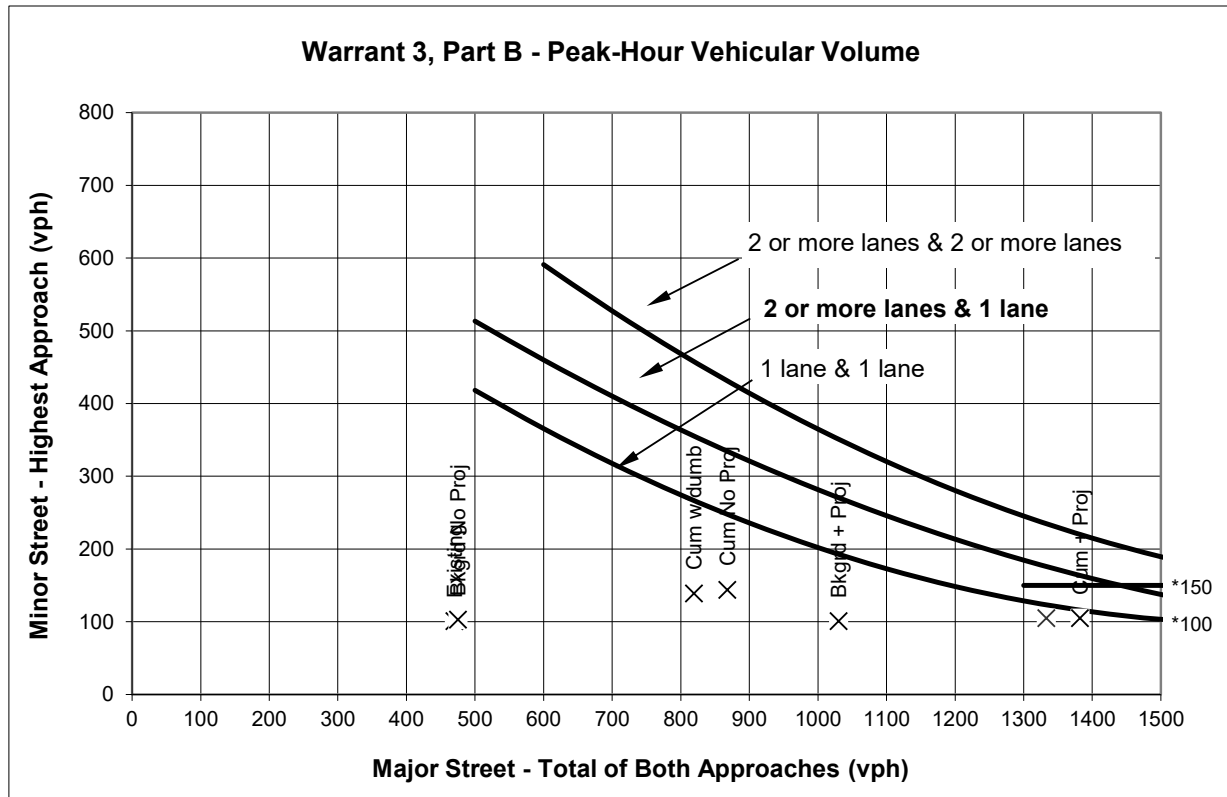


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PLOT DATE: 02-04-21 PLOTTED BY: beck



## **Appendix F**

### **Signal Warrant Analysis**



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Warrant 3, Part B - Peak-Hour Vehicular Volume**

		Approach Lanes		AM PEAK PERIOD						
		2 or	One	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		More	More							
Major Street - Both Approaches	O'Brien Drive	X		470	475	1030	868	1382	819	1333
Minor Street - Highest Approach	Adams Drive/	X		101	103	101	144	105	139	105
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Facebook Willow Village

**TRAFFIC SIGNAL WARRANTS WORKSHEET**

Analyst: SJ date: 6/22/21

Major Street: O'Brien Drive  
 Minor Street: Adams Drive/

Critical Approach Speed\* (mph) 25  
 Critical Approach Speed\* (mph) 25  
 \*Posted Speed.

Critical speed of major street traffic > 50 mph (64 km/h).....  } Rural (R)  
 In built up area of isolated community of < 10,000 population.....  }  
 Urban (U)

**AM PEAK PERIOD**

**Warrant 3 - Peak Hour**

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

	AM PEAK PERIOD						
	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Minor Street Approach Direction w/ Highest Delay	SB	SB	SB	SB	SB	SB	SB
Highest Minor Street Average Delay (sec/veh)	14.0	14.1	49.5	48.3	320.8	35.8	193.0
Corresponding Minor Street Approach Volume (veh/hr)	101	103	101	144	105	139	105
Minor Street Total Delay (veh-hrs)	0.4	0.4	1.4	1.9	9.4	1.4	5.6

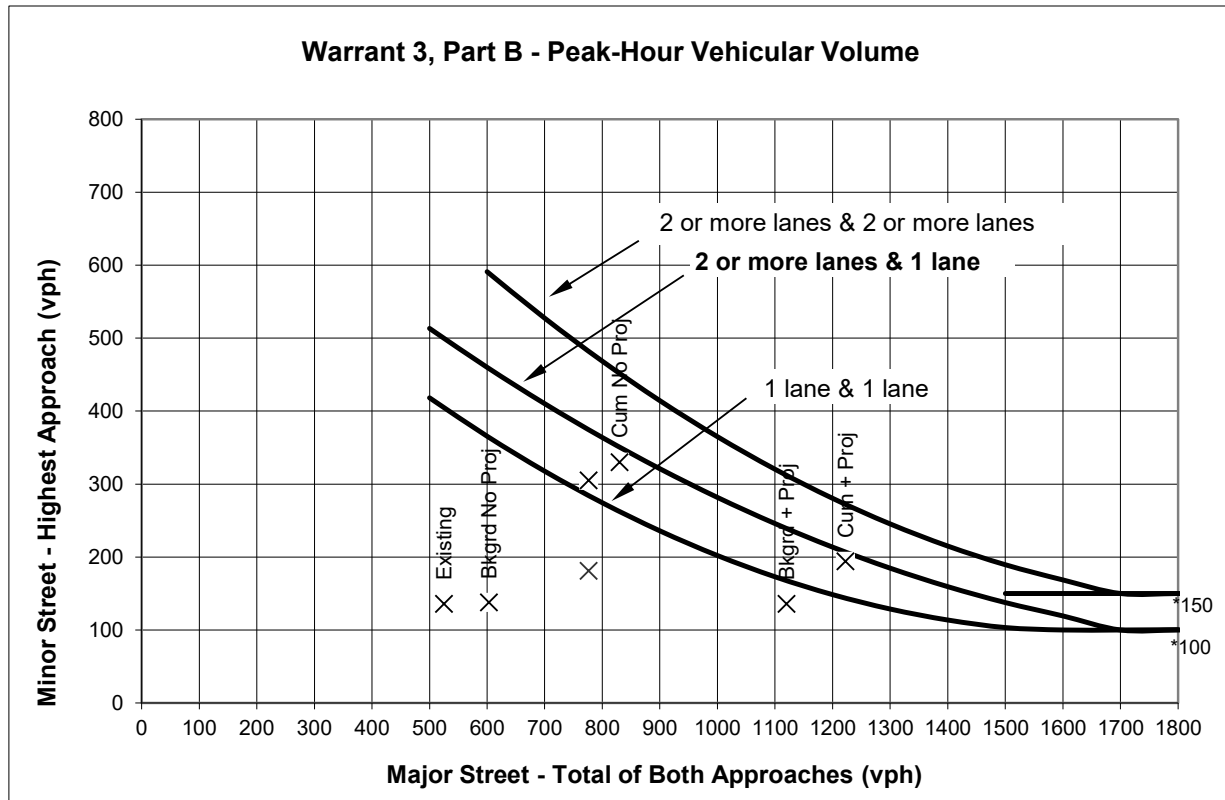
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <u>AND</u>	No	No	No	No	Yes	No	Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <u>AND</u>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>

**PART B**

		Approach Lanes		AM PEAK PERIOD						
		One	2 or More	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Major Street - Both Approaches	O'Brien Drive	X		470	475	1030	868	1382	819	1333
Minor Street - Highest Approach	Adams Drive/	X		101	103	101	144	105	139	105
<b>Signal Warranted based on Part B?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).  
 Notes:



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Warrant 3, Part B - Peak-Hour Vehicular Volume**

		Approach Lanes		PM PEAK HOUR						
		2 or	One	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		X								
Major Street - Both Approaches	O'Brien Drive	X		525	603	1120	830	1222	776	776
Minor Street - Highest Approach	Adams Drive/	X		136	138	136	330	194	305	181
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Facebook Willow Village

**TRAFFIC SIGNAL WARRANTS WORKSHEET**

Analyst: SJ date: 6/22/21

Major Street: O'Brien Drive

Critical Approach Speed\* (mph) 25

Minor Street: Adams Drive/

Critical Approach Speed\* (mph) 25

*\*Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h).....  } **Rural (R)**  
 In built up area of isolated community of < 10,000 population.....  }  
 **Urban (U)**

**PM PEAK HOUR**

**Warrant 3 - Peak Hour**

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

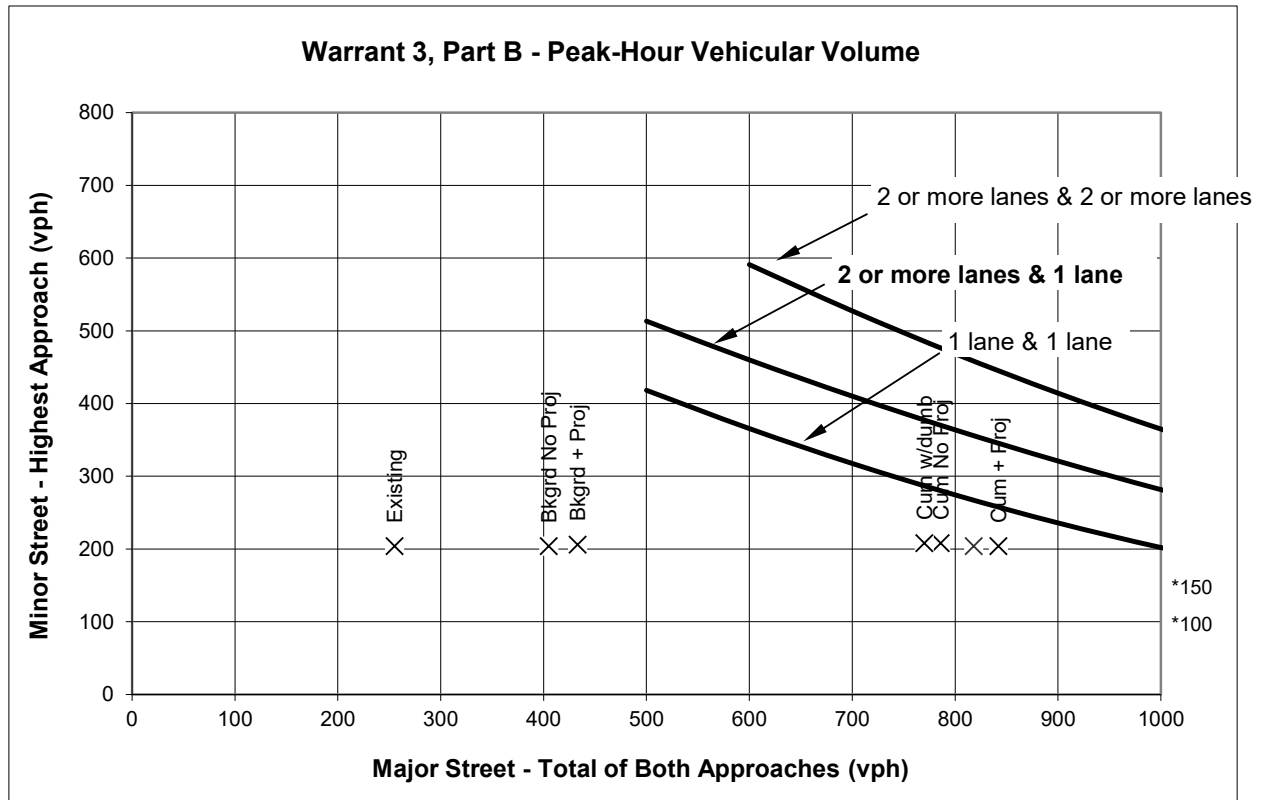
	PM PEAK HOUR						
	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Minor Street Approach Direction w/ Highest Delay	SB	SB	SB	SB	SB	SB	SB
Highest Minor Street Average Delay (sec/veh)	22.4	27.6	281.8	500.6	941.8	383.6	753.8
Corresponding Minor Street Approach Volume (veh/hr)	136	138	136	330	194	305	181
Minor Street Total Delay (veh-hrs)	0.8	1.1	10.6	45.9	50.8	32.5	37.9
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <u>AND</u>	No	No	Yes	Yes	Yes	Yes	Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <u>AND</u>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

**PART B**

				PM PEAK HOUR						
		Approach Lanes		Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		One	2 or More							
Major Street - Both Approaches	O'Brien Drive	X		525	603	1120	830	1222	776	1176
Minor Street - Highest Approach	Adams Drive/	X		136	138	136	330	194	305	181
<b>Signal Warranted based on Part B?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).  
 Notes:



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Warrant 3, Part B - Peak-Hour Vehicular Volume**

		Approach Lanes		AM PEAK PERIOD						
		2 or	One	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		More	More							
Major Street - Both Approaches	Hamilton	X		255	405	433	786	842	770	818
Minor Street - Highest Approach	Chilco	X		204	204	206	208	204	208	204
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.



Facebook Willow Village

**TRAFFIC SIGNAL WARRANTS WORKSHEET**

Analyst: SJ date: 6/22/21

Major Street: Hamilton  
 Minor Street: Chilco

Critical Approach Speed\* (mph) 35  
 Critical Approach Speed\* (mph) 25  
 \*Posted Speed.

Critical speed of major street traffic > 50 mph (64 km/h).....  } Rural (R)  
 In built up area of isolated community of < 10,000 population.....  }  
 Urban (U)

**AM PEAK PERIOD**

**Warrant 3 - Peak Hour**

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

AM PEAK PERIOD

	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Minor Street Approach Direction w/ Highest Delay	WB	WB	WB	WB	WB	WB	WB
Highest Minor Street Average Delay (sec/veh)	9.3	10.3	10.5	14.1	14.7	13.8	14.2
Corresponding Minor Street Approach Volume (veh/hr)	204	204	206	208	204	208	204
Minor Street Total Delay (veh-hrs)	0.5	0.6	0.6	0.8	0.8	0.8	0.8

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <u>AND</u>	No	No	No	No	No	No	No
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <u>AND</u>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

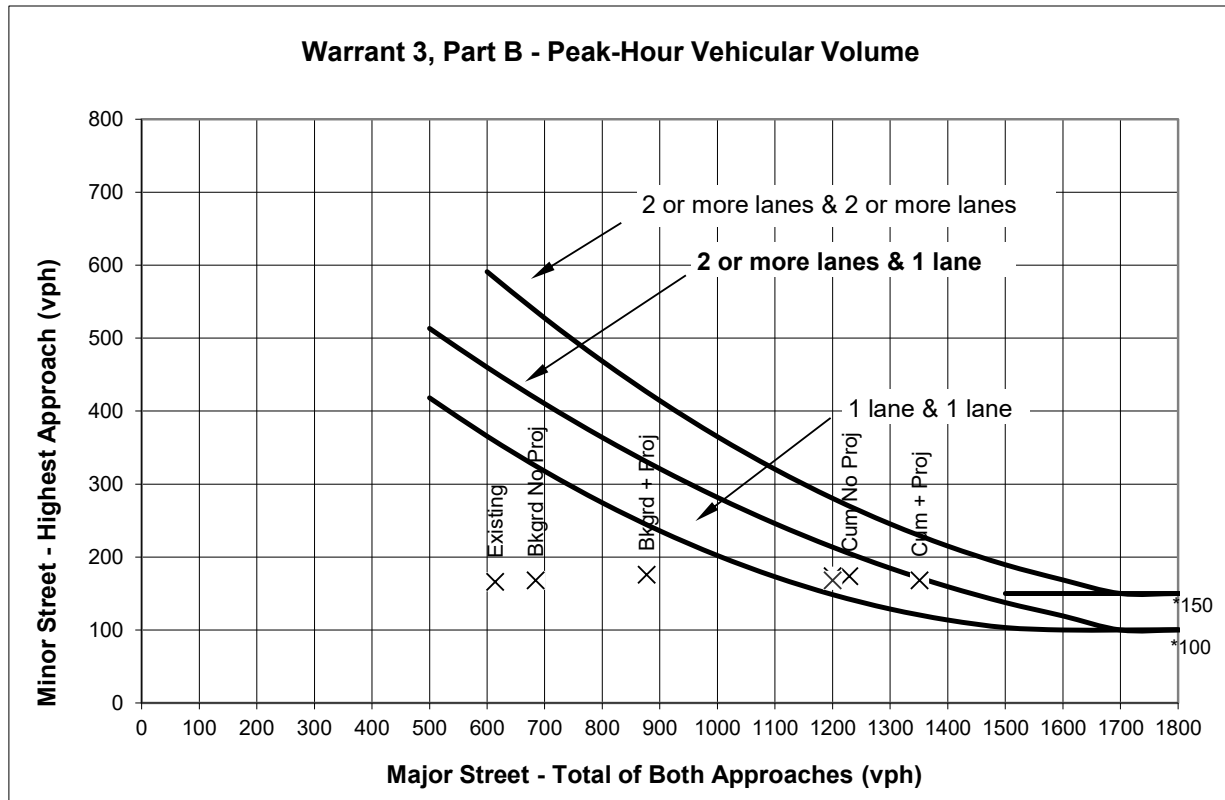
**PART B**

AM PEAK PERIOD

	Approach Lanes	Approach Lanes		Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		One	More							
Major Street - Both Approaches	Hamilton	X		255	405	433	786	842	770	818
Minor Street - Highest Approach	Chilco	X		204	204	206	208	204	208	204
<b>Signal Warranted based on Part B?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).  
 Notes:



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Warrant 3, Part B - Peak-Hour Vehicular Volume**

		Approach Lanes		PM PEAK HOUR						
		2 or One	More	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Major Street - Both Approaches	Hamilton	X		614	684	877	1229	1351	1200	1200
Minor Street - Highest Approach	Chilco	X		166	168	176	174	168	174	168
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Facebook Willow Village

**TRAFFIC SIGNAL WARRANTS WORKSHEET**

Analyst: SJ date: 6/22/21

Major Street: Hamilton

Critical Approach Speed\* (mph) 35

Minor Street: Chilco

Critical Approach Speed\* (mph) 25

*\*Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h).....  } **Rural (R)**  
 In built up area of isolated community of < 10,000 population.....  }  
 **Urban (U)**

**PM PEAK HOUR**

**Warrant 3 - Peak Hour**

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

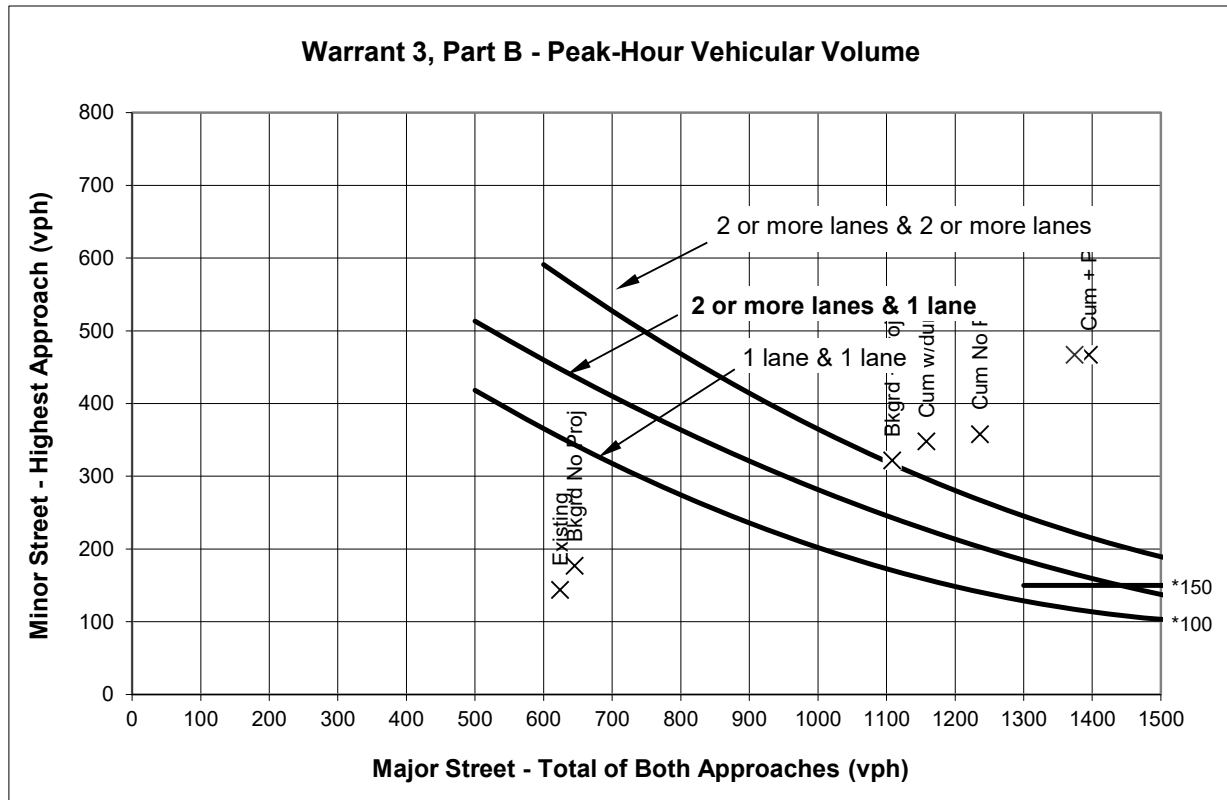
	PM PEAK HOUR						
	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Minor Street Approach Direction w/ Highest Delay	EB	EB	EB	EB	EB	EB	EB
Highest Minor Street Average Delay (sec/veh)	11.2	11.7	13.8	13.9	14.3	13.6	14.1
Corresponding Minor Street Approach Volume (veh/hr)	166	168	176	174	168	174	168
Minor Street Total Delay (veh-hrs)	0.5	0.5	0.7	0.7	0.7	0.7	0.7
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <u>AND</u>	No	No	No	No	No	No	No
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <u>AND</u>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

**PART B**

				PM PEAK HOUR						
		Approach Lanes		Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		One	2 or More							
Major Street - Both Approaches	Hamilton	X		614	684	877	1229	1351	1200	1315
Minor Street - Highest Approach	Chilco	X		166	168	176	174	168	174	168
<b>Signal Warranted based on Part B?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).  
 Notes:



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Warrant 3, Part B - Peak-Hour Vehicular Volume**

		Approach Lanes		AM PEAK PERIOD						
		2 or	One	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		More	More							
Major Street - Both Approaches	O'Brien Drive	X		624	645	1108	1236	1395	1158	1374
Minor Street - Highest Approach	Kavanaugh/	X		144	177	322	358	467	348	467
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>				<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Facebook Willow Village

**TRAFFIC SIGNAL WARRANTS WORKSHEET**

Analyst: SJ date: 6/22/21

Major Street: O'Brien Drive  
 Minor Street: Kavanaugh/

Critical Approach Speed\* (mph) 35  
 Critical Approach Speed\* (mph) 25  
 \*Posted Speed.

Critical speed of major street traffic > 50 mph (64 km/h).....  } Rural (R)  
 In built up area of isolated community of < 10,000 population.....  }  
 Urban (U)

**AM PEAK PERIOD**

**Warrant 3 - Peak Hour**

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

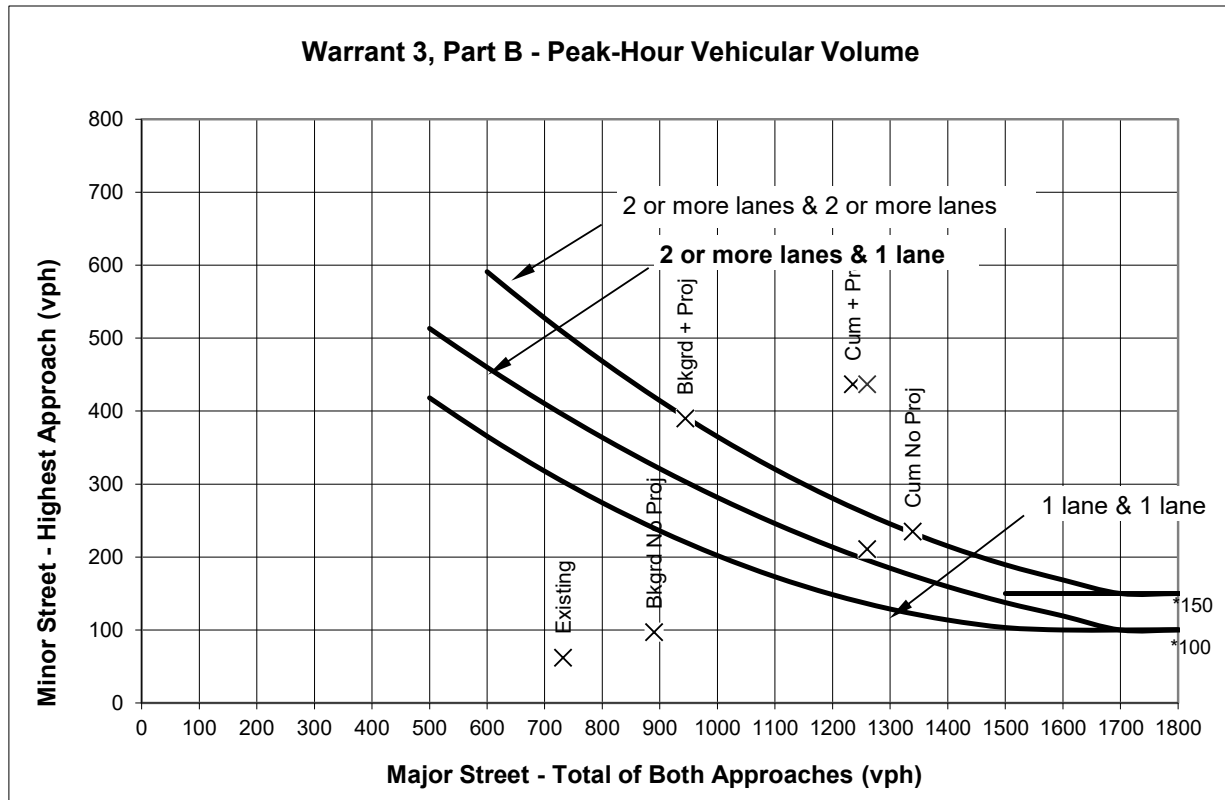
	AM PEAK PERIOD						
	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Minor Street Approach Direction w/ Highest Delay	SB	WB	NB	NB	NB	NB	NB
Highest Minor Street Average Delay (sec/veh)	12.7	13.6	190.5	299.1	482.3	236.7	472.6
Corresponding Minor Street Approach Volume (veh/hr)	328	177	713	818	933	760	916
Minor Street Total Delay (veh-hrs)	1.2	0.7	37.7	68.0	125.0	50.0	120.3
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <u>AND</u>	No	No	Yes	Yes	Yes	Yes	Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <u>AND</u>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

**PART B**

	Approach Lanes	AM PEAK PERIOD											
		Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P					
									2 or More	One			
Major Street - Both Approaches	O'Brien Drive	X											
Minor Street - Highest Approach	Kavanaugh/	X											
<b>Signal Warranted based on Part B?</b>		<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>					

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).  
 Notes:



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Warrant 3, Part B - Peak-Hour Vehicular Volume**

		Approach Lanes		PM PEAK HOUR						
		2	One More	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Major Street - Both Approaches	O'Brien Drive	X		732	890	944	1339	1235	1260	1260
Minor Street - Highest Approach	Kavanaugh/	X		62	97	390	235	437	211	437
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>				<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Facebook Willow Village

**TRAFFIC SIGNAL WARRANTS WORKSHEET**

Analyst: SJ date: 6/22/21

Major Street: O'Brien Drive

Critical Approach Speed\* (mph) 35

Minor Street: Kavanaugh/

Critical Approach Speed\* (mph) 25

*\*Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h).....  } **Rural (R)**  
 In built up area of isolated community of < 10,000 population.....  }  
 **Urban (U)**

**PM PEAK HOUR**

**Warrant 3 - Peak Hour**

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

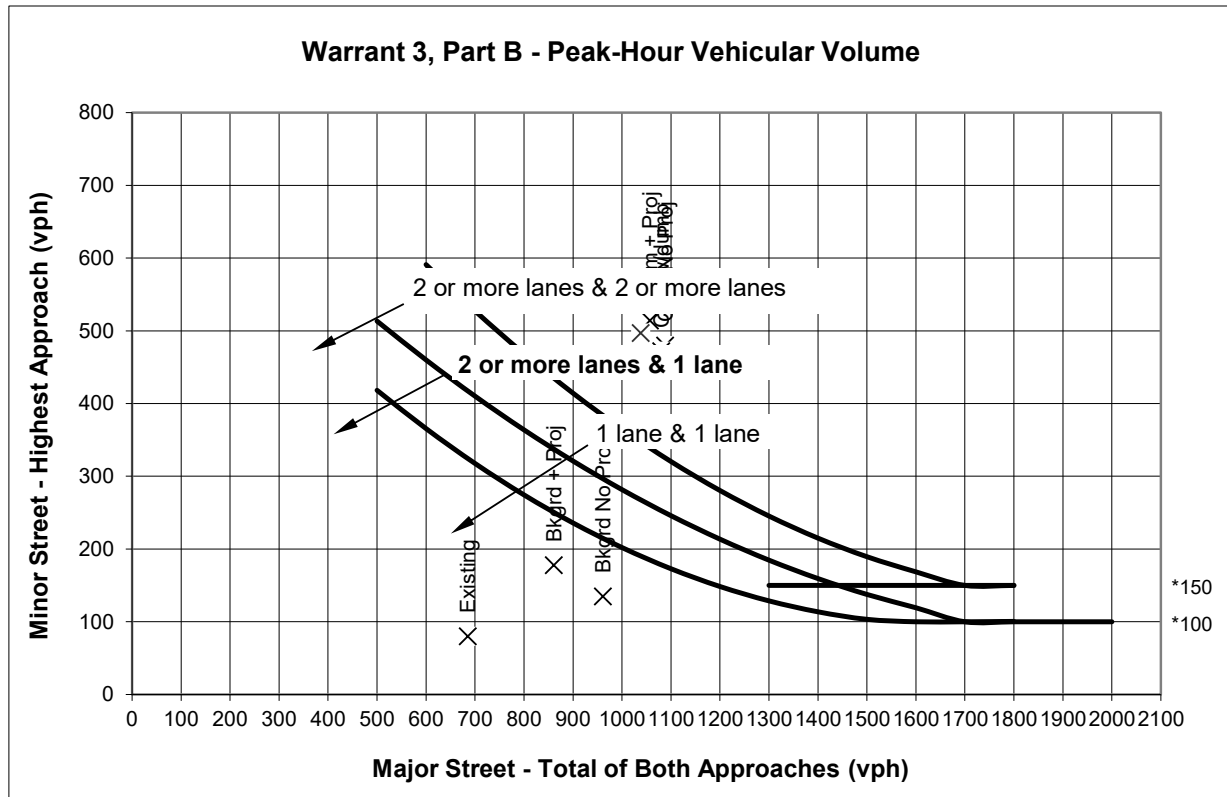
	PM PEAK HOUR						
	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	NB	NB	NB	NB
Highest Minor Street Average Delay (sec/veh)	17.9	39.0	129.2	308.5	320.5	250.3	313.2
Corresponding Minor Street Approach Volume (veh/hr)	529	648	625	914	783	882	760
Minor Street Total Delay (veh-hrs)	2.6	7.0	22.4	78.3	69.7	61.3	66.1
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <u>AND</u>	No	No	Yes	Yes	Yes	Yes	Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <u>AND</u>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

**PART B**

				PM PEAK HOUR						
		Approach Lanes		Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		One	2 or More							
Major Street - Both Approaches	O'Brien Drive	X		732	890	944	1339	1235	1260	1188
Minor Street - Highest Approach	Kavanaugh/	X		62	97	390	235	437	211	437
<b>Signal Warranted based on Part B?</b>				<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).  
 Notes:



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Warrant 3, Part B - Peak-Hour Vehicular Volume**

		Approach Lanes		AM PEAK PERIOD						
		2 or	One	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		More								
Major Street - Both Approaches	Newbridge	X		685	961	861	1088	1057	1080	1038
Minor Street - Highest Approach	Saratoga	X		80	135	178	480	514	472	497
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.



Facebook Willow Village

**TRAFFIC SIGNAL WARRANTS WORKSHEET**

Analyst: SJ date: 6/22/21

Major Street: Newbridge  
 Minor Street: Saratoga

Critical Approach Speed\* (mph) 35  
 Critical Approach Speed\* (mph) 25  
 \*Posted Speed.

Critical speed of major street traffic > 50 mph (64 km/h).....  } Rural (R)  
 In built up area of isolated community of < 10,000 population.....  }  
 Urban (U)

**AM PEAK PERIOD**

**Warrant 3 - Peak Hour**

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

	AM PEAK PERIOD						
	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	NB	NB	NB	NB
Highest Minor Street Average Delay (sec/veh)	13.3	17.9	18.2	167.6	187.6	155.9	163.7
Corresponding Minor Street Approach Volume (veh/hr)	80	135	178	480	514	472	497
Minor Street Total Delay (veh-hrs)	0.3	0.7	0.9	22.3	26.8	20.4	22.6

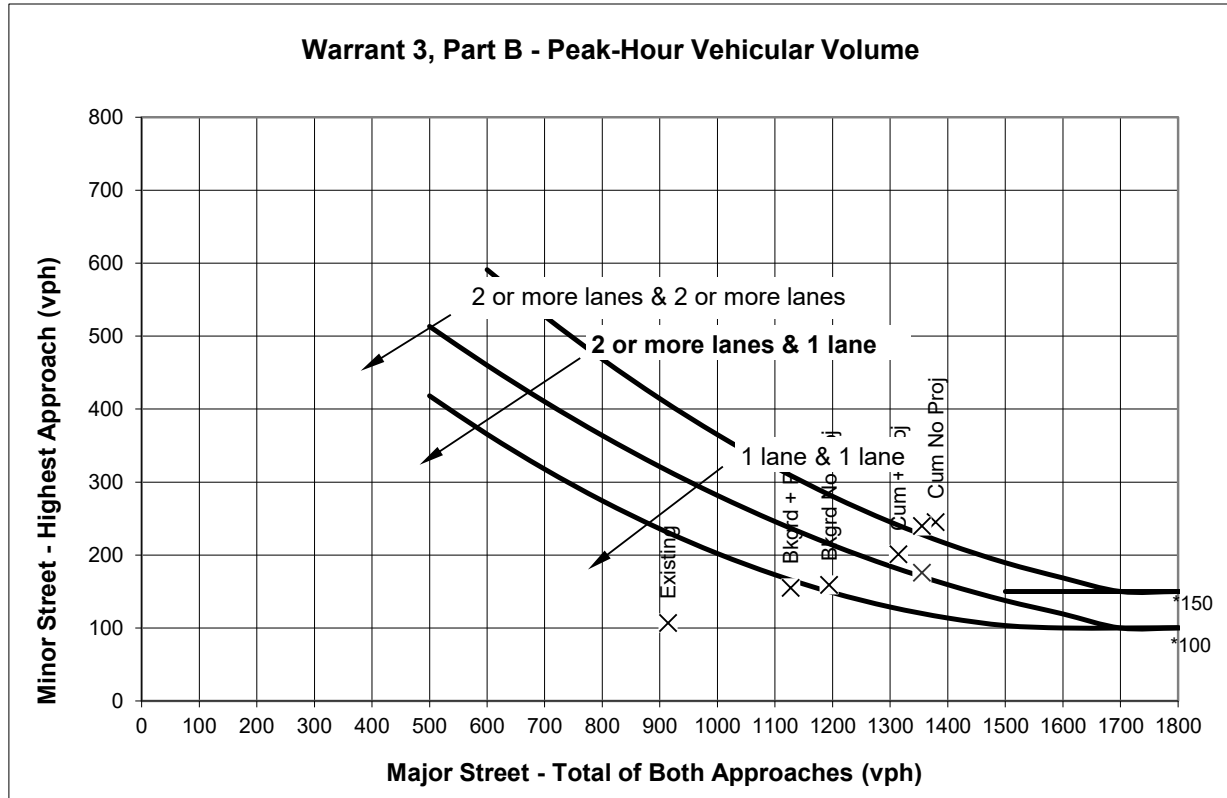
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <u>AND</u>	No	No	No	Yes	Yes	Yes	Yes
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <u>AND</u>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

**PART B**

		Approach Lanes		AM PEAK PERIOD						
		One	2 or More	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Major Street - Both Approaches	Newbridge	X		685	961	861	1088	1057	1080	1038
Minor Street - Highest Approach	Saratoga	X		80	135	178	480	514	472	497
<b>Signal Warranted based on Part B?</b>				<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

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 Notes:



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).

\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

**Warrant 3, Part B - Peak-Hour Vehicular Volume**

		Approach Lanes		PM PEAK HOUR						
		2 or	One	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		More	More							
Major Street - Both Approaches	Newbridge	X		914	1194	1127	1379	1314	1355	1355
Minor Street - Highest Approach	Saratoga	X		107	159	155	245	201	240	176
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>				<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

Facebook Willow Village

**TRAFFIC SIGNAL WARRANTS WORKSHEET**

Analyst: SJ date: 6/22/21

Major Street: Newbridge

Critical Approach Speed\* (mph) 35

Minor Street: Saratoga

Critical Approach Speed\* (mph) 25

*\*Posted Speed.*

Critical speed of major street traffic > 50 mph (64 km/h).....  } **Rural (R)**  
 In built up area of isolated community of < 10,000 population.....  }  
 **Urban (U)**

**PM PEAK HOUR**

**Warrant 3 - Peak Hour**

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

	PM PEAK HOUR						
	Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	NB	NB	NB	NB
Highest Minor Street Average Delay (sec/veh)	15.6	22.0	21.0	40.0	28.6	37.2	23.4
Corresponding Minor Street Approach Volume (veh/hr)	107	159	155	245	201	240	176
Minor Street Total Delay (veh-hrs)	0.5	1.0	0.9	2.7	1.6	2.5	1.1
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <b>AND</b>	No	No	No	No	No	No	No
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <b>AND</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	No	No	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

**PART B**

				PM PEAK HOUR						
		Approach Lanes		Existing	Bkgrd No Proj	Bkgrd + Proj	Cum No Proj	Cum + Proj	Cum w/dumb	Cum w/dumb+P
		One	2 or More							
Major Street - Both Approaches	Newbridge	X		914	1194	1127	1379	1314	1355	1291
Minor Street - Highest Approach	Saratoga	X		107	159	155	245	201	240	176
<b>Signal Warranted based on Part B?</b>				<b>No</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2010 Edition, as amended for use in California).  
 Notes:

**Appendix G**  
**Project's Transportation Demand Management Plan**



# Willow Village TDM Plan

Prepared for:  
Peninsula Innovation Partners

July 2021

SJ18-1860

FEHR & PEERS

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## 1. INTRODUCTION

Willow Village will replace approximately one million square feet of industrial, office, and warehouse buildings in the Menlo Science and Technology Park with a mixed-use development. Willow Village creates a new mixed-use community comprised of new housing, retail, hotel, office, and entertainment space. The 59-acre Willow Village site is located in Menlo Park's Bayfront Area. The site is bounded by Willow Road to the west, the Joint Powers Board (JPB) rail corridor to the north, the Hetch-Hetchy corridor and Mid-Peninsula High School to the south and an existing life science office park to the east. **Figure 1** shows the project location and adjacent street network.

The Project will include the following components:

- Community-serving retail – grocery, pharmacy, restaurants, personal services, and entertainment venues
- Below market rate and market rate housing
- A hotel
- Office buildings with associated meeting and conference space
- Open space improvements including a public park and community center
- New bike and pedestrian facilities

The primary purpose of any Transportation Demand Management (TDM) plan is to reduce the amount of vehicle traffic generated by a development by creating measures, strategies, incentives, and policies to shift workers and residents from driving alone to using other travel modes including transit, carpooling/ridesharing, cycling, and walking. TDM strategies can include informational resources, physical site enhancements, monetary incentives, and more. This report presents the comprehensive TDM Plan for the Willow Village development. In addition to reducing vehicles trips, the TDM Plan can reduce the parking demand of the residents and office workers.



The existing and proposed transit, bicycle, and pedestrian facilities near the site are illustrated in this document to provide the transportation context of the Project. The TDM Plan includes attributes of the site's location and physical improvements at the site as well as the TDM measures that will be provided by the Project.









-  Project Site
-  City Boundary



Figure 1  
Project Location and Adjacent Street Network

## 1.1 PROJECT DESCRIPTION AND TDM APPROACH

Willow Village proposes to replace approximately one million square feet of existing industrial, office, and warehouse space in the Menlo Science and Technology Park with a new mixed-use village including up to 1,730 residential units, 200,000 square feet of retail uses, a 193-room hotel, 1,600,000 square feet of office and accessory uses, consisting of a maximum of 1,250,000 square feet of space for office and amenity uses and the balance ( 350,000 square feet, if the office space is maximized) of accessory uses. The proposed site improvements include construction of:

- new circulation improvements to accommodate vehicles, bicycles, and pedestrians,
- utility improvements,
- a community park, an elevated park, and other open space improvements,
- residential mixed-use buildings,
- a hotel, and
- office campus improvements.

**Figure 2** is a site plan showing the roadway network, landscaping, and building locations. **Figure 3** shows the location of the three districts consisting of the Office Campus District, the Town Square District, and Residential/ Shopping District. The Office Campus District includes the office and accessory space that will be used by Facebook. The Town Square District will include the hotel, retail, and restaurants. The Residential / Shopping District will include apartments, a grocery store, and other retail.

Due to the mixture of office, residential, and retail uses, the Project's TDM plan is anticipated to reduce vehicles trips throughout the day as well as during the typical morning and afternoon peak periods of travel. The mix of residential, office, and retail uses within the Project reduces the need to travel long distances to jobs and services. The Project proposes walking and biking improvements including sidewalks and gathering areas for pedestrians as well as on and off-street bike facilities. These facilities reduce the need to use a vehicle to travel within the project.

### 1.1.1 PROPOSED CIRCULATION AND ACCESS

**Figure 2** shows the proposed street network. The Project proposes a new circulation network consisting of approximately 4.6 acres of public rights of way and approximately 7.2 acres of private streets with public access easements. The proposed network will accommodate multiple transportation modes including vehicles, pedestrians, and bicycles. Site access from Willow Road will be primarily provided via two signalized intersections: the realigned Hamilton Avenue intersection and a proposed new intersection at Park Street. Main Street will provide primary north/south access via a new signalized intersection at O'Brien Drive. There





Source: Peninsula Innovation Partners



Figure 2  
Site Plan



 District Boundary



Figure 3  
Office Campus District vs. Residential/Shopping District Location

will also be two right-in/right-out driveways. Both Hamilton Avenue and Park Street connect with Main Street to facilitate circulation throughout the Community. There will also be a connection via the North Loop Road between Hamilton Avenue and Adams Court. In addition to these roadways, the Project includes an off-street pedestrian and bicycle pathways that parallel Main Street and East Loop Road.

### 1.1.2 PROPOSED CAMPUS PARKING AND TRANSIT

Along the eastern edge of the Office Campus District, seated worker parking will be provided in two parking structures with a total of approximately 3,325 parking spaces with an additional 600 valet spaces. Both parking structures include a ground-level transit hub for regional Facebook worker commuter shuttles and intra-campus trams. Intra-campus trams will also operate on Main Street, West Street, and East Loop Road providing service between the Willow Village, Bayfront, and Classic Campuses. Visitor parking for the Office Campus District will be in a shared parking structure in the northwestern corner of the project site. Shared parking is located under the Town Center, Hotel, and Parcel 4 and will be used by the hotel guests and employees, retail patrons and employees, and office visitors.

Reserved residential parking will be located on the residential parcels. On mixed-use parcels with residential and retail uses, provisions will be made to reserve the residential parking spaces. Residential parking spaces will be unbundled to provide flexibility for residents, and it generally keeps car ownership lower which supports the lower end of City's municipal code requirements. The publicly accessible park will have its own surface parking lot and on-street parking will be time limited during the day for general use.



## 2. SITE CONTEXT - TRANSPORTATION SERVICES

The transportation system serving the project site includes roadways, pedestrian and bicycle facilities, and transit services. The existing transit, bicycle and pedestrian facilities, and planned project improvements that will support travel to the site by modes of transportation other than driving alone are described below. The data presented represents transit operating conditions prior to the shelter in place order issued March 16, 2020.

### 2.1 NEARBY TRANSIT SERVICE

The City of Menlo Park encourages the use of transit as an alternative mode of transportation and is served by two major transit providers: SamTrans and Caltrain. San Mateo County Transit District (SamTrans) provides bus service throughout San Mateo County and into parts of San Francisco and Palo Alto. Caltrain provides commuter rail service between San Francisco and San Jose. In addition, Caltrain shuttles provide access from the Menlo Park Caltrain Station to the Willow Road area office buildings during commute hours.

Paratransit services are also available for seniors and people with disabilities. The transit district offers Redi-Wheels paratransit service for persons with disabilities who are unable to take SamTrans regular buses.

**Figure 4** shows the existing transit bus routes and bus stops that serve the Project site. **Table 1** summarizes hours of operation and service frequencies for the bus routes nearest the site.

#### 2.1.1 EXPRESS BUS SERVICE BETWEEN THE EAST BAY AND PENINSULA



The Dumbarton Express is an all-day, limited-stop bus service that takes riders from the East Bay to the Peninsula via Dumbarton Bridge on two bus routes. The DB route serves stops on Willow Road in Menlo Park and connects to the Downtown Palo Alto Transit Center. The DB1 route serves stops on Willow Road in Menlo Park north of US 101 and connects to Stanford Research Park via Oregon Expressway. Dumbarton Express bus stops that serve the Willow Village site are located on

Willow Road and are accessible within a five-minute walk to and from the site. The closest existing stops are located at the intersection of Willow Road and Ivy Drive and Willow Road and Hamilton Avenue.

#### 2.1.2 CALTRAIN

Caltrain provides weekday commuter rail service between San Jose and San Francisco. There are currently 46 trains traveling northbound to San Francisco and 46 trains traveling southbound from San Francisco each weekday. A total of 65 trains that serve the Menlo Park Station each day. The Menlo Park and Palo Alto Downtown stations are located approximately 3.0 miles



southwest of the Project site and can be accessed by a twenty-minute bicycle ride, or a thirty-minute bus ride on either M4-Willow Road Shuttle or Dumbarton Express bus routes near the Willow Village site that drop riders off directly in front of the Menlo Park and Palo Alto Caltrain stations. Facebook currently provides additional private shuttle service for their Menlo Park workers to the Palo Alto, Menlo Park and Redwood City Caltrain stations.

### 2.1.3 M4-WILLOW ROAD SHUTTLE

The M4-Willow Road Shuttle is a free commuter shuttle open to everyone. It runs between the Menlo Park Caltrain station and the Willow Road area business parks. The M4-Willow Road Shuttle schedule operates Monday through Friday during the peak period Caltrain schedule. The Menlo Park shuttle service has been in operation since 1989 and is funded through grants from San Mateo City/County Association of Governments, Bay Area Air Quality Management District, and the City of Menlo Park. The closest stops are located south of the Project site along O'Brien Drive, northeast of the intersection of Willow Road and Ivy Drive, and along Hamilton Court and Adams Court.

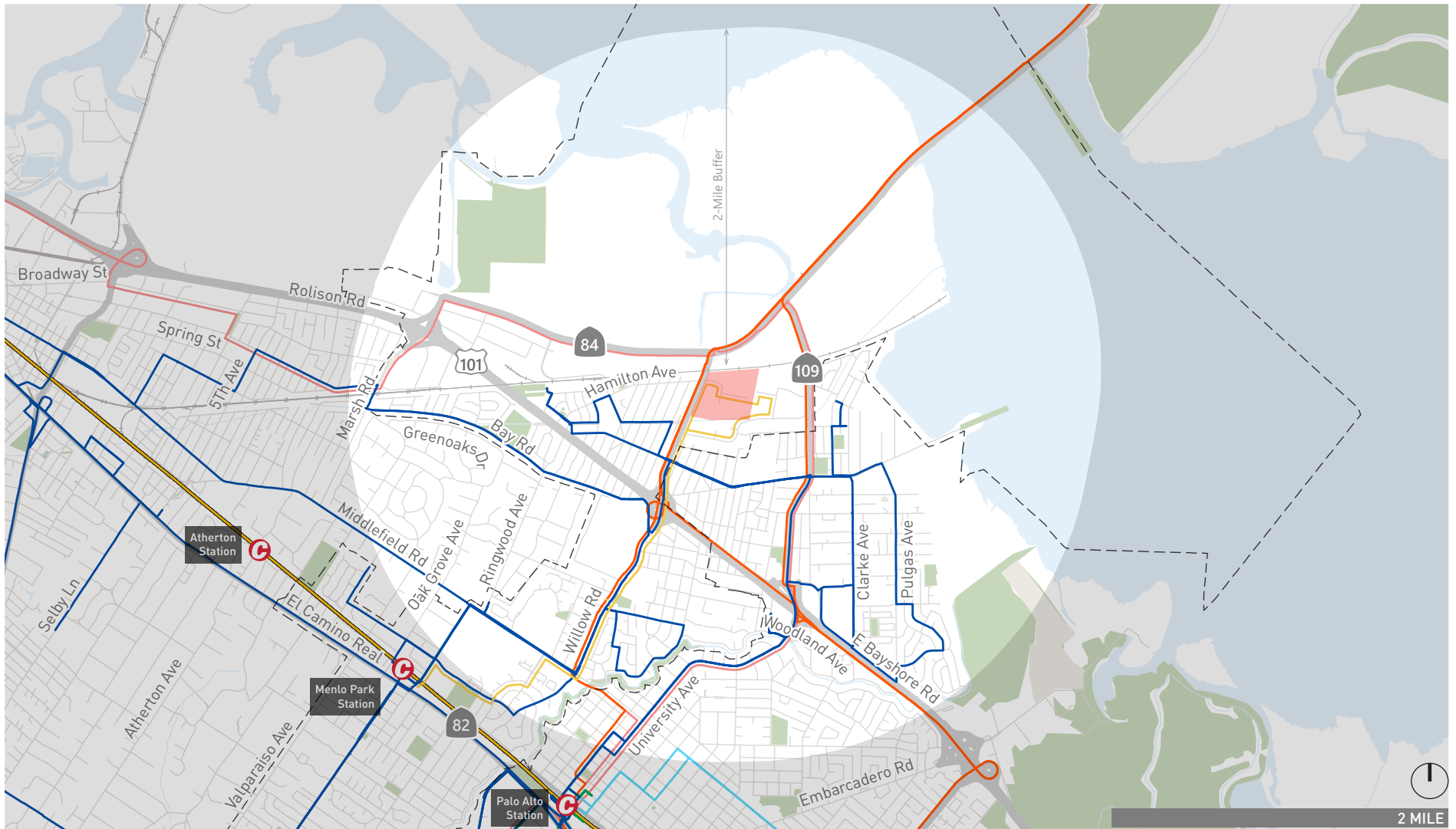
**TABLE 1: NEARBY TRANSIT SERVICES**

Route	From	To	Weekdays		Saturdays		Sundays	
			Operating Hours	Peak Headway (minutes)	Operating Hours	Headway (minutes)	Operating Hours	Headway (minutes)
<b>Dumbarton Express</b>								
DB	Union City BART	Stanford Oval	5:20 am to 8:45 pm	20	No Service			
DB1	Union City BART	3475 Deer Creek Road	5:20 am to 8:30 pm	20	No Service			
<b>Caltrain Shuttle</b>								
M4-Willow Road	Menlo Park Caltrain	Hamilton Court	7:00 am to 10:00 am & 3:15 pm to 6:15 pm	60	No Service			

### 2.1.4 PARATRANSIT

SamTrans paratransit is provided to eligible individuals with disabilities who are prevented from using regular transit services. The San Mateo County Transit District provides paratransit using Redi-Wheels on the bayside of the county and RediCoast on the coast side. Eligible Willow Village residents and employees could use this service to reach nearby destinations.





Transit\_Routes

-  Caltrain Line and Station
-  AC Transbay
-  Stanford Marguerite Shuttle
-  Project Site (Willow Village)
-  Caltrain Shuttle
-  Dumbarton Express
-  samTrans
-  City Boundary
-  Santa Clara Valley Transportation Authority



Figure 4  
Existing Transit Service



## 2.2 EXISTING PEDESTRIAN AND BICYCLE FACILITIES

### 2.2.1 EXISTING AND PROPOSED PEDESTRIAN FACILITIES

Pedestrian facilities near the site include sidewalks, crosswalks, curb ramps, and pedestrian signals. There is a continuous sidewalk along Willow road on the east side of the street. To access the west side of Willow Road from the Project site, there are two existing signalized crosswalks within walking distance from the proposed development. The existing crosswalks are located at the intersection of Willow Road and Ivy Drive and the intersection of Willow Road and Hamilton Avenue. The majority of the existing pedestrian activity occurs at the Willow Road and Hamilton intersection, which is the closest pedestrian connection to the Bayfront and Classic campuses.

As part of the Willow Village development and to enhance the pedestrian experience, publicly accessible open spaces within the Project site are proposed including a publicly accessible park located northeast of the intersection of Willow Road and Ivy Drive, an off-street bike and pedestrian path connecting O'Brien Drive to the proposed Willow tunnel, town square, retail district, and a dog park near O'Brien Avenue. **Figure 2** shows the location of the proposed open spaces within the Project site.

The Project proposes to implement pedestrian crossing improvements along Willow Road. These improvements include installation of new traffic signal at the proposed intersection of Willow Road and Park Street, and sidewalk and landscape improvements. The project will implement a grade separated pedestrian crossing near the Hamilton Avenue and Willow Road intersection via the elevated park. Pedestrian improvements will also be evaluated the intersection of Ivy Drive and Willow Road. Per the proposed site plan, the Project proposes a new intersection at O'Brien Drive requiring new traffic signals with pedestrian crossing considerations.

### 2.2.2 EXISTING AND PROPOSED BICYCLE FACILITIES

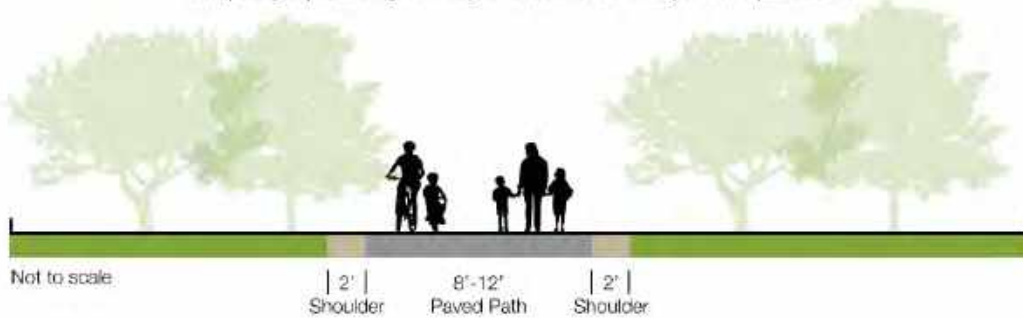
The California Department of Transportation (Caltrans) recognizes four classifications of bicycle facilities:

- **Class I Shared-Use Path**, or commonly referred to as a Bikeway or Bike Path, is a facility separated from automobile traffic for the exclusive use of bicyclists. Class I facilities can be designed to accommodate other modes of transportation, including pedestrians and equestrians, in which case they are referred to as shared use paths.



## SHARED-USE PATH (CLASS I)

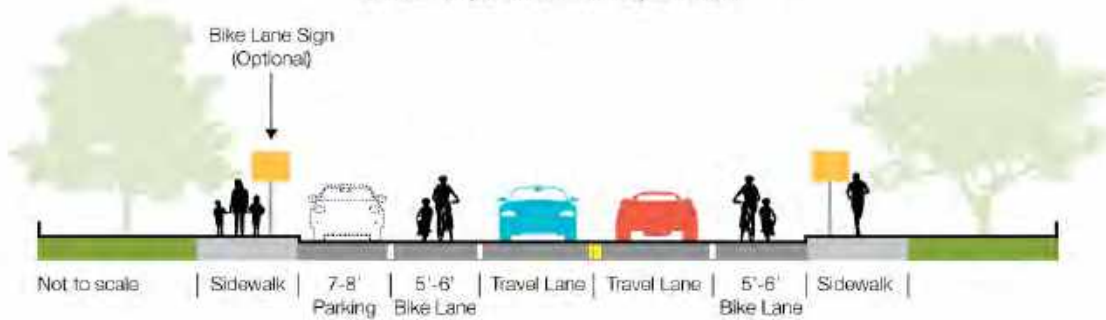
Completely separated right-of-way for exclusive use of bicycles and pedestrians



- **Class II Bicycle Lane** is a dedicated facility for bicyclists immediately adjacent to automobile traffic. Class II facilities are identified with striping, pavement markings and signage, and can be modified with a painted buffer to become a buffered bicycle lane (Class II)

## BICYCLE LANE (CLASS II)

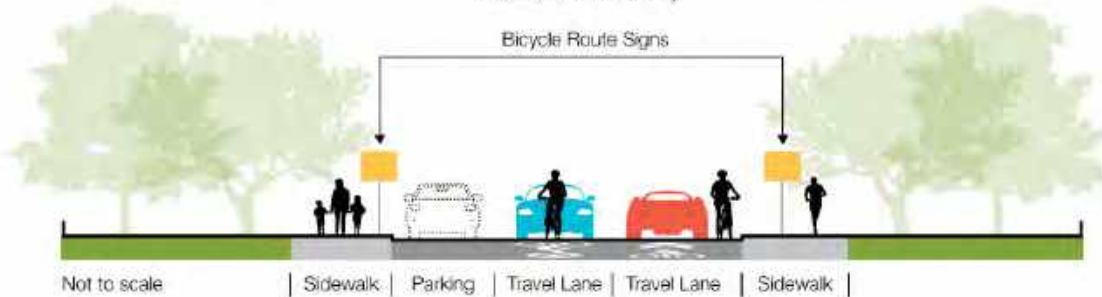
On-street striped lane for one-way bike travel



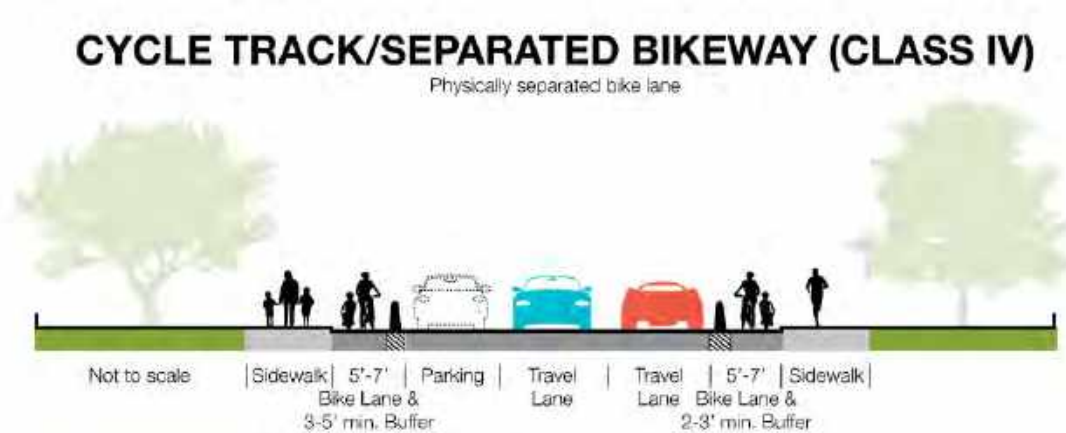
- **Class III Bicycle Route** is an on-street route where bicyclists and automobiles share the road. They are identified with pavement markings and signage, and are typically assigned to low-volume and/or low-speed streets.

## BICYCLE ROUTE (CLASS III)

Shared on-street facility

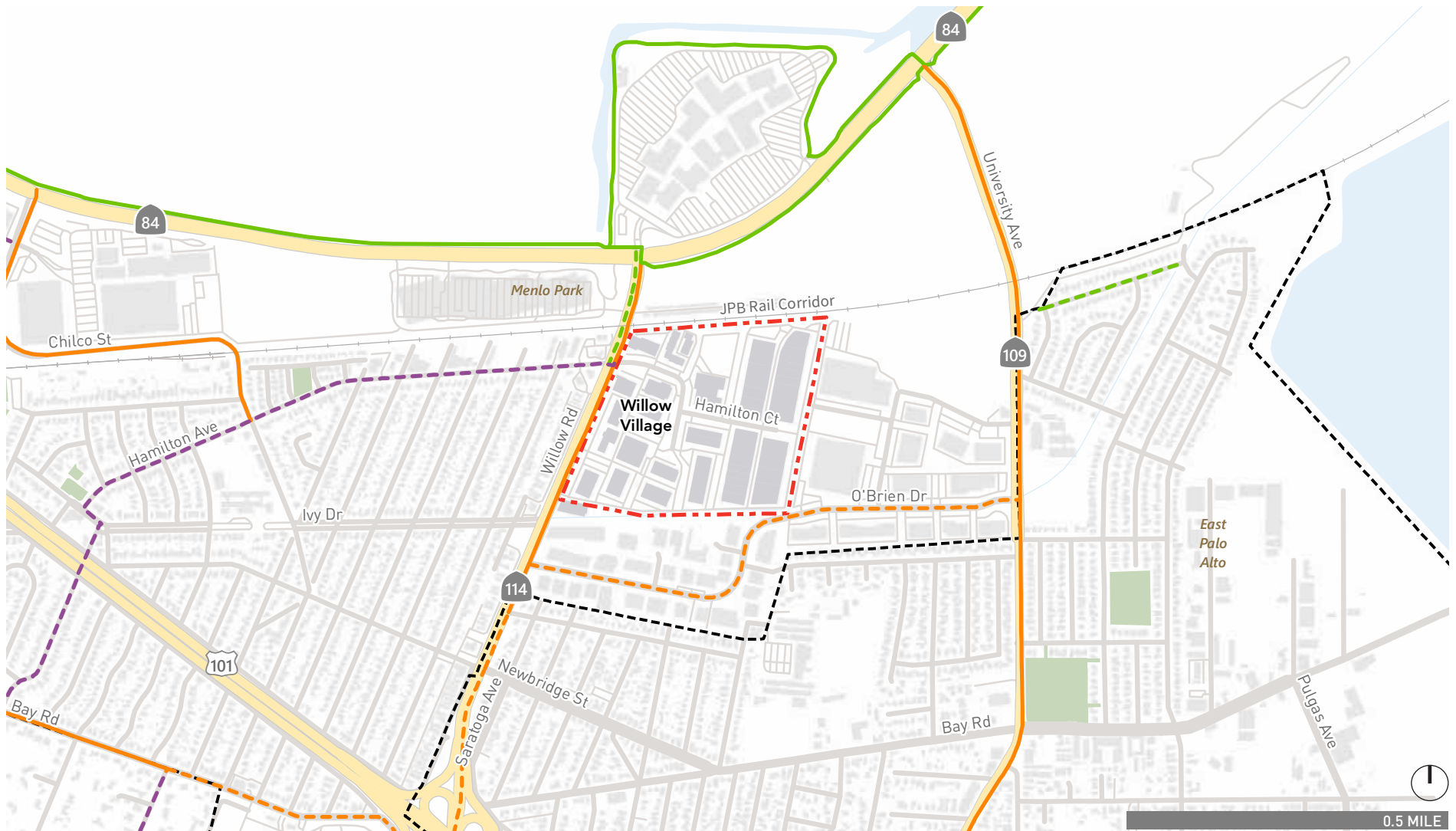


- **Class IV Cycle Track or Separated Bikeway**, commonly referred to as a protected bicycle lane, is a facility that combines elements of Class I and Class II facilities. They offer an exclusive bicycle route immediately adjacent to a roadway similar to a Class II facility, but provide a physical separation from traffic with plastic delineators, raised curb, or parked automobiles.



Class I shared use path and class II bicycle lanes exist near the site, as shown in **Figure 5**. Willow Road west of the Project site, has class II bike lanes on both sides of the street which are connected to the Bayfront recreational trail shared use path along Bayfront Expressway to the north of the Project site. As part of the Menlo Park Comprehensive Bicycle Development Plan, class II bike lanes are proposed along O'Brien Drive connecting Willow Road to the University Avenue. In addition, Class II bike lanes exist along University Avenue serving local trips with north-south connectivity between East Palo Alto and Bayfront recreational trail. The comprehensive plan recommends class III shared on-street facility along Hamilton Avenue. As part of the proposed Willow Village development, there will be an off-street multi-use pathway adjacent to the East Loop Road that provides north-south connectivity between the proposed North Loop Road and O'Brien Drive within the Project site.





- |                        |                        |               |
|------------------------|------------------------|---------------|
| Existing Bike Facility | Proposed Bike Facility | Project Site  |
| Class I Bike Path      | Class I Bike Path      | City Boundary |
| Class II Bike Lane     | Class II Bike Lane     |               |
| Class III Bike Route   | Class III Bike Route   |               |

Figure 5  
Existing and Proposed Regional Bicycle Facilities



## **2.3 EXISTING CARSHARE**

Carsharing allows members to reserve vehicles by the hour or the day, and is typically used for short-term, local trips. Carsharing supports commute modes of travel such as transit, carpooling, walking, and biking, by providing users with access to a vehicle when needed during the workday. There are several Carsharing providers located near or in Menlo Park include Zipcar, Enterprise, Hertz, Avis, and Budget. Facebook sponsors three existing carshare vehicles operated by Enterprise. There is one existing Zipcar located within the project study area near Facebook Building 58.

Additionally, other carshare services allow residents and neighbors to offer their own vehicles as part of carsharing services (peer-to-peer) such as Getaround, and Turo (formerly Relay Rides).

## **2.4 EXISTING RIDESHARE**

Ridesharing is the term to describe grouping travelers into common trips, which allows travelers to better utilize empty seats in passenger cars or vans. Rideshare matching programs, such as 511 Regional Rideshare Program, Scoop, Waze Carpool, Uber Pool, Lyft Carpool, Duet, Carma Carpooling, and other ridesharing apps help carpools and vanpools to form by matching drivers and passengers. Ridesharing services make it easy to coordinate carpools and allows residents or employees to consider downsizing or eliminating the number of vehicles they own.

## **2.5 EXISTING RIDE HAILING**

Ride hailing is for-hire, point-to-point transportation services, which include transportation network companies (TNCs) and taxis. Within the last few years, TNCs, such as Uber and Lyft, have become the primary method of ride hailing since the many users can easily utilize smartphone apps to send requests for rides. Similar to carshare and rideshare, ride hailing makes it easy to almost instantly coordinate and reserve a ride, which allows residents and employees to consider downsizing or eliminating the number of vehicles they own.

Facebook has instituted ride hailing lounges on three of their Menlo Park Campuses including the Willow Village campus. The ride hailing lounges provide a centralized location where TNC vehicles are directed to pick up or drop-off their users.



### 3. TDM MEASURES AND STRATEGIES

There are numerous strategies that can be used to encourage residents and workers to use modes of transportation other than driving alone and, therefore, reduce the vehicle miles traveled (VMT) and parking demand generated by a development. TDM is made up of two key components. The first component are the physical design features of a project that allows users not to drive-alone such as combining residential, retail and office uses; building design features such as showers and changing areas and providing pedestrian and bicycle facilities. The second component are the operational programs offered by employers and residential building managers that will reduce drive-alone travel.

The following sections describe a proposed set of programs that could be used to reduce drive-alone trips to the office, residential, retail and hotel components of the project.

#### 3.1 OFFICE COMPONENT TDM

It is assumed that Facebook will occupy the office component of the Willow Village project. Facebook currently operates an aggressive TDM program that substantially reduces the number of solo drivers to their Menlo Park campuses. A reduction in solo drivers directly reduces the number of vehicles trips at the campus by two trips - one inbound trip in the morning and one outbound trip in the afternoon. Recent Facebook surveys<sup>1</sup> demonstrated that the drive-alone rate for the Menlo Park campuses is 51%. The drive-alone rate for commuters in San Mateo County is 69% as reported in the 2017 American Community Survey, U.S. Census Bureau. Approximately 34% of Facebook workers use the Facebook shuttles for their commutes.

While the commuter shuttle service is a major component of the TDM program, Facebook offers a broad range of services, subsidies, and amenities to their workers that make it possible to use travel alternatives to driving alone. **Table 2** summarizes the existing Facebook TDM measures that will be available to workers working at office component of Willow Village. These programs include drive-alone alternatives such as transit subsidies, shuttles, carpools, and vanpools. In addition, Facebook provides key support services and amenities such as “last-mile” connections to Caltrain, showers and changing rooms, secure bike storage, preferential vanpool parking, intra-campus trams within the Menlo Park campuses, and carshare that frees workers from needing a personal vehicle at the workplace. The campuses also include other amenities such as banking services, a wellness clinic, fitness centers, and food service. Facebook’s TDM program also has an extensive education and marketing program that provides workers information beginning at their initial job orientation.

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<sup>1</sup> Fehr & Peers conducted ground counts of all driveways serving Facebook’s Menlo Park campuses for three days in October 2018. This driveway data was combined with transit ridership, carpool, and vanpool data provided by Facebook to develop mode splits for the 4-hour peak period from 7:00 AM to 11:00 AM. The analysis is documented in Fehr & Peers memorandum *Facebook Menlo Park Campus 2018 Mode Share Monitoring*, December 3, 2019.



**TABLE 2: FACEBOOK OFFICE TDM PROGRAM**

TDM Measure	Description	Facebook Program
Transit Pass Subsidy	Monthly reimbursement for public transit commute costs (fare).	Full time employees and interns are eligible for a subsidy of up to \$260/month toward eligible public transit.
New Hire Clipper Card Program	Clipper cards with cash value for use on specific transit agencies.	Clipper cards with \$130 e-cash loaded are available to new workers to allow for immediate use of public transportation.
Parking at BART, and Caltrain	Monthly reimbursement for parking at specific transit stations.	Up to \$100 month reimbursement available for parking at Caltrain and BART.
Last-Mile Transit Connections	Shuttles to/from nearby transit facilities.	Facebook will provide dedicated shuttles to nearby transit facilities to provide reliable connections between transit stops and the Menlo Park campuses.
Commuter Shuttle Bus Services	Private shuttle service from various regions of the Bay Area to the Menlo Park campuses.	Currently, Facebook provides free direct services between Menlo Park and Sunnyvale, Palo Alto, San Francisco, Mountain View, Cupertino, Campbell, Berkeley, Oakland, Dublin, Castro Valley, Redwood City, San Jose, Fremont, Danville, San Ramon, Los Gatos, Millbrae, San Mateo, Santa Cruz, Scotts Valley, Marin, Saratoga, and other cities for workers.
Bicycle Amenities and Perks	Lockers, showers, towel service, bicycle pumps, FixIt self-repair station, etc.	<ul style="list-style-type: none"> <li>• A 24/7 DIY FixIt station will be located within the office complex along with a free vending machine with emergency parts for repair.</li> <li>• Routine Bike to Work Days with giveaways are held with bike shop staff leading group rides.</li> <li>• Each worker-occupied building has interior bike parking, and a bike cage that offers additional bike parking space.</li> </ul>



TDM Measure	Description	Facebook Program
Bike Sales and Rentals	Bikes available for purchase and rental onsite.	Discounted bikes are available for sale onsite and sold below MSRP and include a commuter-ready package with a helmet, lights, and a U-lock.  Bike rentals are available for periods of 1-2 weeks for visiting employees.
Vanpool Program	A program that allows groups of people to share rides to and from work.	Facebook provides vanpools to and from surrounding areas.
Carpool Matching with the Internal Ride App	Scoop & Facebook Ride App for carpool match.	Facebook is in the processing of transitioning to Scoop for carpool matching between workers. Previously, they used their Ride App to connect workers to coordinate a carpool.
Dedicated Vanpool Parking	Dedicated parking for Vanpools.	Facebook provides preferred parking for Vanpools.
Education and Promotion	Educational and promotional events to encourage employees to use alternative modes to travel to and from the workplace.	Drop-in commute advice is available through the Transportation Desk at the transportation hubs. There will be four transportation hubs when Willow Village is open.  Events and competitions for prizes include bike commuting classes and Bike to Work Days. New workers receive information on various commute options during orientation.
Emergency Ride Home	Rides provided for employees in case of emergency.	In the event of an emergency, Facebook provides rides home to all ride share and alternative mode commuters who may not have a vehicle readily accessible.
Campus Bike Share Program	Bicycles provided for employee use on campus.	This program provides Facebook Bike Share Bicycles for workers to use for trips around campus.
Intercampus Tram and On-Demand Car Service	Tram service to transport workers between buildings.	A fleet of electric and non-electric vehicles to transport employees between buildings, and a separate on-demand car service for moving between campuses at Menlo Park.
Carshare	Car sharing available on campus.	A fleet of shared cars that are available to reserve for free if employees use alternative transportation to commute and have a mid-day errand or business appointment offsite. Facebook provides Enterprise vehicles for employees and there are also publicly available Zipcars.





TDM Measure	Description	Facebook Program
Amenities	Provision of services at the campus so workers do not need a vehicle at work or do not need to make mid-day trips.	<p>Facebook provides a wide range of on-site amenities for workers that minimize the need to make trips in personal vehicles. These amenities include:</p> <ul style="list-style-type: none"> <li>• cafes</li> <li>• banking services/ATMs</li> <li>• dry cleaning services</li> <li>• fitness center(s)</li> <li>• wellness center</li> <li>• bicycle shop &amp; DIY FixIt stations</li> <li>• car wash services</li> <li>• auto services (oil changes)</li> <li>• vehicle fueling</li> </ul>

Source: Fehr & Peers / Facebook Transportation Group, August 2020

As noted above, the Facebook TDM program reduces the commute drive-alone rate to 51% as compared to the county average drive-alone rate of 69%. This is a reduction of 26% in the drive-alone rate over the county average. This level of drive-alone reduction is sufficient to reduce the peak hour trips by more than 20% relative to the Institute of Transportation Engineers general office trip generation for the office component of the Project. There will be additional peak period commute trip reductions due to the presence of nearby housing in the residential/retail portion of the project.

### 3.1.1 TDM ENHANCEMENTS TO REDUCE OFFICE PARKING DEMAND

The *Willow Village Parking Assessment Report* (July 2021) identified that there would be a shortfall in the office seated worker parking supply of 106 spaces (vehicles). Therefore, the Facebook TDM program will need to make modest improvements to shift more seated workers from driving-alone to other commute modes to reduce the office worker parking demand. As stated above the current drive alone for the entire MPK campus (Classic, Bayfront, Willow, and Chilco) is 51 percent. If the parking reduction is assumed to occur only at the Willow Village campus, the drive-alone rate for the Willow Village campus would need to be 49.7 percent. However, Facebook TDM programs are available to all seated workers in Menlo Park. Any enhancements to the TDM programs will be applied to all of Facebook seated workers; therefore, to achieve a reduction of 106 spaces the overall Menlo Park drive-alone rate would need to be 50.6 percent. To achieve this 0.5% reduction, Facebook will need to invest additional resources into their existing programs and, possibly, add to or expand the commute programs often to workers.

As described above, Facebook’s has an extensive set of TDM programs that they can utilize to reduce the drive-alone rate by expanding existing programs and/or offering higher incentives not to drive alone. Some of the key TDM programs Facebook could enhance or increase their investment to achieve the reduction in drive-alone rate and reduce the parking demand are:



- Employee shuttle service – expanded service areas or frequency of service
- Bicycle commute incentives – amenities such as showers, lockers, fix-it stations, bike rentals and bike sales to employees
- Carpool matching – service to match Facebook employees to form carpools or van pools
- Vanpools – provision of a van for groups of five or more employees
- Public transit incentives – subsidized transit passes and station parking costs
- Implement flexible work schedules and work from home policies that will reduce the number of workers on-campus during the work week

In addition to these existing TDM programs, Facebook is considering new TDM programs and activities that will promote other modes of travel for commuters including bicycle facility improvements and parking management options.

The Facebook Transportation team monitors TDM program effectiveness and refines the TDM programs to meet the needs of their workers. The TDM program monitoring and evaluation is designed to determine the effectiveness of each individual program and the program's ability to reduce peak period vehicle trips, eliminate drive alone vehicle trips, and reduce parking demand. Programs that are under performing may be replaced with new programs that are designed to better meet workers' commute travel needs. Therefore, this TDM Plan is designed to evolve over time. A description of the TDM monitoring is provided in Section 3.3 Monitoring Program.

## **3.2 RESIDENTIAL/RETAIL COMPONENT TDM**

While the Office TDM program will be delivered by Facebook to their workers, the TDM program for the residential, retail, and hotel (Residential/Retail TDM) components will be delivered by multiple entities including property management companies for residential uses and individual businesses for the retail, restaurant, and entertainment uses. Either the property owner's association or a Transportation Management Association will be created to coordinate the delivery of the Residential/Retail TDM Plan. The Association will improve the effectiveness of the programs and potentially reduce the overall costs to deliver the TDM programs. The Association will establish by laws for the operation of the organization and establish a funding mechanism for common services provided by the Association.

The City of Menlo Park will require the Willow Village Project to implement a TDM program that will reduce the trip generation of the proposed land uses by 20% as compared to the trip generation using standard Institute of Transportation Engineers (ITE) trip generation rates. The 20% reduction will be accomplished through both design features of the Project that make it easier to travel without a vehicle, and specific programs or incentives to reduce the number of drive-alone vehicle trips. The Willow Village Residential/Retail TDM program will consist of strategies that are aimed at discouraging single-occupancy vehicle trips and encouraging alternative modes of transportation, such as carpooling, taking transit,



walking, and biking. Strategies included in most TDM programs address a wide range of transportation factors, including parking, transit access, shared mobility, bicycle infrastructure, site design, education and encouragement, and management.

TDM reductions for the Project were estimated based on the California Air Pollution Control Officers Association (CAPCOA) research and methodologies as described in Quantifying Greenhouse Gas Mitigation Measures (2010) and more recent research for the California Air Resources Board Zero Carbon Buildings and Communities studies.

Residential and commercial land use TDM credits were calculated separately, as certain TDM measures are more appropriately applied in the commercial arena or vice versa. For example, for commercial tenants, vanpools and rideshare may be effective tools to reduce employee solo vehicle trips. However, vanpools would be difficult to implement for residents who are traveling from the Project to many disparate destinations. For residents, unbundling parking is a more effective strategy as residents are incentivized to reduce car ownership to save on monthly rental costs for a vehicular parking space. Additionally, the net effectiveness of commute trip reductions is reduced for the commercial land uses as those measures are only applicable to the work trips made by commercial land use employees, rather than the trips made by commercial patrons.

**Table 3** provides a list of physical and programmatic TDM actions that could be provided to the retail/hotel employees and Willow Village residents along with an indication of which use or uses they are appropriate. The TDM measures listed in **Table 3** include both physical design measures such as pedestrian and bike facilities and programs that help shift travelers out of their personal vehicles. In addition, **Table 3** also includes reserved measures that could be used to improve the performance of the Residential/Retail TDM plan, as needed in the future.

**TABLE 3: WILLOW VILLAGE RESIDENTIAL/RETAIL TDM PROGRAM**

TDM	Description	Implementation	Retail/ Hotel Employees	Residents	Reserved Measure
Transportation Management Association	Create an Association for the mixed-uses.	<ul style="list-style-type: none"> <li>• Information sharing</li> <li>• Education &amp; marketing function – TDM coordinator</li> <li>• Pooled resources to reduce costs</li> <li>• Provide emergency rides home for workers</li> <li>• Assist in monitoring TDM programs</li> </ul>	✓	✓	



TDM	Description	Implementation	Retail/ Hotel Employees	Residents	Reserved Measure
Increasing diversity of land uses	Increasing developed area dedicated to a complementary but uncommon or nonexistent use in the surrounding neighborhood	Proposed development includes a combination of multi-family residential units with retail spaces including grocery, restaurants, entertainment, and hotel.	✓	✓	
Housing	Housing built near job center	Willow Village development includes multifamily residential units which could accommodate some of the workers working in the office, retail, and hotel components of the development.		✓	
Public Transit Improved Service	Coordination with SamTrans to provide potential service options to the site.	The property managers and employers will work with SamTrans staff to encourage SamTrans to improve the service area around the Project site through providing new frequent routes or re-routing the existing SamTrans routes.	✓	✓	
Bicycle Amenities	Lockers & showers	Clothing lockers and shower can be provided in the overall design of the hotel space.	✓		
Bicycle network	Integration of the Project site bike network into the City's bike network	The Proposed site plan includes a network of publicly accessible open spaces and a bike and pedestrian path which will be integrated into the City of Menlo Park's bike network.	✓	✓	
Vanpool Program	A program to allow groups of people to share rides to and from work.	Sponsored by mixed-use employers to create carpools. Potentially, a combined service to take advantage of the large number of Facebook workers for ride matching.	✓		



TDM	Description	Implementation	Retail/ Hotel Employees	Residents	Reserved Measure
Carpool Matching	Use of public or private service	Use of 511 RideMatch, SCOOP or WAZE Carpool for employees and residents. There is an opportunity to take advantage of the large number of Facebook workers for ride matching.	✓		✓
Dedicated Carpool/ Vanpool Parking	Dedicated parking for multiple-occupancy vehicles	Spaces could be provided in parking structures near retail and/or hotel.	✓		✓
Shared Parking	Provision of shared pool of parking for the mixed-use development	The retail, hotel, office visitors, and residential guests will share a pool of parking.	✓	✓	
Emergency Ride Home	Rides provided for employees in case of emergency	In the event of an emergency, the Association provides rides home to hotel / retail employees that use alternative modes to commute to work.	✓		
Wayfinding and Lighting	Provision of wayfinding signage and lighting	The project developer will provide bicycle, pedestrian, transit and vehicle wayfinding signage and lighting throughout the development.	✓	✓	
Carshare	Car sharing located in public parking areas	Shared cars that are available for a fee to retail/hotel employees and Willow Village residents to run errand or business appointment offsite. Fees could be subsidized for employees using alternative modes for their commute.	✓	✓	
Bicycle Parking	Enclosed secure bicycle parking	Incorporated into the design of the residential units, hotel, and retail buildings.	✓	✓	
Bicycle Repair Stations	Do it yourself repair stations located in the development	These facilities allow residents and employees to repair and maintain bicycles that can be used for their commutes.	✓	✓	



TDM	Description	Implementation	Retail/ Hotel Employees	Residents	Reserved Measure
Bike Sharing	Provision of bike share stations at the development	The property managers and employers will work with the City of Menlo Park to advocate for bike share stations at the development.	✓	✓	
Commute Assistance Center/Website	Information sharing to new residents & employees	A function provided by the Association for the mixed-use component.	✓	✓	
Unbundled Residential Parking / Limit Parking Supply	Separate sale or lease of a vehicular parking	Unbundled parking, which separates the sale or lease of a vehicular parking space from the sale or lease of living units, will be provided for all market-rate residential units.		✓	
Metered On-Street Parking	Priced on-street parking	On-street parking would be priced. This measure requires coordination and approval from the City of Menlo Park.	✓	✓	
Off-Street Parking Fees	Priced off-street parking				✓

Source: Fehr & Peers, August 2020

The TDM programs promote use of transit, carpooling, vanpooling, biking, and walking to reduce vehicle trips. These programs are complimented by physical design features such as bicycle parking, pedestrian and bicycle features, and showers/changing areas in large workspaces. Each TDM strategy has an associated range of effectiveness in reducing vehicle trips and the combination of strategies have an overall effectiveness. The overall effectiveness is not simply additive when programs are combined since some of the programs overlap in terms of their markets and effectiveness. For this analysis, we evaluated the range of effectiveness as shown in **Table 4** and have chosen to use the average of the range of the combined strategies effectiveness.

Based on the CAPCOA and CARB research, it is estimated that the Project's Residential/Retail TDM program would reduce the residential, retail, and hotel trips as follows:

- Residential trip reduction                      24%
- Retail trip reduction                                18%
- Hotel trip reduction                                20%



The overall trip reduction from the Residential/Retail TDM program as proposed would be approximately 20%. The estimates represent the average of the potential range effectiveness for each land use supported by evidence from the application of these same measures at other projects reported in the CAPCOA and found in more recent CARB research.

The City of Menlo Park requires that the project monitor the effectiveness of the TDM programs in achieving a 20% reduction in trips. The TDM monitoring program is outlined below for the Mixed-Use and Office Components.

**TABLE 4: WILLOW VILLAGE RESIDENTIAL/RETAIL TDM PROGRAM EFFECTIVENESS**

<b>TDM Strategy</b>	<b>Residential</b>	<b>Retail</b>	<b>Hotel</b>
<b>Parking</b>			
Unbundle Parking & Reduced Parking Supply	Up to 20%	--	--
On-Street Parking Fees	3% to 11%	3% to 11%	3% to 11%
Off-Street Parking Fee (reserved program)	6% to 11%	6% to 11%	6% to 11%
<b>Bike &amp; Walk</b>			
Secure Parking	Up to 1%	Up to 1%	Up to 1%
Showers & Lockers	Up to 1%	--	--
End of Trip Repair Stations	Up to 1%	Up to 1%	Up to 1%
Bike Share & Subsidies	Up to 1%	Up to 1%	Up to 1%
<b>Commute Programs / Association</b>			
Marketing Program	3% to 10%	Up to 1%	Up to 1%
Commute Incentives	--	Up to 1%	Up to 1%
<b>Total of All Measures</b>	<b>11% to 36%</b>	<b>9% to 27%</b>	<b>9% to 31%</b>

Source: Fehr & Peers, September 2019



## **4. WILLOW VILLAGE TDM MONITORING PLAN**

The City's Zoning Ordinance requires annual reporting to evidence achievement of the intended TDM reduction. While the Zoning Ordinance does not require monitoring, City staff has requested monitoring as a means of demonstrating compliance. This section outlines a TDM monitoring plan designed to measure and document the effectiveness of office and residential / retail TDM plans. As outlined above in Sections 3.1 and 3.2, there are two distinct components in the TDM plan. The office component of the plan will be implemented by Facebook as the sole owner and occupant of the office space. The residential / retail component will have multiple owners, property managers, and tenants; therefore, a Transportation Management Association will be established to assist in the implementation and coordination of the programs included in the residential / retail TDM plan. While the Association can assist in the implementation, the ultimate effectiveness of the residential / retail TDM programs will depend on the execution by each Association member.

### **4.1 OFFICE TDM (TRIP CAP) MONITORING**

Since Facebook is proposing an office trip cap for Willow Village office uses that is consistent with the trip caps currently used on the Classic and Bayfront campuses, the trip cap monitoring report will provide information on the driveway vehicle counts as well as a list of TDM programs that are in use on the campus. The monitoring report of the Willow Village Office trip cap, and TDM program, will be packaged with the other trip cap monitoring reports for the Classic and Bayfront campuses.

### **4.2 RESIDENTIAL / RETAIL TDM MONITORING PLAN**

As stated above, the TDM Plan monitoring for the residential / retail component introduces a several challenges since there is no single entity responsible for the implementation of the TDM programs. The creation of, and requiring membership in, the Association will provide a means to coordinate the TDM efforts executed by the property owners, property managers, and major tenants. The Association can be used to implement some TDM programs that will benefit from sharing resources between the Association members. However, many of the programs will be implemented by the property owners, property managers, and individual tenants in the retail spaces. The Association can also serve as a clearing house for gathering data, summarizing it, and documenting the TDM performance of the residential properties and retail tenants (including the hotel).

The Association will be responsible for coordinating the monitoring of and report on the residential, retail and hotel components of the Willow Village project. The Association will prepare an annual report documenting the following aspects of the residential and retail TDM plan:





- **Inventory of TDM Facilities** – The Association will establish and maintain an inventory of the TDM Related facilities. The inventory would include a tabular summary and map showing the location of the facilities serving the residential, retail, hotel, and town square parcels. This inventory would include features such as:
  - Bicycle and Pedestrian Networks
  - Bicycle Parking – Long-term and Short-term
  - Bike Share Locations
  - Bicycle Repair Stations
  - Other Bicycle Amenities (i.e., location of public restrooms)
  - Dedicated Carpool/Vanpool Parking Locations
  - Carshare Locations
  
- **TDM Program Data** – The Association would compile a summary of the TDM programs operated by each member of the organization. This data would include descriptions of the services provided by each of the members and programs sponsored by the Association.
  - Transportation Demand Coordinators – list of names and contact information
  - Commute Assistance Centers/Websites – list of locations and URLs
  - Carpool Matching – number of carpools
  - Vanpool Programs – number of vanpools
  - Transit Subsidies – any subsidies provided to residents or employees
  - Emergency Ride Home – existence of program and operation
  - Unbundled Residential Parking – description of programs and use of program
  - Off-Street Parking Fees (non-residential) – status and rates
  - Metered On-Street Parking – current status and rates
  - Public Transit Improved Service – actions taken by Association
  
- **Parking Occupancy Data** – Once a year during the spring or fall (agreed to by the City) when school is in session and there are no holidays or special events, the following data will be collected:
  - Parking Occupancy Counts – On two weekdays and one weekend day, parking occupancy counts will be conducted in the parking structures between the hours of 7:00 AM and 7:00 PM. Counts will be conducted in one-hour intervals.

The Association will submit the TDM monitoring report to the City for review. If the City determines that the TDM programs are falling short of the proposed TDM plan, the Association will work with members to improve or expand their individual TDM programs.





**Appendix H**  
**Internal Intersection Analysis**



## Memorandum

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**Date:** April 5, 2021

**To:** Ms. Kirsten Chapman, ICF Jones & Stokes, Inc.

**From:** Ollie Zhou, Katie Riutta

**Subject:** Internal Intersection Analysis for the Proposed Willow Village Project in Menlo Park, CA

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Hexagon Transportation Consultants, Inc. has completed an internal intersection analysis for the proposed Willow Village project in Menlo Park, California. The Proposed Project would redevelop an approximately 59-acre industrial site plus two parcels north of Willow Road<sup>1</sup> (collectively, the Project Site) as a mixed-use development. The Proposed Project would demolish all existing onsite buildings and landscaping on the 59-acre portion of the Project Site and construct new buildings, provide open space areas, and install infrastructure within a new Residential/Shopping District, Town Square District, and Campus District. In addition, the Proposed Project would alter two parcels (Hamilton Avenue Parcels North and South<sup>2</sup>) to accommodate realignment of Hamilton Avenue at Willow Road for Project Site access.

The Proposed Project would provide up to 1.6 million sf of space for office and accessory use (consisting of up to 1.25 million sf of office uses and the balance (350,000 square if office use is maximized) of accessory uses<sup>3</sup>) and up to 200,000 sf of commercial/retail space. The Proposed Project would also include up to 1,730 multi-family housing units, an up to 193-room hotel, and open spaces, including publicly accessible parks (e.g. 3.5 acre publicly accessible park, elevated linear park, town square, and dog park).

The Project Site would be bisected by a new north–south street (Main Street) and an east–west street, which would provide access to all three districts. It would include a circulation network for vehicles, bicycles, and pedestrians, inclusive of both public rights-of-way and private streets, that would be generally aligned to an east-to-west and a north-to-south grid. The Proposed Project would also alter parcels north of the industrial site, across Willow Road, on both the east and west sides of Hamilton Avenue (Hamilton Avenue Parcels North and South) to support realignment of the Hamilton Avenue right-of-way and provide access to the new elevated park. This would require demolition and reconstruction of an existing service station (Chevron gas station) and potentially an increase in 1,000 sf on Hamilton Avenue Parcel South and enable the potential addition of up to 6,700 sf of retail uses at the existing neighborhood shopping center on the Hamilton Avenue Parcel North. A total of 7,700 sf could be added to the Hamilton Avenue Parcels.

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<sup>1</sup> For transportation analysis, “North/South” is aligned to be parallel to US 101. Hence, Willow Road and University Avenue are considered east-west streets, whereas Hamilton Road and Bayfront Expressway are considered north-south streets.

<sup>2</sup> Hamilton Avenue Parcels North and South consider Hamilton Avenue an east to west street, which differs from the compass directions used for the transportation analysis discussion.

<sup>3</sup> Accessory uses could include the following types of spaces: meeting/collaboration space, orientation space, training space, event space, incubator space, a business partner center, an event building (including pre-function space, collaboration areas, and meeting/event rooms), a visitor center, product demonstration areas, film studio, gathering terraces and private gardens, and space for other Meta accessory uses. Accessory uses could occur in spaces located anywhere throughout the Campus District.

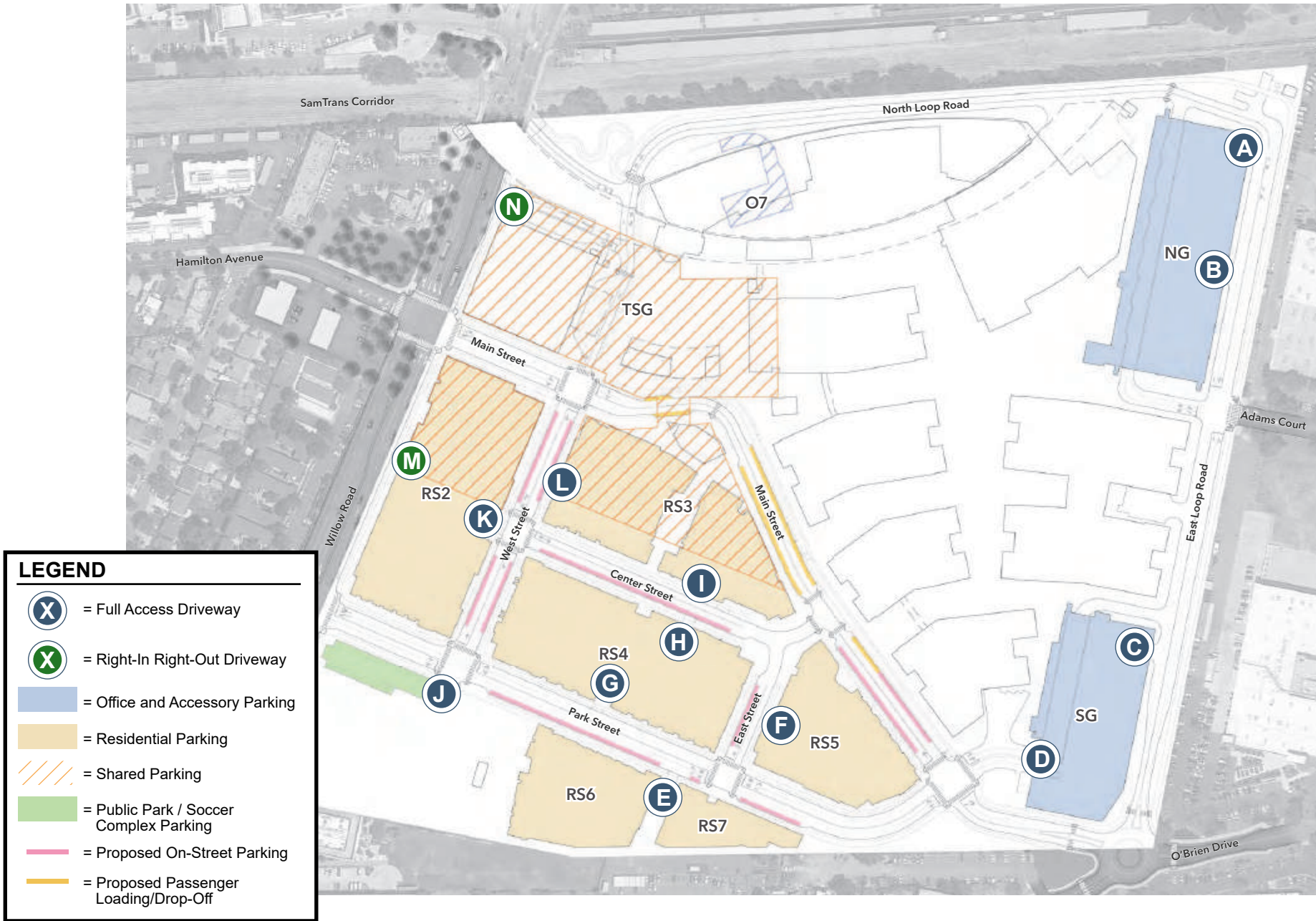


Access to the project site would be provided by four intersections on Willow Road (at Hamilton Avenue, one new driveway intersection north of Hamilton Avenue, and two new intersections south of Hamilton Avenue), a new intersection on O'Brien Drive at the southeast corner of the project site, and Adams Court (see Figure 1). This analysis evaluates the internal site's intersection operations, potential queuing issues, and general site access and circulation, and parking. The analysis also evaluates the site access, circulation, and parking for the proposed Hamilton parcels.

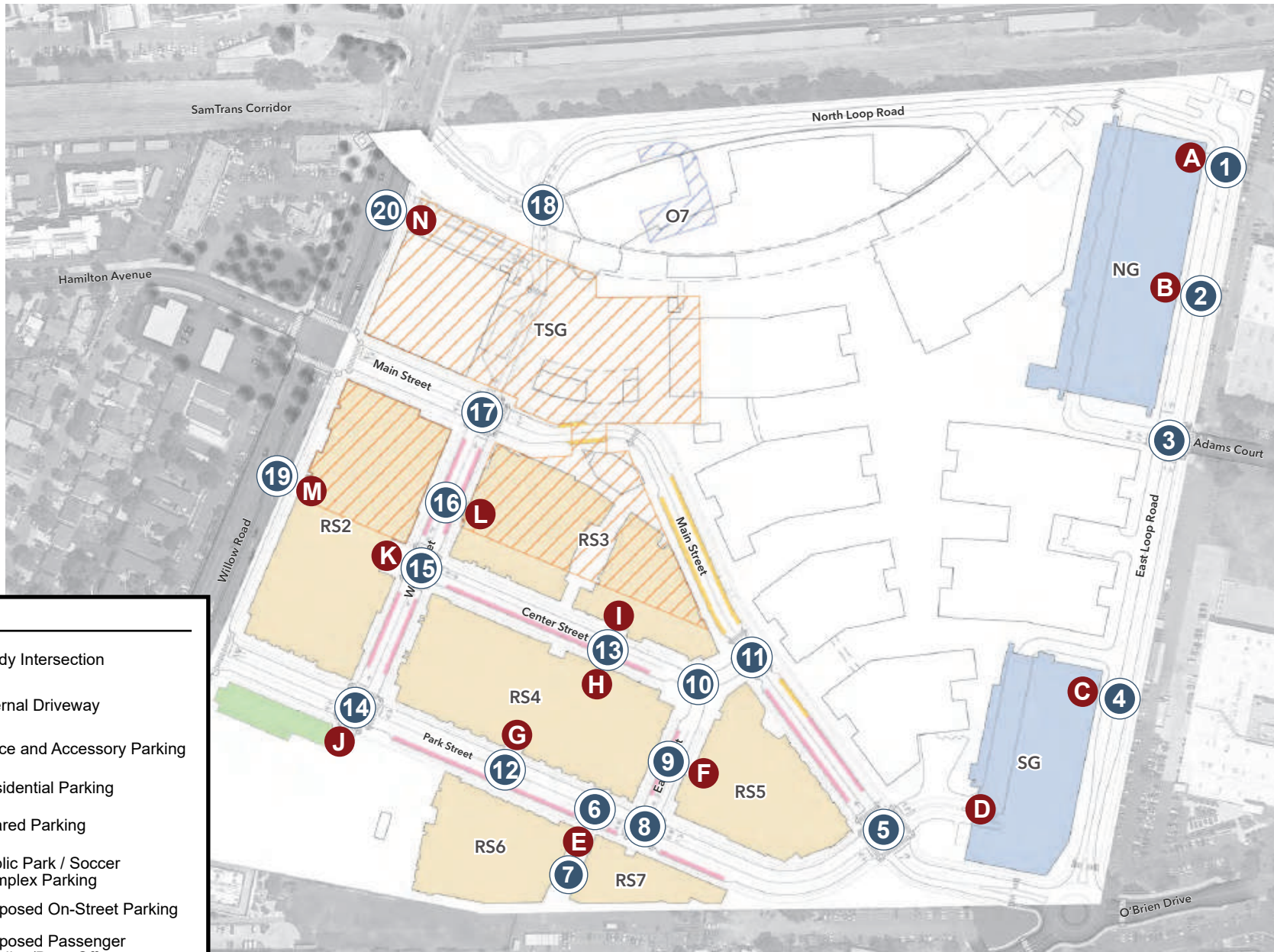
A system of new streets would be implemented within the proposed Willow Village area to provide vehicular connections between parking garages in the project area and Willow Road, O'Brien Drive, and Adams Court. Seven new internal streets are planned within the project site, including North Loop Road, East Loop Road, Main Street, West Street, Center Street, East Street, and Park Street. The project proposes 14 parking garage driveways and designated areas for on-street parking within the project area. Most driveways would be full access, but the two garage driveways on Willow Road (Driveways M and N) would be right in right out only. For the purposes of this study, Willow Road is considered to be an east-west roadway.

The new internal streets and project driveways would create 20 new intersections that are listed below and shown on Figure 2.

1. Driveway A & East Loop Road (unsignalized)
2. Driveway B & East Loop Road (unsignalized)
3. Adams Court & East Loop Road
4. Driveway C & East Loop Road (unsignalized)
5. Main Street & Park Street/Driveway D
6. Park Street & Driveway E (unsignalized)
7. Buildings RS6/RS7 & Driveway E (unsignalized)
8. Park Street & East Street (unsignalized)
9. Driveway F & East Street (unsignalized)
10. Center Street & East Street (unsignalized)
11. Main Street & East Street (unsignalized)
12. Park Street & Driveway G (unsignalized)
13. Center Street & Driveway H/Driveway I (unsignalized)
14. Park Street & West Street/Driveway J
15. Center Street/Driveway K & West Street (unsignalized)
16. Driveway L & West Street (unsignalized)
17. Main Street & West Street
18. North Loop Road & West Street (unsignalized)
19. Driveway M & Willow Road (unsignalized)
20. Driveway N & Willow Road (unsignalized)



**Figure 1**  
**Project Driveways**



**LEGEND**

- # = Study Intersection
- X = Internal Driveway
- = Office and Accessory Parking
- = Residential Parking
- = Shared Parking
- = Public Park / Soccer Complex Parking
- = Proposed On-Street Parking
- = Proposed Passenger Loading/Drop-Off

**Figure 2**  
Internal Analysis Study Intersections

## Intersection Operations

### Trip Generation

The project trip generation by land use was presented in a trip generation memo by Hexagon Transportation Consultants dated October 13, 2021 and is discussed further in the Transportation Impact Analysis (TIA). As shown in Table 1, the gross project trips generated by the Main Project Site on the roadway network would be 32,237 daily trips, including 2,396 AM peak hour trips (1,638 inbound trips and 758 outbound trips), and 2,719 PM peak hour trips (969 inbound trips and 1,750 outbound trips).

The trip generation by land use was converted to trip generation by parking garage based on the *Willow Village Master Plan Conditional Development Permit* by Peninsula Innovation Partners dated September 7, 2021, and the *Willow Village Parking Assessment* by Fehr & Peers dated July 2021. The trip generation by parking garage considers the respective TDM reductions. Trips were assigned to each parking garage based on the proportion of parking spaces proposed for each garage. Table 2 shows the trip generation for each parking garage. The public on-street and passenger loading parking spaces were assigned to the nearest parking garages.

### Trip Distribution and Assignment

Trips generated by the proposed project were distributed to the study network based on model outputs (see Figures 3 – 4). The proposed office use would typically generate inbound trips in the morning and outbound trips in the evening. The proposed residential, retail, and office/residential visitor uses would typically generate outbound trips in the morning to employment areas and inbound trips in the evening from employment areas. The proposed hotel use would typically generate trips from the nearby office areas.

The peak-hour trips generated by the proposed uses were assigned to the roadway network based on the directions of approach and departure, the roadway network connections, the location of project driveways, and the proposed lane configurations. Retail pass-by trips were added to the network from east and west Willow Road, based on the proportion of through traffic under background plus project conditions. The travel demand forecast model identified some cut-through traffic using the internal roadways within the project site. These were added to the network between Willow Road and O'Brien Drive via Main Street and Park Street based on model outputs (see Figure 5). The proposed lane configurations are shown on Figure 6, the internal intersection project volumes are shown on Figure 7, and the project trip assignment assumptions are detailed in Appendix IIA.A.



**Table 1**  
**Trip Generation Estimates – Project Buildout (Main Campus)**

Land Use	ITE Land Use Code <sup>1</sup>	Size	Unit	Daily		AM Peak Hour			PM Peak Hour					
				Rate <sup>1</sup>	Total	Rate <sup>1</sup>	IN	OUT	Total	Rate <sup>1</sup>	IN	OUT	Total	
<b><i>Campus District</i></b>														
Office	710	6,950	employees	3.28	22,796	0.37	2,135	437	2,572	0.40	556	2,224	2,780	
<i>TDM Reductions <sup>2</sup></i>						(4,559)		(765)	(137)	(902)		(171)	(939)	(1,110)
<b>Office Trip Cap <sup>2</sup></b>						<b>18,237</b>		<b>1,370</b>	<b>300</b>	<b>1,670</b>		<b>385</b>	<b>1,285</b>	<b>1,670</b>
<b><i>Residential/Shopping and Town Square Districts</i></b>														
Residential	221	1,730	d.u.	5.44	9,411	0.36	162	461	623	0.44	464	297	761	
Retail	820	200	ksf	37.75	7,550	0.94	117	71	188	3.81	366	396	762	
Hotel	310	193	rooms	8.36	1,613	0.47	54	37	91	0.60	59	57	116	
Publicly Accessible Park <sup>3</sup>	488	3	fields	71.33	214	0.99	2	1	3	16.43	32	17	49	
Subtotal						18,788		335	570	905		921	767	1,688
<i>TDM Reductions <sup>4</sup></i>						(3,762)		(67)	(112)	(179)		(245)	(206)	(451)
<b>Residential/Shopping and Town Square Districts Trips (MU)</b>						<b>15,026</b>		<b>268</b>	<b>458</b>	<b>726</b>		<b>676</b>	<b>561</b>	<b>1,237</b>
Project Trips after TDM Reductions (Office + MU)						33,263		1,638	758	2,396		1,061	1,846	2,907
<i>Retail Pass-By Reductions <sup>5</sup></i>						(1,026)		0	0	0		(92)	(96)	(188)
<b>Total New Trips Generated by the Project</b>						<b>32,237</b>		<b>1,638</b>	<b>758</b>	<b>2,396</b>		<b>969</b>	<b>1,750</b>	<b>2,719</b>
Existing Trip Generation Credit <sup>6</sup>						(11,700)		(699)	(286)	(985)		(250)	(555)	(805)
<b>Net New Trips Generated on Roadway Network</b>						<b>20,537</b>		<b>939</b>	<b>472</b>	<b>1,411</b>		<b>719</b>	<b>1,195</b>	<b>1,914</b>
<b>Notes</b>														
<i>d.u. = dwelling unit, ksf = 1,000 s.f.</i>														
1. Daily, AM, and PM peak hour average rates published in ITE Trip Generation Manual, 10th Edition, 2017 were used for each land use.														
2. Office trip generation and TDM reductions reflect the proposed daily, AM and PM peak hour trip caps.														
3. The publicly accessibleThe programmatic design of the park has not been determined. In order to provide a conservative estimate of potential traffic generation, it is assumed that the park will have play structures and open field areas for warm-ups or casual play. The park is planned for approximately 3.5 acres. Number of soccer fields on 3.5 acres of land was estimated based on the size of a standard soccer field. park is assumed to be programmable. ITE Land Use "Soccer Field" is analyzed as a proxy. Number of soccer fields was estimated based on the size of a standard soccer field.														
4. For the Residential/Shopping and Town Square Districts, the applicant proposes a 20 percent reduction from gross ITE trip generation for daily, and a 20 percent and 27 percent reduction from gross ITE trip generation during the AM and PM peak hours of commute, respectively.														
5. Pass-by trip reduction is based on the average pass-by trip reduction rate published in the ITE Trip Generation Handbook, 3rd Edition. Hexagon assumes no pass-by trip reduction during the AM peak hour and half of the PM peak pass-by reduction for daily trip generation.														
6. Existing Use trip estimates based on driveway counts conducted over three days in September 2019 per Facebook Willow Traffic Counts Memorandum, Fehr & Peers, March 26, 2020. 8-9 AM in the AM peak period and 4-5 PM in the PM peak period have been considered as peak hours since they have the highest trips.														

**Table 2**  
**Trip Generation by Parking Garage**

Parking Garage	Parking Use	# Spaces	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
<b>Net Project Trips</b>								
NG	Office and Accessory Parking	2,422	835	183	1,018	235	784	1,019
SG	Office and Accessory Parking	1,511	521	114	635	146	489	635
RS2	Residential Parking	351	26	74	100	66	44	110
RS3	Residential Parking	419	32	88	120	80	52	132
RS4	Residential Parking	466	35	98	133	88	58	146
RS5	Residential Parking	276	20	58	78	52	35	87
RS6	Residential Parking	195	14	41	55	37	24	61
RS7	Residential Parking	68	5	14	19	13	9	22
TSG	Shared Parking (Hotel)	168	43	28	71	43	43	86
RS2	Shared Parking (Retail and Residential Visitors)	297	33	20	53	65	67	132
TSG/RS3	Shared Parking (Retail and Residential/Office Visitors)	524	72	39	111	119	131	250
	Publicly Accessible Park	41	2	1	3	25	14	39
	<b>Total</b>	<b>6,738</b>	<b>1,638</b>	<b>758</b>	<b>2,396</b>	<b>969</b>	<b>1,750</b>	<b>2,719</b>
<b>Retail Pass-By Trips</b>								
RS2	Shared Parking (Retail and Residential Visitors)	297	-	-	-	33	35	68
TSG/RS3	Shared Parking (Retail and Residential/Office Visitors)	524	-	-	-	59	61	120
	<b>Total</b>	<b>821</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>92</b>	<b>96</b>	<b>188</b>
<u>Notes:</u>								
Trips were calculated using Willow Village Trip Generation Estimates at the land use level. Trips were assigned to each parking garage based on proportion of parking spaces. The public on-street and passenger loading parking spaces were assigned to the nearest parking garages.								

Willow Village Internal Intersection Analysis

**LEGEND**









-  = Study Intersection
-  = Trip Distribution
-  = Office and Accessory Parking
-  = Residential Parking
-  = Shared Parking
-  = Public Park / Soccer Complex Parking
-  = Proposed On-Street Parking
-  = Proposed Passenger Loading/Drop-Off



Figure 3  
Project Trip Distribution - Campus District

Willow Village Internal Intersection Analysis

**LEGEND**









-  = Study Intersection
-  = Trip Distribution
-  = Office and Accessory Parking
-  = Residential Parking
-  = Shared Parking
-  = Public Park / Soccer Complex Parking
-  = Proposed On-Street Parking
-  = Proposed Passenger Loading/Drop-Off



Figure 4  
Project Trip Distribution - Mixed-Use District

Willow Village Internal Intersection Analysis

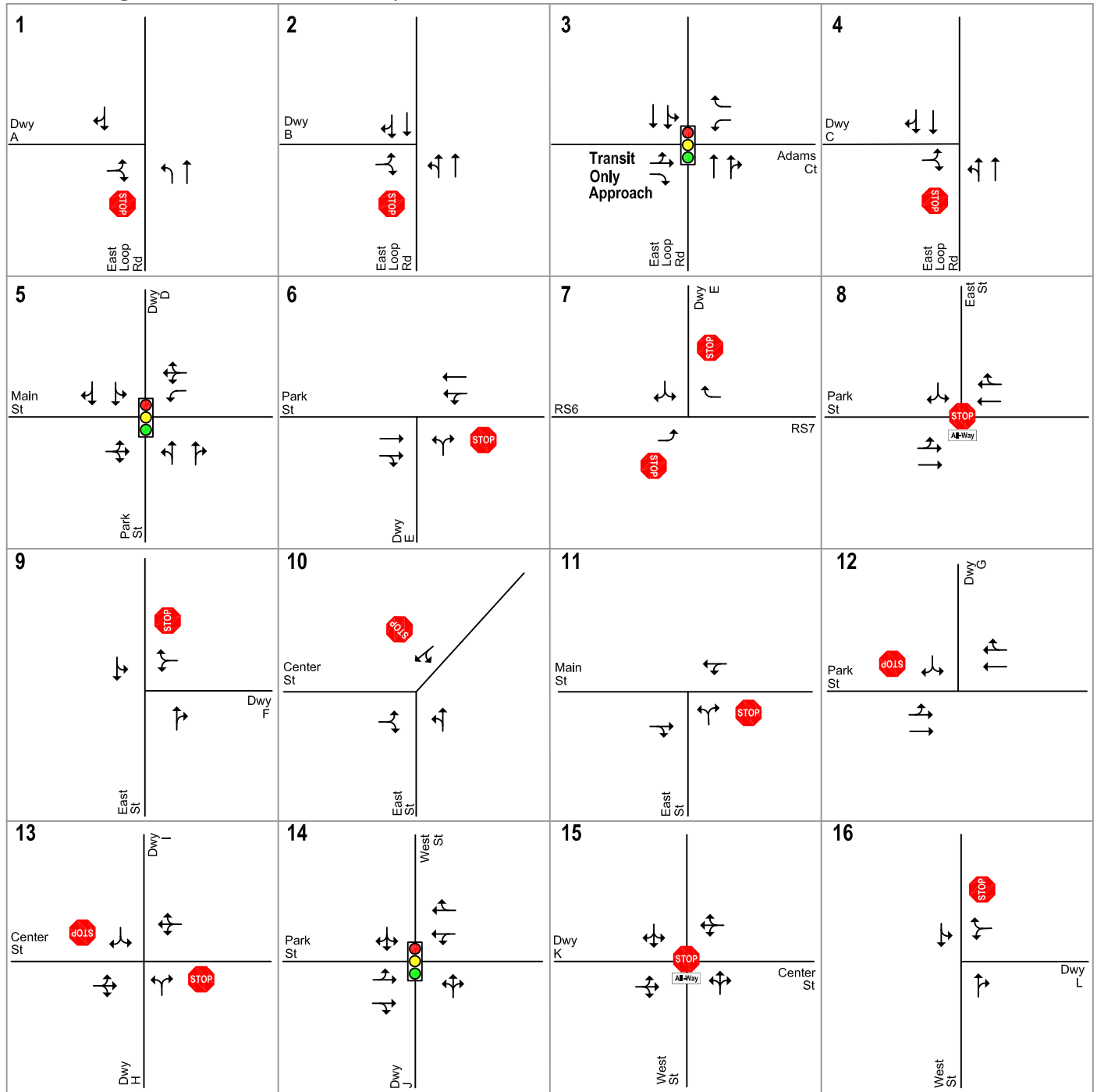
**LEGEND**

- XX(XX) = AM(PM) Peak-Hour Cut-Through Trips
- = Office and Accessory Parking
- = Residential Parking
- = Shared Parking
- = Public Park / Soccer Complex Parking
- = Proposed On-Street Parking
- = Proposed Passenger Loading/Drop-Off






**Figure 5**  
Cut-Through Traffic Volumes

# Willow Village Internal Intersection Analysis

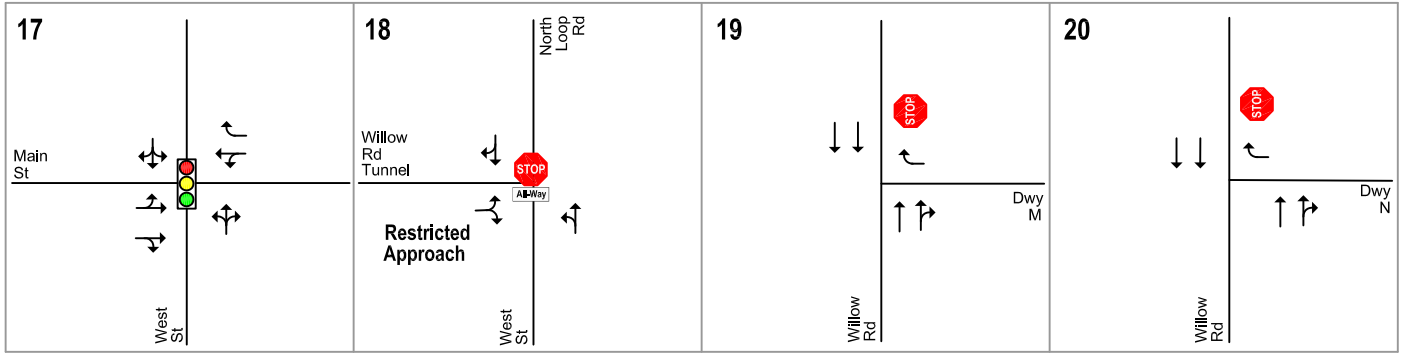


## LEGEND

-  = Stop-Controlled Approach
-  = All-Way Stop-Controlled Intersection
-  = Signalized Intersection

**Figure 6**  
**Internal Intersection Lane Configurations**

Willow Village Internal Intersection Analysis



LEGEND




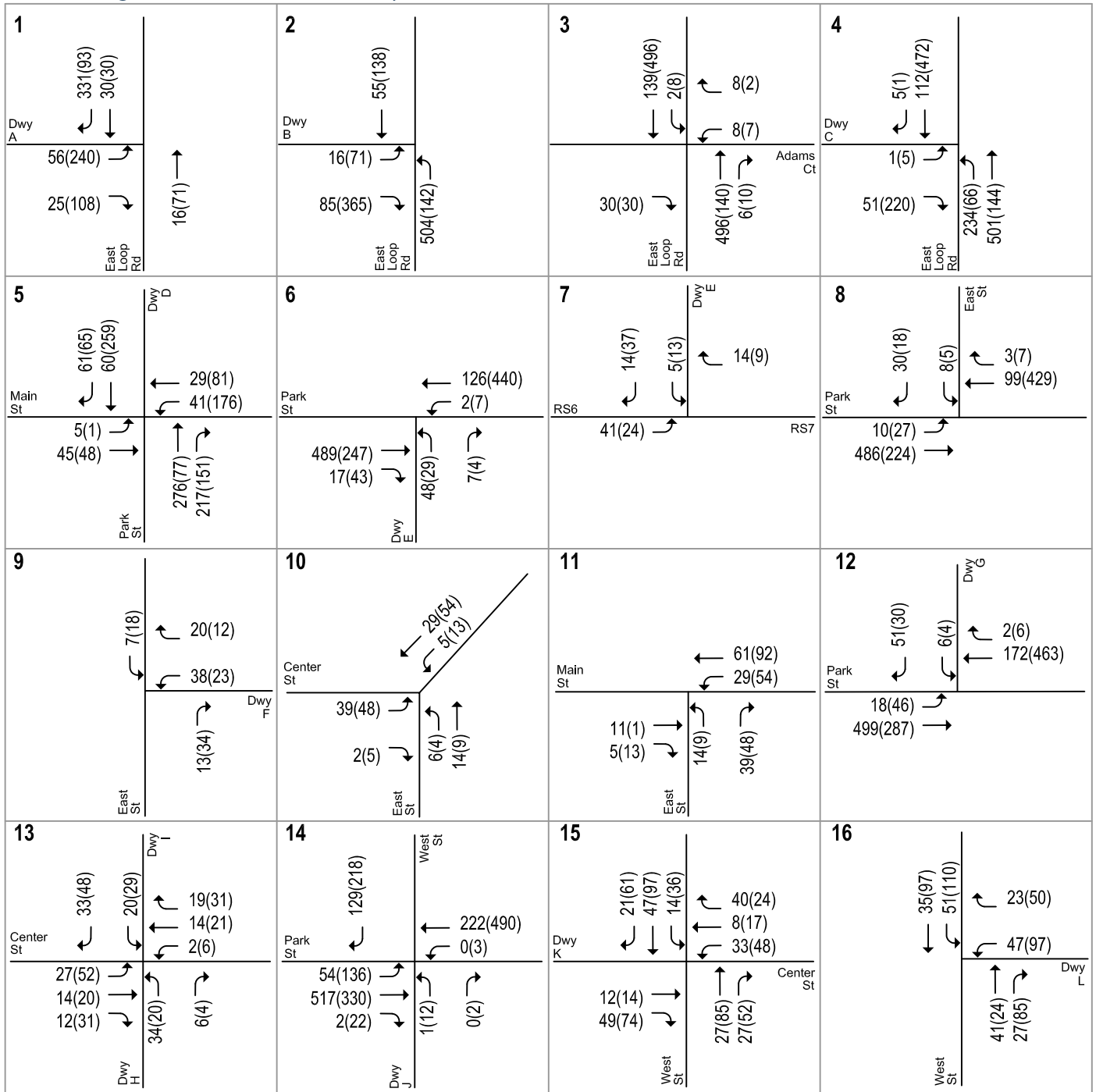
-  = Stop-Controlled Approach
-  = All-Way Stop-Controlled Intersection
-  = Signalized Intersection

Figure 6  
Internal Intersection Lane Configurations

Willow Village Internal Intersection Analysis



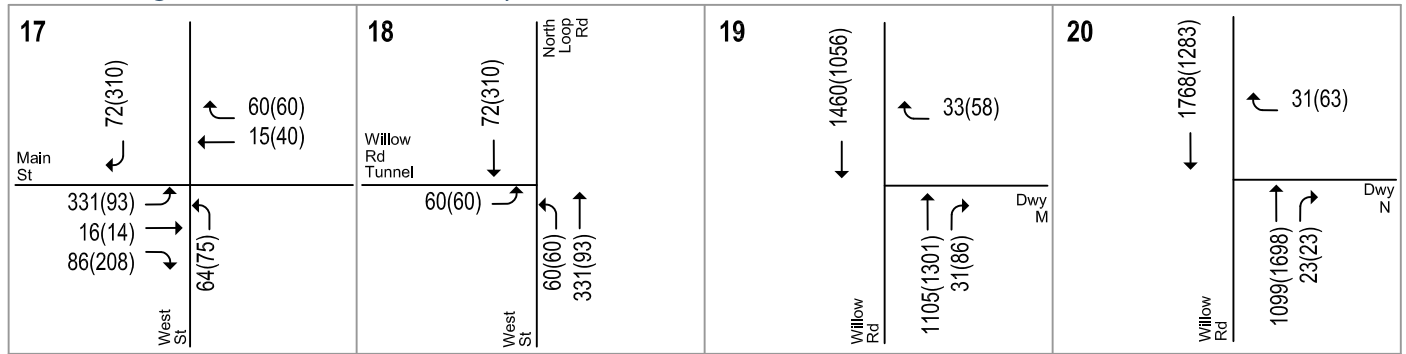
**LEGEND**

XX(X) = AM(PM) Peak-Hour Trips

**Figure 7**  
**Internal Intersection Project Volumes**



Willow Village Internal Intersection Analysis



LEGEND

XX(X) = AM(PM) Peak-Hour Trips

Figure 7  
Internal Intersection Project Volumes

## Vehicular Access and Circulation

The site access and circulation evaluations are based on the September 7, 2021 site plan<sup>4</sup> prepared by Peninsula Innovation Partners (see Figure 2 of the Transportation Impact Analysis). Site access and on-site vehicular circulation were reviewed in accordance with generally accepted traffic engineering standards.

### Site Access

Access to the internal roadway network would be provided via Willow Road, O'Brien Drive, and Adams Court. The following intersections were studied in the TIA using Vistro software: Hamilton Avenue/Main Street & Willow Road, Park Street & Willow Road, and Main Street/O'Brien Drive & East Loop Road/O'Brien Drive.

### Willow Road Corridor

The results of the level of service analysis in the TIA conducted separately for this project showed that the two intersections on Willow Road would operate at LOS F during both peak hours under near-term (2025) plus project conditions and under cumulative (2040) plus project conditions. The Willow Road corridor is expected to experience capacity issues due to unserved demand at the intersections. Level of service is discussed further in the TIA.

### Proposed Roundabout

The need for a roundabout was determined at the intersection of Main Street/O'Brien Drive & East Loop Road/O'Brien Drive. Due to the existing intersection's large and skewed shape, trucks and buses would not be able to make all the turning movements. The proposed roundabout is shown in Figure 1. The results of the level of service analysis in the TIA showed that the roundabout intersection would operate at LOS A during both peak hours under near-term (2025) plus project conditions and during the AM peak hour under cumulative (2040) plus project conditions. The intersection would operate at LOS B during the PM peak hour under cumulative plus project conditions.

### Vehicle Queuing Analysis

The level of service analysis for the intersections that would provide access to the project's internal roadway network was supplemented with a vehicle queuing analysis for left-turn lanes at intersections where the project would add a substantial number of left turns. This analysis provides a basis for estimating future storage requirements at the intersections under near-term plus project conditions. Vehicle queues were estimated using Vistro software. The following left-turn lanes were selected for evaluation:

- Westbound left and Eastbound left lanes at Hamilton Avenue/Main Street & Willow Road
- Westbound left and Northbound left lanes at Park Street & Willow Road
- All approaches at Main Street/O'Brien Drive & East Loop Road/O'Brien Drive

The results show that two intersections are expected to have insufficient turn lane storage to accommodate the anticipated traffic volumes under project conditions (see Table 3).

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<sup>4</sup> A site plan resubmittal was received in December 2021 but had no substantive revisions that might affect this analysis.

**Table 3**  
**Left-Turn Storage Queuing Analysis for External Intersections**

Measurement	Hamilton Ave/Main St & Willow Rd				Park St & Willow Rd			
	WBL		NBL		WBL		NBL <sup>3</sup>	
	AM	PM	AM	PM	AM	PM	AM	PM
<b>Near-Term Plus Project</b>								
Volume (vph)	337	284	18	75	205	150	352	720
Lanes	2	2	1	1	2	2	2	2
Volume (vphpl)	169	142	18	75	103	75	176	360
95th % Queue <sup>1</sup> (veh)	11	25	2	4	8	2	10	10
95th % Queue <sup>2</sup> (ft.)	275	625	50	100	200	50	250	250
Storage (ft/ln)	230	230	225	225	250	250	225	225
Adequate (Y/N)	N	N	Y	Y	Y	Y	N	N
Notes:								
<sup>1</sup> Vehicle queues are from Vistro outputs and are rounded up to the next whole number.								
<sup>2</sup> Assumes 25 Feet Per Vehicle Queued								
<sup>3</sup> Approach shares a turn lane with right-turning movements. Volumes represent the total approach volume.								

**Table 3 (continued)**  
**Left-Turn Storage Queuing Analysis for External Intersections**

Measurement	Main Street/O'Brien Drive & East Loop Road/O'Brien Drive							
	NBLTR <sup>3</sup>		EBLTR <sup>3</sup>		SBLTR <sup>3</sup>		WBLTR <sup>3</sup>	
	AM	PM	AM	PM	AM	PM	AM	PM
<b>Near-Term Plus Project</b>								
Volume (vph)	355	225	431	175	262	199	162	692
Lanes	1	1	1	1	1	1	1	1
Volume (vphpl)	355	225	431	175	262	199	162	692
95th % Queue <sup>1</sup> (veh)	3	1	3	1	1	2	1	5
95th % Queue <sup>2</sup> (ft.)	75	25	75	25	25	50	25	125
Storage (ft/ln)	-	-	-	-	325	325	330	330
Adequate (Y/N)	-	-	-	-	Y	Y	Y	Y
Notes:								
<sup>1</sup> Vehicle queues are from Vistro outputs and are rounded up to the next whole number.								
<sup>2</sup> Assumes 25 Feet Per Vehicle Queued								
<sup>3</sup> Approach shares a turn lane with through and right-turning movements. Volumes represent the total approach volume.								

***Westbound Left-turn at Hamilton Avenue/Main Street & Willow Road***

Two left turn pockets are proposed for the westbound approach on Willow Road at Hamilton Avenue/Main Street. The proposed vehicle storage for the westbound left turn pockets would be 310 feet and 150 feet, averaging to 230 feet per lane. Under near-term plus project conditions, the 95<sup>th</sup> percentile queue would exceed the storage length of each turn pocket by 219 vehicles during the AM peak hour and 16 vehicles during the PM peak hour. The project would add 337 vehicles to the left turn movement during the AM peak hour and 284 vehicles during the PM peak hour. If the left turn lanes at Hamilton Avenue/Main Street become saturated, it is assumed that vehicles would choose to instead enter the project site via Park Street. The westbound approach at Park Street would also provide two left turn pockets, which would be 250 feet per lane. It is assumed that the demand queue could be accommodated between the left turn lanes at these two intersections on Willow Road.

***Northbound Left-turn at Park Street & Willow Road***

One left turn lane and one shared left-right lane are proposed for the northbound approach on Park Street at Willow Road. The proposed vehicle storage between Willow Road and West Street would be approximately 225 feet per lane. Under near-term plus project conditions, the 95<sup>th</sup> percentile queue would exceed the storage length of each turn pocket by one vehicle during both the AM and PM peak hours. The project would add 352 vehicles to the shared lanes during the AM peak hour and 720 vehicles during the PM peak hour. If the approach becomes saturated, northbound right-turning vehicles could use West Street and Main Street to travel eastbound on Willow Road.

***All Approaches at Main Street/O'Brien Drive & East Loop Road/O'Brien Drive (future intersection)***

The Main Street/O'Brien Drive & East Loop Road/O'Brien Drive intersection is proposed to be a roundabout. All legs of the roundabout would have one approach lane. The 95<sup>th</sup> percentile queues for all legs were checked and found to be a maximum of 5 vehicles, which would not block any nearby intersections or driveways.

**On-site Circulation**

On-site vehicular circulation was reviewed in accordance with generally accepted traffic engineering standards. The project would generally expect sufficient levels of service and left-turn storage capacity at driveways and internal intersections. The internal roadway network would provide adequate wayfinding for motorists. Cut-through traffic would be relatively low. Therefore, on-site circulation is expected to be adequate, with some identified circulation issues described below.

**Intersection Levels of Service**

Intersection levels of service were evaluated for informational purposes relative to the City of Menlo Park standards and were calculated using Vistro software. No stop controls were specified for the intersections of Center Street & East Street or Main Street & East Street. Therefore, it was assumed that the westbound approach would be stop controlled for the Center Street & East Street intersection, and the eastbound approach would be stop controlled for the Main Street & East Street intersection (see Figure 6). The results of the internal intersection level of service analysis under project conditions are summarized in Table 4. The intersection levels of service calculation sheets are included in Appendix IIA.B.

**Table 4**  
**Internal Intersection Levels of Service Summary**

#	Intersection	Peak Hour	Traffic Control	Project Conditions	
				Avg delay <sup>1</sup>	LOS
1	East Loop Road & Driveway A	AM	OWSC	10.1	B
		PM		11.9	B
2	East Loop Road & Driveway B	AM	OWSC	<b>31.0</b>	<b>D</b>
		PM		16.5	C
3	East Loop Road & Adams Court	AM	Signal	4.9	A
		PM		15.2	B
4	East Loop Road & Driveway C	AM	OWSC	19.6	C
		PM		17.0	C
5	Main Street & Park Street/Driveway D	AM	Signal	16.3	B
		PM		17.1	B
6	Driveway E & Park Street	AM	OWSC	13.9	B
		PM		12.7	B
7	Driveway E & Buildings RS6/RS7	AM	TWSC	8.8	A
		PM		8.8	A
8	East Street & Park Street	AM	AWSC	9.3	A
		PM		9.1	A
9	East Street & Driveway F	AM	OWSC	8.8	A
		PM		8.9	A
10	East Street & Center Street	AM	OWSC	9.5	A
		PM		9.7	A
11	Main Street & East Street	AM	OWSC	9.5	B
		PM		10.0	A
12	Driveway G & Park Street	AM	OWSC	12.2	B
		PM		15.4	C
13	Driveway H/Driveway I & Center Street	AM	TWSC	9.6	A
		PM		10.4	B
14	West Street/Driveway J & Park Street	AM	Signal	12.0	B
		PM		15.7	B
15	West Street & Center Street/Driveway K	AM	AWSC	7.4	A
		PM		8.3	A
16	West Street & Driveway L	AM	OWSC	10.1	B
		PM		12.8	B
17	West Street & Main Street	AM	Signal	10.8	B
		PM		16.9	B
18	West Street & North Loop Road	AM	AWSC	10.1	B
		PM		9.3	A
19	Willow Road & Driveway M	AM	OWSC	13.3	B
		PM		16.0	C
20	Willow Road & Driveway N	AM	OWSC	13.2	B
		PM		20.2	C

**Notes:**

OWSC - One Way Stop Control; TWSC - Two Way Stop Control; AWSC - All Way Stop Control

<sup>1</sup>Average delay is reported for signalized and AWSC intersections. For TWSC intersections and OWSC intersections, the delay for the worst stop-controlled movement is reported.

**Bold** indicates substandard level of service

Per City’s LOS standard, the City strives to maintain LOS C at all City-controlled minor intersections during peak hours. The results of the analysis show that the intersection of Driveway B & East Loop Road would operate at LOS D during the AM peak hour. Vehicles turning left out of Driveway B would be expected to experience an average delay of 31 seconds while waiting for a sufficient opening on East Loop Road. During the AM peak hour, approximately 101 vehicles (16 heading eastbound and 85 heading westbound) would be expected to exit the garage, which would be one to two vehicles per minute. Therefore, although exiting drivers would experience some wait time, operations at Driveway B are expected to be adequate.

**Vehicle Queuing Analysis**

The analysis of internal intersection levels of service was supplemented with a vehicle queuing analysis for left-turn lanes at intersections where the project would add a substantial number of left turns. This analysis provides a basis for estimating future storage requirements at the intersections under project conditions. Vehicle queues were estimated using Vistro software. The following left turn lanes were selected for evaluation:

- Southbound shared left/right lane at Driveway A & East Loop Road
- Eastbound shared left/through lane at Driveway B & East Loop Road
- Eastbound shared left/through lane at Driveway C & East Loop Road
- Northbound left lane at Main Street & Park Street/Driveway D
- Southbound shared left/through lane at Park Street & West Street/Driveway J
- Westbound shared left/through lane at Driveway L & West Street
- Southbound shared left/through lane at Main Street & West Street

The results show that all intersections are expected to have sufficient turn lane storage to accommodate the anticipated traffic volumes under project conditions (see Table 5).

**Table 5  
Left-Turn Storage Queuing Analysis for Internal Intersections**

Measurement	Dwy A & East Loop Rd		Dwy B & East Loop Rd		Dwy C & East Loop Rd		Main St & Park St/Dwy D	
	SBLR <sup>3</sup>		EBLT		EBLT		NBL <sup>3</sup>	
	AM	PM	AM	PM	AM	PM	AM	PM
<b>Project</b>								
Volume (vph)	81	348	504	142	234	66	70	257
Lanes	1	1	1	1	1	1	2	2
Volume (vphpl)	81	348	504	142	234	66	35	129
95th % Queue <sup>1</sup> (veh)	1	2	2	1	1	1	1	5
95th % Queue <sup>2</sup> (ft.)	25	50	50	25	25	25	25	125
Storage (ft/ln)	-	-	230	230	100	100	300	300
Adequate (Y/N)	-	-	Y	Y	Y	Y	Y	Y
Notes:								
<sup>1</sup> Vehicle queues are from Vistro outputs and are rounded up to the next whole number.								
<sup>2</sup> Assumes 25 Feet Per Vehicle Queued								
<sup>3</sup> Approach shares turn lane with through and/or right-turning movements. Volumes represent the total approach volume.								

**Table 5 (continued)**  
**Left-Turn Storage Queuing Analysis for Internal Intersections**

Measurement	Park St & West St/Dwy J		Dwy L & West St		Main St & West St	
	SBLT <sup>3</sup>		WBLT <sup>3</sup>		SBLT <sup>3</sup>	
	AM	PM	AM	PM	AM	PM
<b>Project</b>						
Volume (vph)	573	488	86	207	433	315
Lanes	2	2	1	1	2	2
Volume (vphpl)	287	244	86	207	217	158
95th % Queue <sup>1</sup> (veh)	6	7	1	1	4	6
95th % Queue <sup>2</sup> (ft.)	150	175	25	25	100	150
Storage (ft/ln)	225	225	150	150	225	225
Adequate (Y/N)	Y	Y	Y	Y	Y	Y
Notes:						
<sup>1</sup> Vehicle queues are from Vistro outputs and are rounded up to the next whole number.						
<sup>2</sup> Assumes 25 Feet Per Vehicle Queued						
<sup>3</sup> Approach shares turn lane with through and/or right-turning movements. Volumes represent the total approach volume.						

### **Left Turns from Garage Driveways**

Left-turn lanes with a substantial number of left turns inside the garages were studied to determine how long the turn pockets should be to accommodate the anticipated 95<sup>th</sup> percentile queues. The southbound shared-left-right lane at Driveway A would be expected to have a 95<sup>th</sup> percentile queue of 25 feet during the AM peak hour and 50 feet during the PM peak hour. Based on the Master Plan, the north office garage would have enough room to accommodate the anticipated 95<sup>th</sup> percentile queue.

### **Left Turns near Proposed Roundabout**

The project proposes a roundabout at the intersection of Main Street/O'Brien Drive & East Loop Road/O'Brien Drive. Given the geometric constraints at this intersection, a four-legged signalized intersection would have resulted in insufficient turn spaces for certain movements. A roundabout would resolve the turning movement restrictions caused by the geometric constraints. The queues for left-turn movements on Main Street and East Loop Road near the roundabout were analyzed for functional requirements. The eastbound shared-left-through lane at Driveway C & East Loop Road would be expected to have a 95<sup>th</sup> percentile queue of 25 feet during both peak hours. The northbound left and shared-left-through-right lanes at Main Street & Park Street/Driveway D would be expected to have a 95<sup>th</sup> percentile queue of 125 feet during the PM peak hour. Based on the Master Plan, the proposed storage for the left turns near the roundabout intersection could accommodate the anticipated 95<sup>th</sup> percentile queues and the queues would not be expected to interfere with the roundabout operations.

### **East Street “Slow Street” Design**

The section of East Street between Center Street and Main Street would be designed to be a “slow street”. As currently proposed, vehicles travelling on southbound Center Street or westbound East Street would only require minor turns to continue along that corridor, whereas vehicles on eastbound East Street would require essentially 90 degree turns.

**Recommendation:** To discourage vehicle traffic from travelling on the section of East Street between Center Street and Main Street and to clarify to drivers that the main throughfare at this intersection is the 90-degree bend, Hexagon recommends the East Street & Center Street intersection be slightly reconfigured. This could be done by modifying the intersection corners so the southbound left movement does not appear as a throughfare.

### **Spillback Queues on Willow Road**

The proposed intersections on West Street at Park Street and Main Street would be located approximately 225 feet from the adjacent intersections on Willow Road.

**Recommendation:** To prevent southbound queues from spilling back onto Willow Road from Park Street and Main Street, Hexagon recommends coordinating the adjacent signals.

### **Emergency Vehicles, Truck Access and Circulation**

Emergency response vehicles would access the project site from the intersections on Willow Road, O'Brien Drive, and Adams Court and would use the internal roadway network. Emergency response vehicles would access the Campus District buildings via Emergency Vehicle Access Easements along the perimeter and through the secure Campus District.

The project proposes five primary loading docks at three buildings in the Campus District. Deliveries for other buildings in the Campus District would use on-street loading zones or the loading docks at other buildings. A grocery loading bay would be located within the parking garage of building RS2. Trucks would enter the garage via Willow Road, back into the diagonal loading bay near the grocery store, and exit the garage via West Street. Rideshare and other delivery vehicles would use the provided on-street parking and loading spaces (see Figure 1). The on-street parking and loading spaces would be located throughout the interior of the project site and would not be expected to create queuing issues onto Willow Road.

### **Parking Garage Access and Circulation**

#### **Sight Distance**

The project driveways should be free and clear of any obstructions to optimize sight distance, thereby ensuring that exiting vehicles can see pedestrians on the sidewalk and other vehicles traveling on the roadway network. Landscaping and signage should not conflict with a driver's ability to locate a gap in traffic and see oncoming pedestrians and bicyclists. Adequate sight distance (sight distance triangles) should be provided at the driveways in accordance with Caltrans standards. Sight distance triangles should be measured approximately 10 feet back from the traveled way.



According to the Caltrans *Highway Design Manual*, the minimum stopping sight distance is the distance required by the user, traveling at a given speed, to bring the vehicle or bicycle to a stop after an object ½-foot high on the road becomes visible. Stopping sight distance for motorists is measured from the driver's eyes, which are assumed to be 3 ½ feet above the pavement surface, to an object ½-foot high on the road. The required stopping sight distances are based on the Caltrans *Highway Design Manual*, Table 201.1. The project driveways are located on Willow Road and throughout the internal roadway network. Willow Road has a speed limit of 40 mph, and the internal roads would have an assumed speed limit of 25 mph. Thus, the Caltrans stopping sight distance requirement is 360 feet (based on a design speed of 45 mph) on Willow Road and 200 feet (based on a design speed of 30 mph) on the internal roads.

On the internal roadways where on-street parking would be prohibited, the parking garage driveways would be expected to have adequate sight distance, provided that the trees within the sidewalk would not obstruct visibility. The site plan shows a sharp roadway curve between North Loop Road and East Loop Road, directly east of Driveway A. The roadway curve would restrict sight distance to approximately 50 feet, which is inadequate. This is considered a potential CEQA Transportation Impact related to hazards and is further discussed under Impact TRA-3 of the draft Environmental Impact Report (dEIR) Transportation Chapter. On roadways with proposed on-street parking, vehicles parked directly next to the garage driveways would interfere with sight distance.

**Mitigation:** Per Mitigation Measure TRA-3 as outlined in the dEIR Transportation Chapter, mitigation would require revising the North Garage access design to provide adequate sight distance for the eastern driveway or incorporate other design solutions to reduce hazards to the satisfaction of the Public Works Director. Potential solutions that would reduce hazards to a less than significant level include restricting the eastern driveway to inbound vehicles only or prohibiting exiting left turns, modifying landscaping or relocating the driveway to the west to allow for adequate sight distance for exiting vehicles, or installing an all-way stop or signal.

**Recommendation:** Prior to final design, the project applicant should ensure that landscaping and vegetation would not obstruct visibility at the parking garage driveways.

**Recommendation:** Hexagon recommends including 30 feet of red curb on both sides of all garage driveways to prevent vehicles from parking and obstructing the vision of exiting drivers.

**Recommendation:** If vehicles exiting the garages cannot see oncoming pedestrians on the sidewalk, Hexagon recommends installing warning signs to alert pedestrians when vehicles are exiting the garages.

**Recommendation:** If any driveways are moved from their position on the current site plan, sight distance should be reevaluated.

### **Driveway Operations**

The project-generated traffic would access the on-site parking garages via 12 full-access driveways, 2 right-in-right-out driveways on Willow Road, and the internal roadway network. According to the City of Menlo Park's *Parking Stalls and Driveway Design Guidelines*, the width for multi-family, office, and retail driveways should be a minimum of 24 feet for two-way driveways and 15 feet for one-way driveways. Based on the *Willow Village Master Plan* dated September 7, 2021, driveways A, B, C, and N would meet the requirement. The driveways of buildings RS6 and RS7 would be approximately 18 feet, which would not meet the requirement. The remaining buildings do not show the driveway widths.

**Recommendation:** It is recommended that all driveway widths meet the City's requirements.

The parking garage site plans show that gates would be provided at the inbound and outbound lanes of driveways A, B, C, and D of the Campus District garages, driveways I and L of building RS3, and within the basement level of building TSG near driveway N. A garage door is shown at the entrances of buildings RS6 and RS7. A roll-up gate is shown on level B1 of building RS3 at the tunnel connection to the town square garage (building TSG). Measurements between the inbound gates and the roadways are not provided on the site plans.

**Recommendation:** At garage driveways where gates and garage doors are proposed, Hexagon recommends conducting an operational analysis to ensure that gate opening and closing times would not create queuing issues and cause vehicles to spill onto the roadway network.

**Recommendation:** Prior to final design, the residential parking on level P1 of building RS2 should be shown to be gated and separated from the retail parking on levels 1 and 2. In addition, the roll-up gate in building RS3 should be clearly shown to separate the retail parking in level B1 and the residential parking in level B2.

### **Drive Aisles**

The project would provide 90-degree parking stalls throughout all parking garages shown in the *Willow Village Master Plan*. According to the City of Menlo Park's *Parking Stalls and Driveway Design Guidelines*, the City's standard minimum width for two-way drive aisles is 23 feet wide where 90-degree parking is provided. Based on the *Willow Village Master Plan*, the office parking garages, the residential parking garage in building RS7, and the retail/hotel parking garage in building TSG would meet the requirement. The drive aisles of the residential parking garage in building RS6 are shown to be approximately 22 feet wide, which would not meet the requirement. The site plans for the remaining parking garages do not show the drive aisle widths.

**Recommendation:** It is recommended that all drive aisle widths meet the City's requirements.

The parking garage site plans show dead-end drive aisles in the north office parking garage on level 1, in the south office parking garage on level 1, in the retail parking on level B1 of building RS3, in the residential parking on level 1 of building RS7, and in the retail parking in the basement level of building TSG. The City's *Parking Stalls and Driveway Design Guidelines* do not provide any requirements for turnaround space. However, providing adequate turnaround space at the end of drive aisles allows drivers to back out of the parking space closest to the end or exit the aisle if there are no parking spaces available.

**Recommendation:** It is recommended that adequate turnaround space is provided at all dead-end drive aisles.

### **Parking Stall Dimensions**

According to the City's *Parking Stalls and Driveway Design Guidelines*, parking stalls are required to have a width of 8 feet 6 inches and a length of 16 feet 6 inches. Based on the *Willow Village Master Plan*, the parking spaces in the Campus District garages would meet the requirements. The parking spaces shown in building TSG would meet the width requirement; however, the parking space lengths are not shown. Parking stall sizes for the remaining buildings are not provided.

**Recommendation:** It is recommended that all parking stall widths meet the City's requirement.

### **Parking Analysis**

The Willow Village project is located within two bonus zoning districts as defined by the *City of Menlo Park General Plan* and *M-2 Area Zoning Update (ConnectMenlo)*. All proposed land uses on the main Project Site would be within the Campus District or the residential mixed-use district. Based on the *Menlo Park Municipal Code* Sections 16.45.080 and 16.43.090, the parking requirements for each zoning district are provided as a range of permitted parking ratios. The office and accessory use would be required to provide between 2 and 3 spaces per 1,000 square feet. The market-rate residential use would be required to provide between 1 and 1.5 spaces per unit. The Municipal Code does not provide requirements for below-market-rate senior residential uses. Therefore, based on an applicant adjustment request, the senior residential use would be required to provide 0.5 spaces per unit. The retail use would be required to provide between 2.5 and 3.3 spaces per 1,000 square feet. The hotel use would be required to provide between 0.75 and 1.1 spaces per guest room. Table 6 shows the minimum and maximum number parking spaces per the Municipal Code and the proposed number of parking spaces for each land use.

Based on the range of permitted parking ratios, the proposed parking for the office and residential uses would meet the parking requirements. However, the proposed parking for the retail and hotel uses would be included among the shared parking spaces. Given that the project proposes shared parking facilities for retail, hotel and Campus District visitors, a shared parking analysis was performed to determine whether the proposed amount of shared parking spaces would be adequate based on their varying time-of-day demands. The parking demand for these uses throughout the day was calculated based on the time-of-day trend data and parking ratios published in the Urban Land Institute's *Shared Parking*, 3<sup>rd</sup> Edition.

**Table 6**  
**Parking Requirements by Land Use**

Land Use	Size	Proposed Spaces	Minimum Spaces	Maximum Spaces
Office and Accessory <sup>1</sup>	1,600 ksf	3,333	3,200	4,800
Residential	1,730 du	1,702	1,670	2,475
<i>Market-rate</i>	1,610 du		1,610	2,415
<i>BMR Senior Housing</i>	120 du		60	60
Publicly Accessible Park	3 fields	41	-	-
Shared Parking <sup>2</sup>		938	-	-
Notes:				
ksf = 1,000 square feet				
du = dwelling unit				
<sup>1</sup> The number of proposed spaces does not include proposed valet parking.				
<sup>2</sup> The number of proposed spaces does not include proposed on-street parking.				

The shared parking spaces would be used by retail customers and employees, hotel guests and employees, and office and accessory space visitors. Residential guests would also use the shared parking facilities, in addition to the on-street parking. The garages with shared parking spaces would also contain residential parking. There would be a physical separation between resident parking and shared parking within the garages. According to the time-of-day trend data, parking demand for retail uses is highest between 12:00 PM and 2:00 PM on weekdays; parking demand for hotel uses is highest in the evening and early mornings; and parking demand for office visitors is highest between 10:00 AM and 11:00 AM. The project proposes a total shared parking supply of 938 spaces among three parking garages, with two of the garages being connected via tunnel. Assuming the minimum parking requirements for retail and hotel, and the estimated peak parking demand for office visitors, the maximum shared parking demand on the site would be 761 parking spaces on a weekday, which would be lower than the proposed parking supply by 177 spaces (see Table 7). Therefore, the shared parking supply is expected to meet the demand for the retail, hotel, and office visitor use.

The project would provide a variety of parking stalls, including standard, accessible, electric vehicle, compact, puzzle, tandem puzzle, and stacker. Puzzle parking is proposed in the residential areas of buildings RS2 and RS3. Tandem puzzle parking is also proposed in the residential area of building RS3. Stacker parking is proposed in buildings RS6, RS7, and TSG. Parking operations are not provided for the puzzle, tandem puzzle, or stacker parking spaces in the Master Plan. The puzzle and stacker parking are assumed to allow for individual vehicle retrieval. The proposed mechanical parking systems would provide tandem puzzle spaces that are individually accessible.

**Table 7**  
**Time-of-Day Shared Parking Demand**

Hour of Day	Retail <sup>1</sup>	Hotel <sup>1</sup>	Office Visitors <sup>2</sup>	Parking Demand
6:00 AM	5	138	0	143
7:00 AM	25	131	3	159
8:00 AM	75	116	42	233
9:00 AM	175	102	126	403
10:00 AM	300	87	209	596
11:00 AM	375	87	95	557
12:00 PM	500	80	32	612
1:00 PM	500	80	95	675
2:00 PM	475	87	199	761
3:00 PM	425	87	95	607
4:00 PM	425	95	32	552
5:00 PM	425	102	21	548
6:00 PM	450	109	11	570
7:00 PM	400	109	5	514
8:00 PM	325	116	3	444
9:00 PM	225	124	0	349
10:00 PM	75	138	0	213
11:00 PM	25	145	0	170
12:00 AM	0	145	0	145
			<b>Maximum Demand</b>	761
			<b>Shared Parking Supply</b>	938
			<b>Surplus</b>	+177

**Notes:**  
Time-of-day factors are from Urban Land Institute's *Shared Parking*, 3rd Edition.  
<sup>1</sup> The number of retail and hotel spaces represent the minimum requirements from the Menlo Park Municipal Code, which are 500 and 145 spaces, respectively.  
<sup>2</sup> The number of office visitor spaces is based on the peak visitor parking demand estimated at 0.03 vehicles per seated worker, as described in the Willow Village Parking Assessment, dated July 2021

### **ADA Requirements**

The number of accessible parking spaces were evaluated according to the *2019 California Building Code* (Table 11B-208.2). As shown in Table 8, the project would provide at least the required number of accessible parking spaces in the garages included in the Master Plan. Buildings RS4 and RS5 are not shown in the Master Plan.

**Recommendation:** Prior to final design, Hexagon recommends that the required amount of ADA parking spaces be provided in all parking garages.

**Table 8**  
**ADA Parking Requirements**

Parking Garage	Total Proposed Spaces	Required ADA Spaces	Proposed ADA Spaces
Parcel 2 / RS2	634	13	15
Parcel 3 / RS3	639	13	18
Parcel 6 / RS6	181	6	6
Parcel 7 / RS7	63	3	4
Town Square / TSG	435	9	13
North Office / NG	2032	31	44
South Office / SG	1301	24	34

Source: 2019 California Building Code, Table 11B-208.2

### **EV Requirements**

The *Menlo Park Municipal Code* (Section 16.72.010) references the *2019 California Green Building Standards Code* regarding electric vehicle (EV) parking spaces. Based on Section 4.106.4.2 of the Building Standards Code, new multifamily dwellings are required to provide 10 percent of the total number of parking spaces. Based on Section 12.18.110 of the Municipal Code, non-residential buildings greater than 9,999 square feet are required to provide 15 percent of the total required number of parking stalls. As shown in Table 9, buildings RS6 and RS7, the Town Square garage, and the Campus District garages would meet the requirements. The EV parking for building RS3 would not meet the requirements. The site plan for building RS2 does not show any provided EV parking.

**Recommendation:** Prior to final design, Hexagon recommends that the required amount of EV parking spaces be provided in all parking garages.

**Table 9**  
**EV Parking Requirements**

Parking Garage	Total Proposed Spaces	Required EV Spaces	Proposed EV Spaces
Parcel 2 / RS2	634	79	
<i>Residential</i>	351	36	-
<i>Non-residential</i>	283	43	-
Parcel 3 / RS3	639	75	2
<i>Residential</i>	419	42	1
<i>Non-residential</i>	220	33	1
Parcel 6 / RS6	181	19	27
Parcel 7 / RS7	63	7	12
Town Square / TSG	435	66	69
North Office / NG	2032	305	420
South Office / SG	1301	196	271
Source: Menlo Park Municipal Code Sections 16.72.010 and 12.18.110			

## Pedestrian, Bicycle and Transit Analysis

### Pedestrian and Bicycle Facilities

The proposed project would include multiple pedestrian and bicycle facilities on the project site and connections between the project site and the surrounding roadway network. The proposed pedestrian facilities are shown in Figure 8 and the proposed bicycle facilities are shown in Figure 9.

The proposed pedestrian facilities include:

- Sidewalks on both sides of realigned Hamilton Avenue, Main Street, West Street, Center Street, East Street, and Park Street.
- Crosswalks at the proposed signalized intersections on Willow Road at Main Street and Park Street that would connect the project site to the Belle Haven neighborhood. Crosswalks would also be provided at most internal intersections. Crosswalks would not be provided at East Street & Center Street or at driveway intersections. A midblock crosswalk would be provided on Main Street.

**Recommendation:** Hexagon recommends that a crosswalk be provided at the intersection of Center Street & East Street and that midblock crosswalks are provided on Center Street and Park Street to reduce block size and improve pedestrian convenience. Recommended crosswalks are shown on Figure 8.

- An internal pedestrian network connecting Main Street, office buildings, and the transit hubs.
- Pedestrian access to the elevated park connecting the North Loop Road and Willow Road via elevators.
- A subgrade pedestrian connection within the proposed Willow Road Tunnel between the project site and the Meta Bayfront Campus.

The proposed bicycle facilities include:

- On-street bicycle circulation along Park Street, West Street, Center Street, and East Street. Class III bikeways would be provided on Main Street between Willow Road and West Street.
- Bicycle connections to the existing class II/proposed class IV bike lanes along Willow Road via Park Street and Main Street.
- A class IV bike path between the Meta Bayfront Campus via the subgrade Willow Road Tunnel and the project site. The class IV bike path would extend along Main Street within the project site to Park Street, where it transitions into a multi-use pathway. A cross section of Main Street is shown on Figure 10.
- A class I multi-use path along North Loop Road, East Loop Road, and portions of Main Street and O'Brien Drive.
- Bicycle parking available for public use along the internal streets within the project site. Bicycle parking for Meta employees would be located in the North Garage and the South Garage, facilitating bicycle access between Campus District transit stops and the multi-use pathway adjacent to East Loop Road and North Loop Road.
- Bicycle access to the elevated park connecting North Loop Road and Willow Road via elevators.

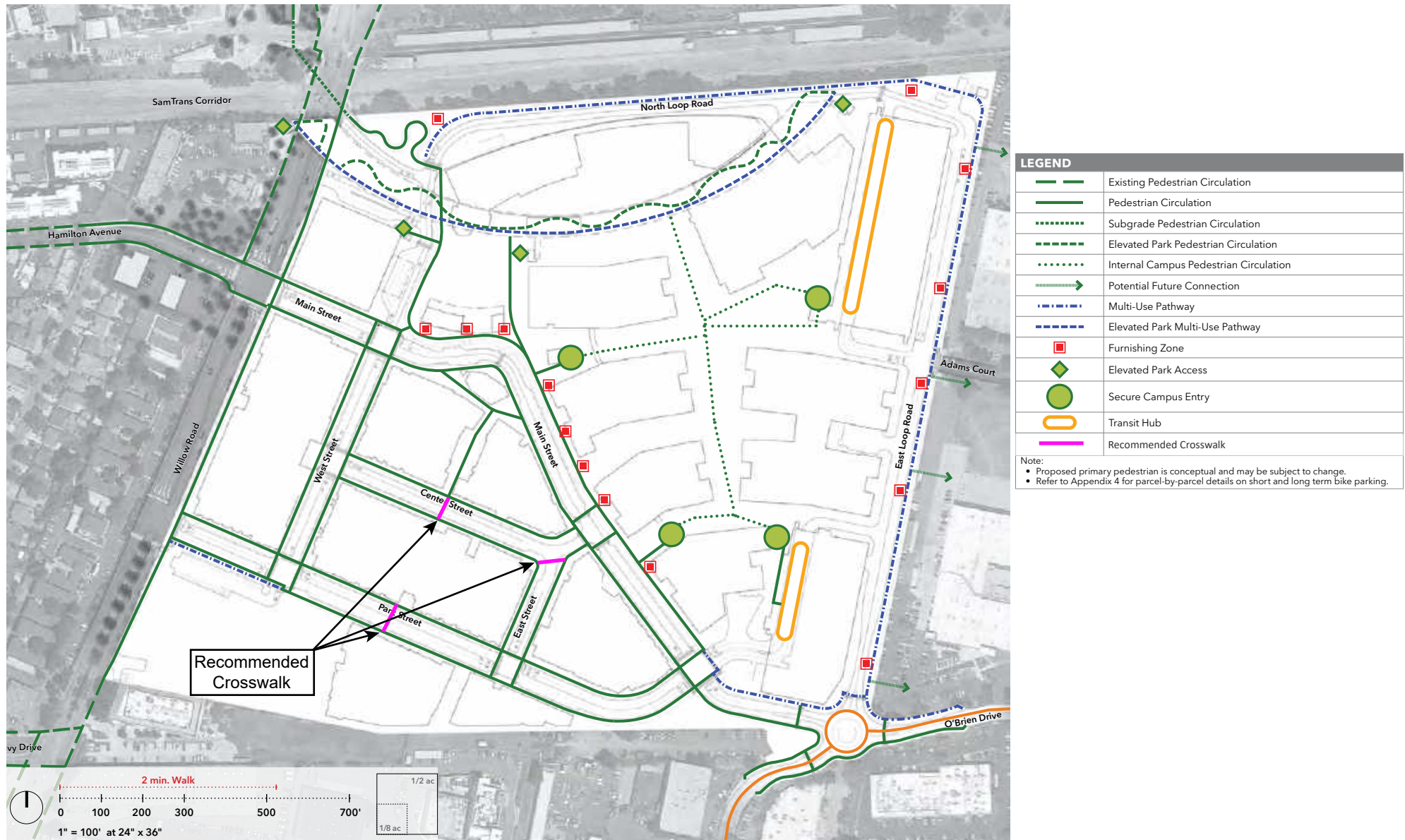
## Transit Facilities

The proposed project would provide two transit hubs adjacent to East Loop Road exclusively for the Meta Commuter Shuttle and five inter-campus tram routes. These transit services would not be open to the public and would be reserved for Campus District workers.

The inter-campus tram route would loop around the project site via Main Street, East Loop Road, and North Loop Road, and would connect to the Meta Bayfront Campus and other Meta campuses via the proposed Willow Road Tunnel. The trams would also stop at two points along Main Street and at the intersection of West Street/North Loop Road & Willow Road Tunnel (see Figure 11). Along Main Street, the trams would utilize the passenger loading areas in the bus turnouts and would not be expected to block the flow of traffic (see Figure 1).

The proposed Meta Commuter Shuttle routes would be along Willow Road, O'Brien Drive, and Adams Court in the immediate vicinity of the project site, and along Park Street and East Loop Road internal to the project site (see Figure 12). Based on Meta Transportation data from March 2020, there were 59 shuttles that traveled to the South Bay, San Francisco, East Bay, the Peninsula, Santa Cruz/Scotts Valley, and North Bay/Marin District. The total ridership was 6,310 for inbound service and 6,391 for outbound service, which represents approximately 39% of the capacity. It is assumed that the existing shuttle program would have sufficient capacity to serve the proposed project.

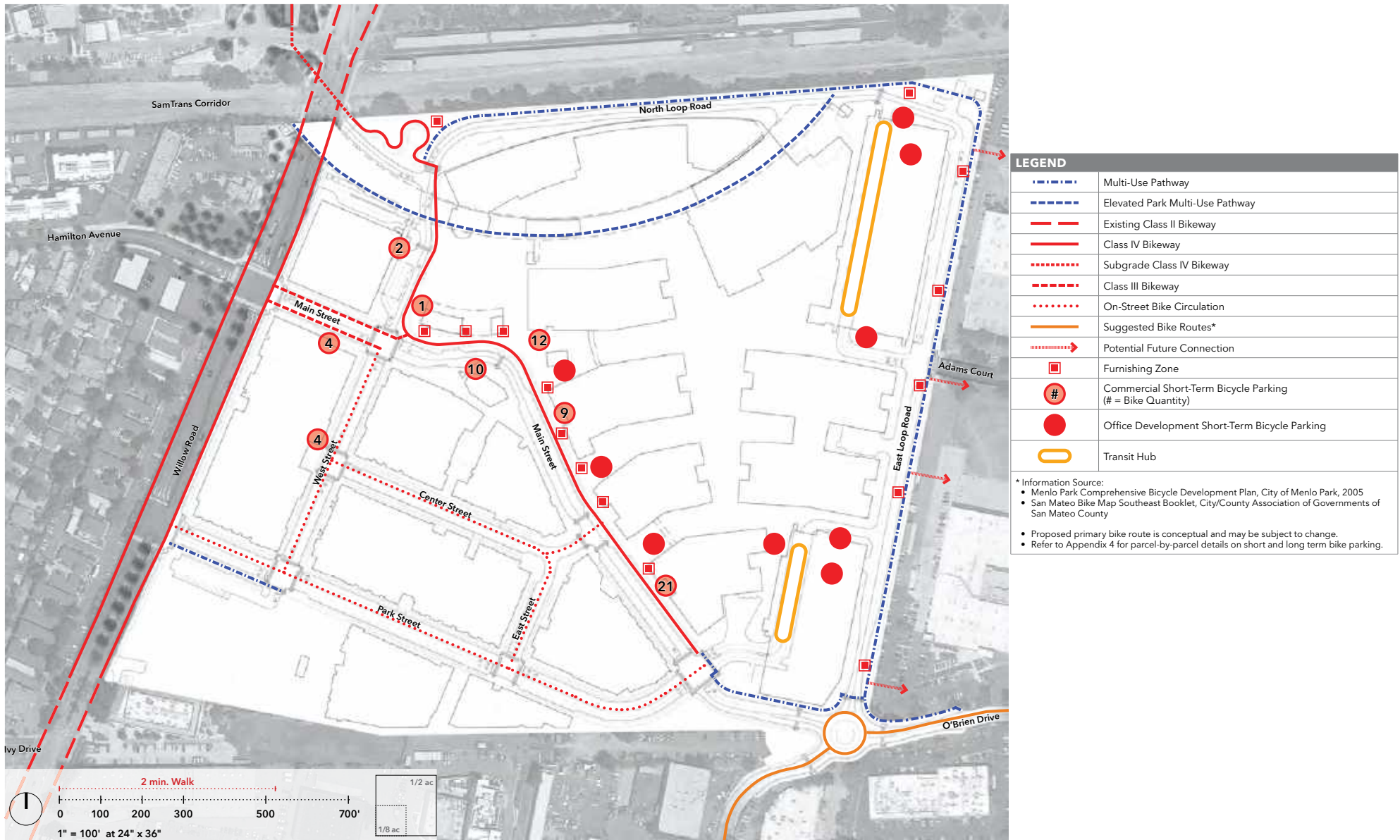




Source: Willow Village Master Plan, Peninsula Innovation Partners, September 7, 2021

**Figure 8**  
**Proposed Pedestrian Improvements**

Willow Village Internal Intersection Analysis

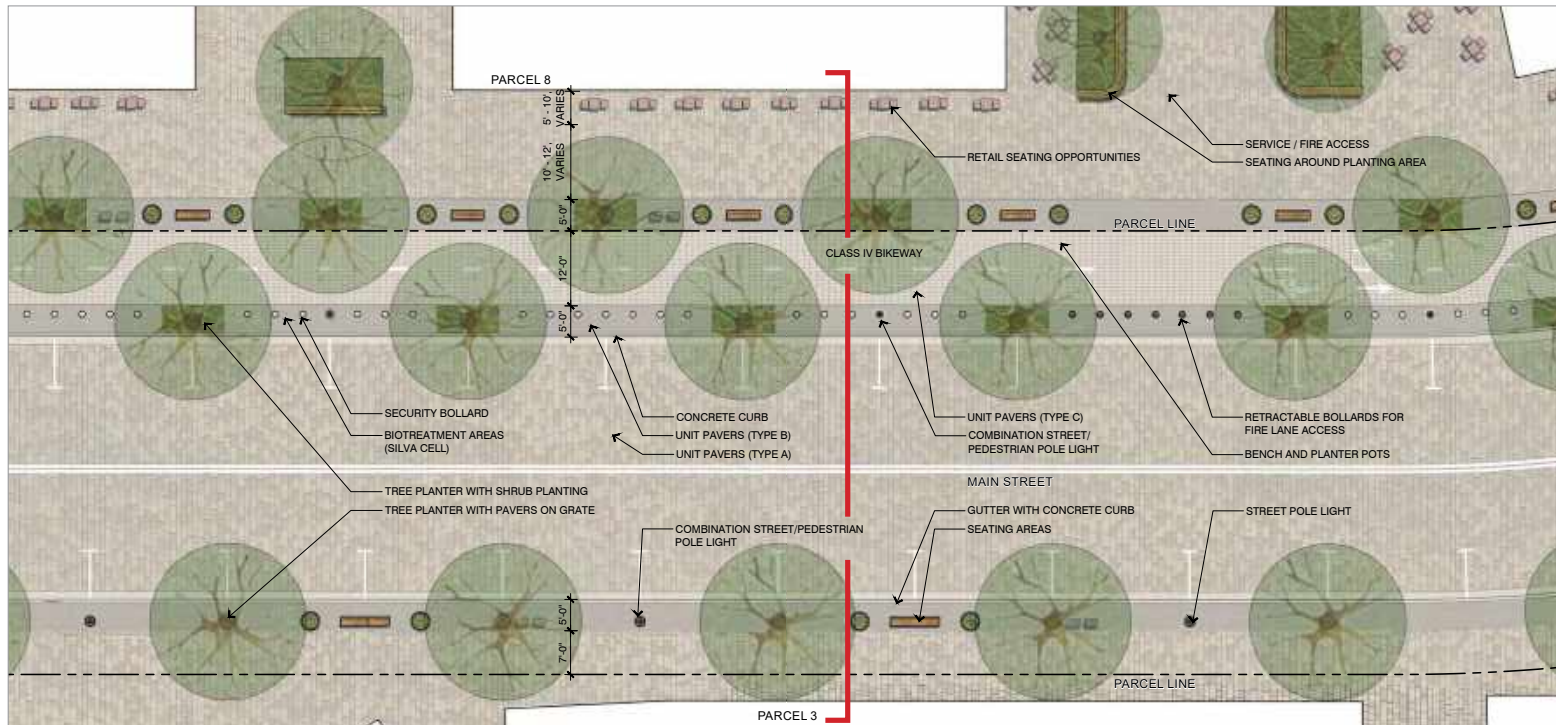


Source: Willow Village Master Plan, Peninsula Innovation Partners, September 7, 2021

**Figure 9**  
Proposed Bicycle Improvements

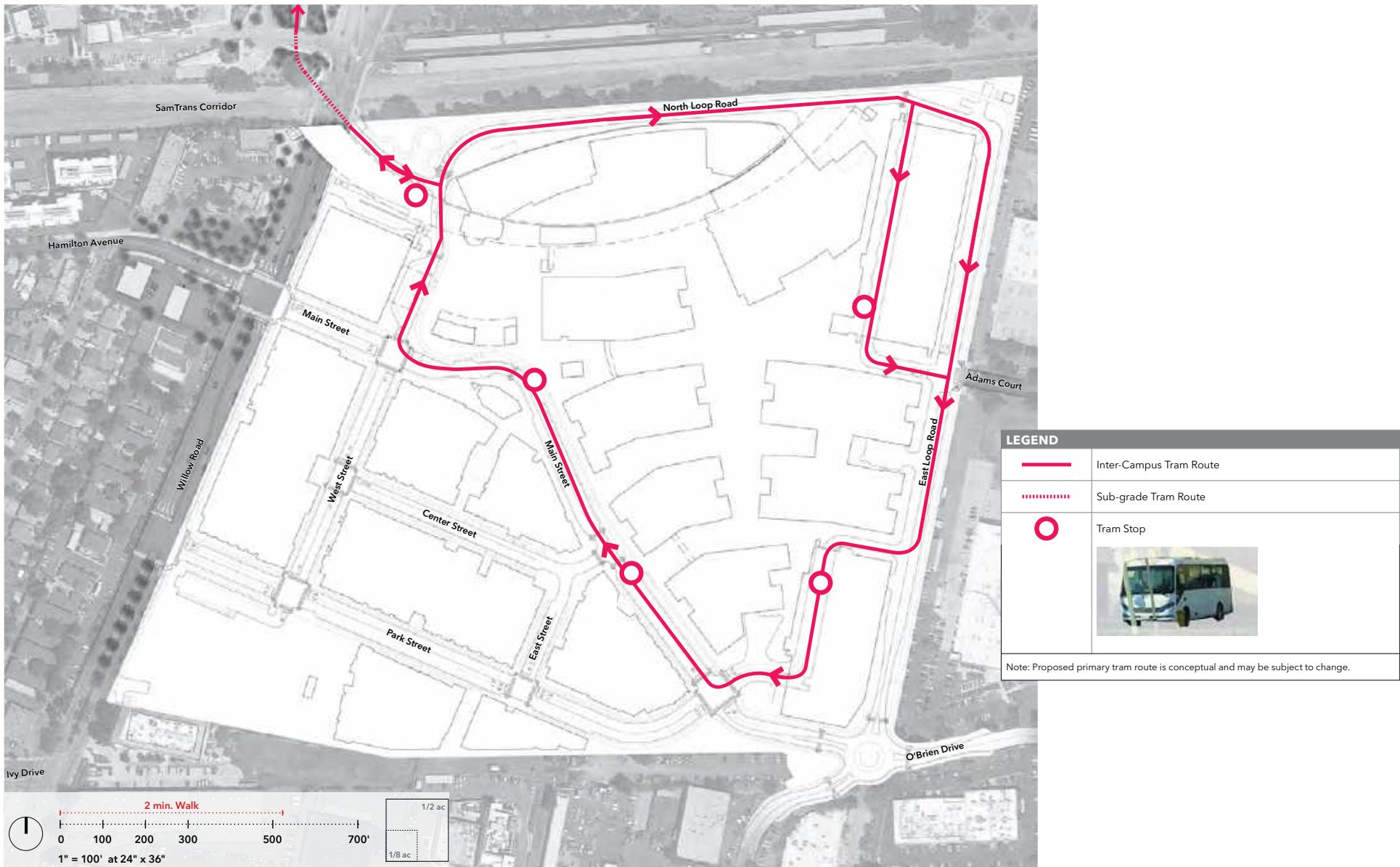


SECTION



Source: Willow Village Master Plan, Peninsula Innovation Partners, September 7, 2021

Figure 10  
Conceptual Street Enlargement - Main Street B



Source: Willow Village Master Plan, Peninsula Innovation Partners, September 7, 2021

Figure 11  
Proposed Tram Route



Source: Willow Village Master Plan, Peninsula Innovation Partners, September 7, 2021

**Figure 12**  
**Proposed Shuttle Route**

## Hamilton Parcels

The Proposed Project would also alter parcels north of the industrial site, across Willow Road, on both the east and west sides of Hamilton Avenue (Hamilton Avenue Parcels North and South) to support realignment of the Hamilton Avenue right-of-way and provide access to the new elevated park. This would require demolition and reconstruction of an existing service station (Chevron gas station) and potentially an increase in 1,000 sf on Hamilton Avenue Parcel South and enable the potential addition of up to 6,700 sf of retail uses at the existing neighborhood shopping center on the Hamilton Avenue Parcel North. A total of 7,700 sf could be added to the Hamilton Avenue Parcels. Access to the Hamilton parcels would be provided by one right-in-right-out driveway each on Willow Road and one full-access driveway each on Hamilton Avenue.

The site access and circulation evaluations of the Hamilton parcels are based on the conceptual site plans in Appendix 7 of the September 7, 2021 master plan prepared by Peninsula Innovation Partners (see Figures 13 and 14). Site access and on-site vehicular circulation were reviewed in accordance with generally accepted traffic engineering standards.

### Access and Circulation

#### Sight Distance

The project driveways should be free and clear of any obstructions to optimize sight distance, thereby ensuring that exiting vehicles can see pedestrians on the sidewalk and other vehicles traveling on the roadway network. Landscaping and signage should not conflict with a driver's ability to locate a gap in traffic and see oncoming pedestrians and bicyclists. Adequate sight distance (sight distance triangles) should be provided at the driveways in accordance with Caltrans standards.

The required stopping sight distances are based on the Caltrans *Highway Design Manual*, Table 201.1. The project driveways are located on Willow Road and Hamilton Avenue. Willow Road has a speed limit of 40 mph and Hamilton Avenue has a speed limit of 25 mph. Thus, the Caltrans stopping sight distance requirement is 360 feet (based on a design speed of 45 mph) on Willow Road and 200 feet (based on a design speed of 30 mph) on Hamilton Avenue.

On Hamilton Avenue, on-street parking may be provided adjacent to the project driveways which may obstruct sight distance for exiting drivers. In addition, landscaping and trees placed within the sidewalk should not obstruct visibility. The driveways on Willow Road would be expected to have adequate sight distance.

**Recommendation:** Hexagon recommends including 30 feet of red curb on both sides of the project driveways on Hamilton Avenue if on-street parking is provided to prevent vehicles from parking and obstructing the vision of exiting drivers.

#### Driveway Operations

The project-generated traffic would access the Hamilton parcels via two right-in-right-out driveways on Willow Road and two full-access driveways Hamilton Avenue. According to the City of Menlo Park's *Parking Stalls and Driveway Design Guidelines*, the width for multi-family, office, and retail driveways should be a minimum of 24 feet for two-way driveways. The site plans do not show the driveway widths.

**Recommendation:** It is recommended that all driveway widths meet the City's requirements.

### **Drive Aisles**

The project would provide 90-degree parking stalls on surface parking lots as shown in the *Willow Village Master Plan*. According to the City of Menlo Park's *Parking Stalls and Driveway Design Guidelines*, the City's standard minimum width for two-way drive aisles is 23 feet wide where 90-degree parking is provided. The site plans do not show the drive aisle widths.

**Recommendation:** It is recommended that all drive aisle widths meet the City's requirements.

### **Parking Stall Dimensions**

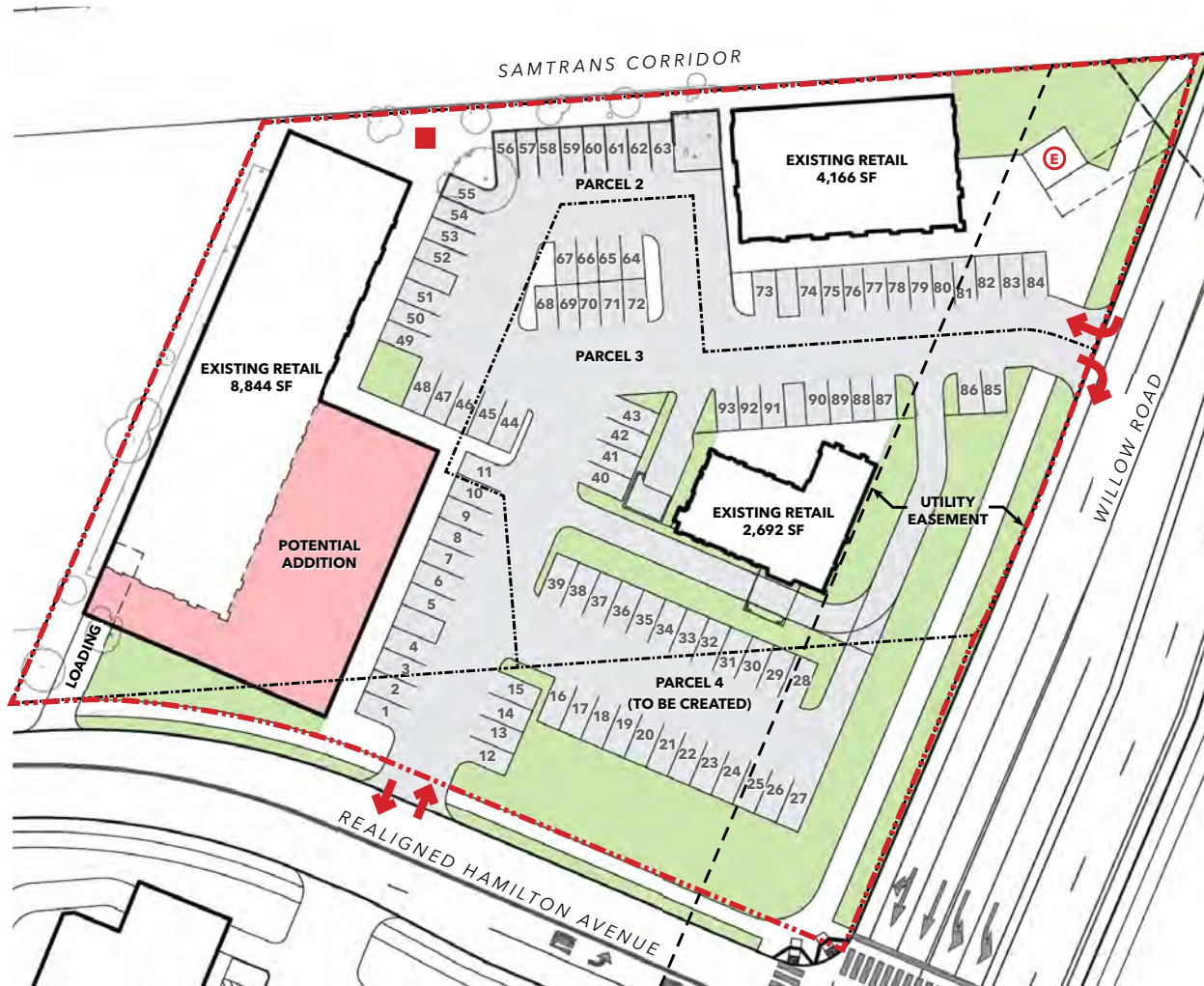
According to the City's *Parking Stalls and Driveway Design Guidelines*, parking stalls are required to have a width of 8 feet 6 inches and a length of 16 feet 6 inches. The site plans do not show the parking stall dimensions.

**Recommendation:** It is recommended that all parking stall dimensions meet the City's requirements.

### **Parking**

The Hamilton parcels are located within the C-2-S zoning district, which per Menlo Park Municipal Code Section 16.37(7), will have parking requirements established by the planning commission for each development. The Hamilton North parcel proposes total potential development up to 22,402 square feet and 93 spaces. The Hamilton South parcel proposes total development of 5,760 s.f. and 13 spaces.

**Recommendation:** It is recommended that the project applicant confirm that sufficient parking is provided for the proposed total development.



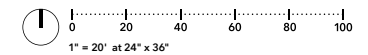
LEGEND	
	Existing Parcel Boundary
	Existing Easement Boundary
	Proposed Parcel Boundary
	Proposed Added Built Area
	Proposed Landscaped Area
	Proposed Generator*
	Proposed Elevator to Elevated Park Access
	Driveway Access

\*Generator to be place within sound attenuating enclosure.

SITE AREA	
Existing Total Site Area (Parcels 2 & 3)	+/- 1.81 acre
Proposed Site Area (Parcels 2, 3, 4)	+/- 2.21 acre

BUILT AREA	
Existing Total Area	15,702 sf
Potential Area Added	Up to 6,700 sf
Proposed Potential Total Area	Up to 22,402 sf

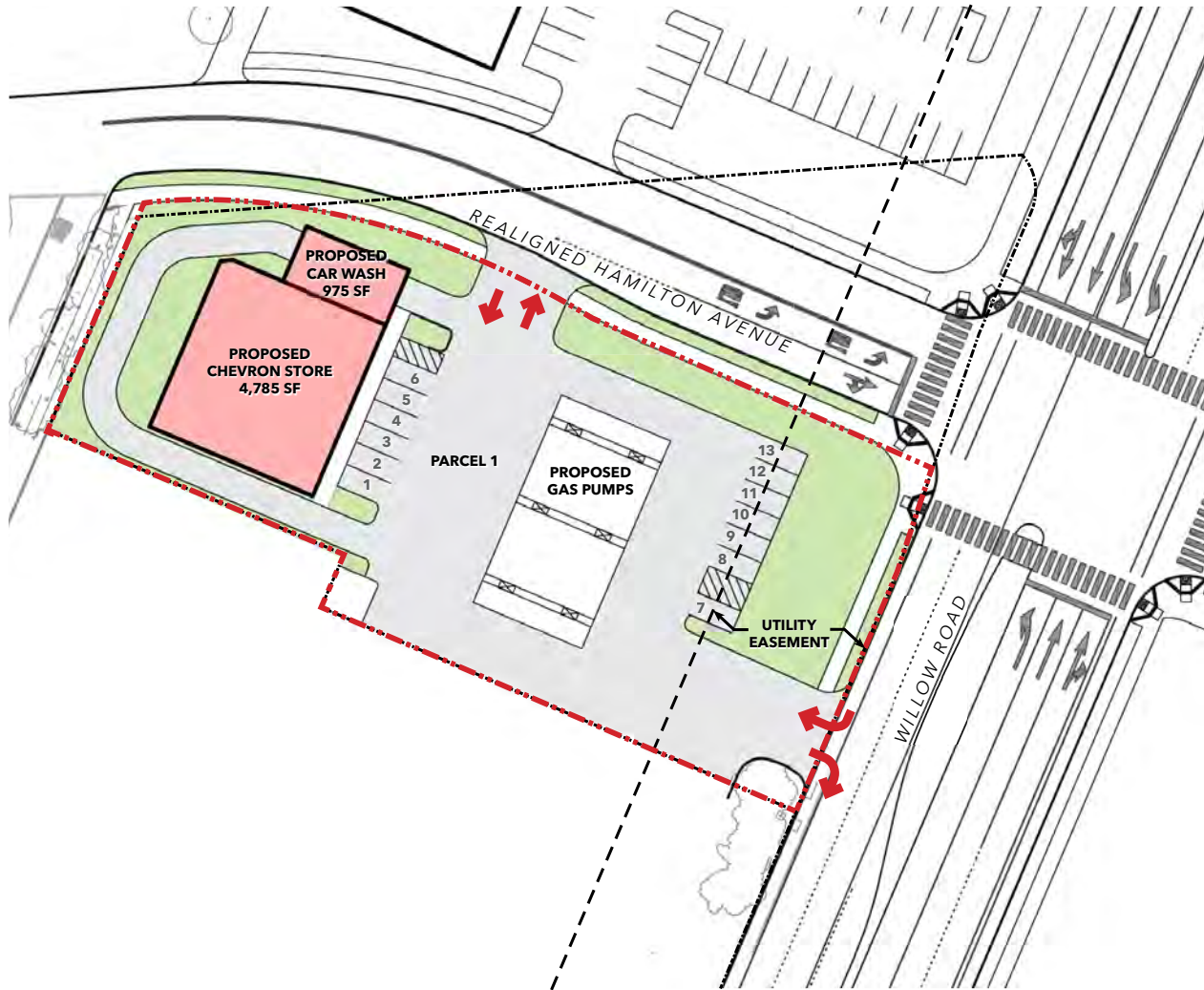
PARKING	
Proposed Total Parking	93 spaces
Proposed Parking Ratio	4.16 spaces/ksf



Source: Willow Village Master Plan, Peninsula Innovation Partners, September 7, 2021

Figure 13  
Hamilton Avenue Parcel North



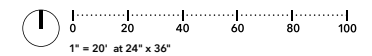


LEGEND	
	Existing Parcel Boundary
	Existing Easement Boundary
	Proposed Parcel Boundary
	Proposed Built Area
	Proposed Landscaped Area
	Driveway Access

SITE AREA	
Existing Site Area	+/- 1.33 acre
Proposed Site Area	+/- 0.97 acre

BUILT AREA	
Proposed Total Area	5,760 sf

PARKING	
Proposed Total Parking	13 spaces
Proposed Parking Ratio	2.26 spaces/ksf



Source: Willow Village Master Plan, Peninsula Innovation Partners, September 7, 2021

**Figure 14**  
**Hamilton Avenue Parcel South**

## Conclusions

The site plan review evaluated the internal site's intersection operations, potential queuing issues, and general site access and circulation for the proposed seven new internal streets, 14 parking garage driveways, and 20 new intersections. The results of the level of service analysis show that the intersection of Driveway B & East Loop Road would operate at LOS D during the AM peak hour. Vehicles turning left out of Driveway B would be expected to experience an average delay of 31 seconds while waiting for a sufficient opening on East Loop Road. During the AM peak hour, approximately 101 vehicles (16 heading eastbound and 85 heading westbound) would be expected to exit the garage, which would be one to two vehicles per minute. Therefore, although exiting drivers would experience some wait time, operations at Driveway B are expected to be adequate. The results of the queuing analysis show that the intersection of Hamilton Avenue/Main Street & Willow Road is expected to have insufficient turn lane storage to accommodate the anticipated traffic volumes under near-term plus project conditions. However, it is assumed that vehicles would choose to instead enter the project site via Park Street.

Hexagon identified one impact related to a design feature that could increase hazards. This impact is considered less than significant with mitigation, with the following mitigation:

- Per Mitigation Measure TRA-3 as outlined in the dEIR Transportation Chapter, mitigation would require revising the North Garage access design to provide adequate sight distance for the eastern driveway or incorporate other design solutions to reduce hazards to the satisfaction of the Public Works Director. Potential solutions that would reduce hazards to a less than significant level include restricting the eastern driveway to inbound vehicles only or prohibiting exiting left turns, modifying landscaping or relocating the driveway to the west to allow for adequate sight distance for exiting vehicles, or installing an all-way stop or signal.

Hexagon recommends the following regarding the internal project circulation:

### Circulation Related Recommendations

- To discourage vehicle traffic from travelling on the section of East Street between Center Street and Main Street and to clarify to drivers that the main throughfare at this intersection is the 90-degree bend, Hexagon recommends the East Street & Center Street intersection be slightly reconfigured. This could be done by modifying the intersection corners so the southbound left movement does not appear as a throughfare.
- To prevent southbound queues from spilling back onto Willow Road from Park Street and Main Street, Hexagon recommends coordinating the adjacent signals.

### Sight Distance Related Recommendations

- Prior to final design, the project applicant should ensure that landscaping and vegetation would not obstruct visibility at the parking garage driveways.
- Hexagon recommends including 30 feet of red curb on both sides of all garage driveways to prevent vehicles from parking and obstructing the vision of exiting drivers.
- If vehicles exiting the garages cannot see oncoming pedestrians on the sidewalk, Hexagon recommends installing warning signs to alert pedestrians when vehicles are exiting the garages.
- If any driveways are moved from their position on the current site plan, sight distance should be reevaluated.

### **Parking Garage Circulation Related Recommendations**

- Prior to final design, it is recommended that all driveway widths meet the City's requirement.
- At garage driveways where gates and garage doors are proposed, Hexagon recommends conducting an operational analysis to ensure that gate opening and closing times would not create queuing issues and cause vehicles to spill onto the roadway network.
- Prior to final design, the residential parking on level P1 of building RS2 should be shown to be gated and separated from the retail parking on levels 1 and 2. In addition, the roll-up gate in building RS3 should be clearly shown to separate the retail parking in level B1 and the residential parking in level B2.
- It is recommended that all drive aisle and parking stall widths meet the City's requirements.
- It is recommended that adequate turnaround space is provided at all dead-end drive aisles.

### **Parking Related Recommendations**

- Prior to final design, Hexagon recommends that the required number of ADA and EV parking spaces be provided in all parking garages.

### **Pedestrian Related Recommendations**

- Hexagon recommends that a crosswalk is provided at the intersection of Center Street & East Street and that midblock crosswalks are provided on Center Street and Park Street to reduce block size and improve pedestrian convenience.

### **Hamilton Parcels Related Recommendations**

- Hexagon recommends including 30 feet of red curb on both sides of the Hamilton Avenue driveways if on-street parking is provided to prevent vehicles from parking and obstructing the vision of exiting drivers.
- It is recommended that all driveway widths, drive aisle widths, and parking stall dimensions meet the City's requirements.
- It is recommended that the project applicant confirm that sufficient parking is provided for the proposed total development.

Appendix IIA.A  
**Project Trip Assignment Assumptions**

## Project Trip Assignment Assumptions

### To/From O'Brien Drive

- Office parking in Building NG: We assumed 100% to travel on East Loop Road enter via Driveway B. We assumed 70% to exit via Driveway B and 30% to exit via Driveway A.
- Office parking in Building SG: We assumed 100% to travel on East Loop Road enter/exit via Driveway C.
- Residential and shared parking in Building RS2: We assumed 100% to travel on Main Street to Center Street and enter/exit via Driveway K.
- Residential and shared parking in Building RS3: We assumed 100% to travel on Main Street to Center Street and enter/exit via Driveway I.
- Residential parking in Building RS4: We assumed 50% to travel on Park Street and enter/exit via Driveway G and 50% to travel on Main Street to Center Street and enter/exit via Driveway H.
- Residential parking in Building RS5: We assumed 100% to travel on Park Street to East Street and enter via Driveway F.
- Residential parking in Building RS6 and RS7: We assumed 100% to travel on Park Street and enter via Driveway E.
- Shared parking in Building TSG: We assumed 100% to travel on Main Street to Center Street and enter/exit via Driveway I in Building RS3.
- Public park parking: We assumed 100% to travel on Park Street and enter/exit via Driveway J.

### To/From Adams Court

- Office parking in Building NG: We assumed 100% to travel on East Loop Road enter via Driveway B. We assumed 70% to exit via Driveway B and 30% to exit via Driveway A.
- Office parking in Building SG: We assumed 100% to enter/exit via Driveway C.
- Residential and shared parking in Building RS2: We assumed 100% to travel on Main Street to Center Street and enter/exit via Driveway K.
- Residential and shared parking in Building RS3: We assumed 100% to travel on Main Street to Center Street and enter/exit via Driveway I.
- Residential parking in Building RS4: We assumed 50% to travel on Park Street and enter/exit via Driveway G and 50% to travel on Main Street to Center Street and enter/exit via Driveway H.
- Residential parking in Building RS5: We assumed 100% to travel on East Loop Road to Park Street and enter/exit via Driveway F.
- Residential parking in Building RS6 and RS7: We assumed 100% to travel on East Loop Road to Park Street and enter/exit via Driveway E.
- Shared parking in Building TSG: We assumed 100% to travel on Main Street to Center Street and enter/exit via Driveway I in Building RS3.
- Public park parking: We assumed 100% to travel on East Loop Road to Park Street and enter/exit via Driveway J.

## To/From Willow Road south of Hamilton Avenue

- Office parking in Building NG: We assumed 60% to travel on Park Street to East Loop Road and enter/exit via Driveway B and 40% to travel on Main Street to North Loop Road and enter/exit via Driveway A.
- Office parking in Building SG: We assumed 100% to travel on Park Street and enter/exit via Driveway D.
- Residential and shared parking in Building RS2: We assumed 100% to enter via Driveway M and 100% to exit via Driveway K and travel on West Street to Park Street.
- Residential and shared parking in Building RS3: We assumed 50% to travel on Park Street to West Street and enter/exit via Driveway L and 50% to travel on West Street to Center Street and enter/exit via Driveway I.
- Residential parking in Building RS4: We assumed 100% to travel on Park Street and enter/exit via Driveway G.
- Residential parking in Building RS5: We assumed 100% to travel on Park Street and enter/exit via Driveway F.
- Residential parking in Building RS6 and RS7: We assumed 100% to travel on Park Street and enter/exit via Driveway E.
- Hotel parking in Building TSG: We assumed 100% to enter via Driveway N. Due to the exclusive right-turn onto Willow Road and prohibited U-turns at Willow Road/Bayfront Expressway, we assumed 100% to exit via Driveway L in Building RS3 and travel on West Street to Park Street.
- Public park parking: We assumed 100% to travel on Park Street and enter/exit via Driveway J.

## To/From Hamilton Avenue

- Office parking in Building NG: We assumed 100% to travel on Main Street to North Loop Road and enter via Driveway A. We assumed 70% to exit via Driveway A and 30% to exit via Driveway B.
- Office parking in Building SG: We assumed 100% to travel on Main Street and enter/exit via Driveway D.
- Residential and shared parking in Building RS2: We assumed 100% to travel on Main Street to West Street and enter via Driveway K and 100% to exit via Driveway M.
- Residential and shared parking in Building RS3: We assumed 100% to travel on Main Street to West Street and enter/exit via Driveway L.
- Residential parking in Building RS4: We assumed 100% to travel on Main Street to West Street and enter/exit via Driveway H.
- Residential parking in Building RS5: We assumed 70% to travel on Main Street to East Street and enter/exit via Driveway F. We assumed 30% to travel on Main Street to West Street and Center Street and enter/exit via Driveway F.
- Residential parking in Building RS6 and RS7: We assumed 50% to travel on Main Street to West Street and Park Street and enter/exit via Driveway E and 50% to travel on Willow Road to Park Street and enter/exit via Driveway E.
- Hotel parking in Building TSG: We assumed 100% to enter via Driveway N on Willow Road. Due to the exclusive right-turn onto Willow Road and prohibited U-turns at Willow

Road/Bayfront Expressway, we assumed 100% to exit via Driveway L in Building RS3 and travel on West Street to Main Street.

- Public park parking: We assumed 50% to travel on Main Street to West Street and enter/exit via Driveway J and 50% to travel on Willow Road to Park Street and enter/exit via Driveway J.

### **To/From Willow Road north of Hamilton Avenue**

- Office parking in Building NG: We assumed 100% to travel on Main Street to North Loop Road and enter via Driveway A. We assumed 70% to exit via Driveway A and 30% to exit via Driveway B.
- Office parking in Building SG: We assumed 100% to travel on Park Street and enter/exit via Driveway D.
- Residential and shared parking in Building RS2: We assumed 100% to travel on Main Street to West Street and enter via Driveway K and 100% to exit via Driveway M.
- Residential and shared parking in Building RS3: We assumed 100% to travel on Main Street to West Street and enter via Driveway L. We assumed 50% to exit via Driveway L and 50% to exit via Driveway N.
- Residential parking in Building RS4: We assumed 100% to travel on Main Street to West Street and enter/exit via Driveway H.
- Residential parking in Building RS5: We assumed 70% to travel on Main Street to East Street and enter/exit via Driveway F. We assumed 30% to travel on Main Street to West Street and Center Street and enter/exit via Driveway F.
- Residential parking in Building RS6 and RS7: We assumed 100% to travel on Willow Road to Park Street and enter/exit via Driveway E.
- Hotel parking in Building TSG: We assumed 100% to travel on Main Street to West Street and enter via Driveway L. We assumed 100% to exit via Driveway N on Willow Road from Building TSG.
- Public park parking: We assumed 100% to travel on Willow Road to Park Street and enter/exit via Driveway J.

Appendix II.A.B  
**Level of Service Calculations**



Vistro File: \...\Internal Site Analysis\_12.6.2021.vistro

Scenario 1 Internal Analysis AM

Report File: \...\Internal Site Analysis AM.pdf

12/6/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	East Loop Road and Driveway A	Two-way stop	HCM 6th Edition	EB Left	0.072	10.1	B
2	East Loop Road and Driveway B	Two-way stop	HCM 6th Edition	EB Left	0.109	31.0	D
3	East Loop Road and Adams Court	Signalized	HCM 6th Edition	EB Right	0.165	4.9	A
4	East Loop Road and Driveway C	Two-way stop	HCM 6th Edition	EB Left	0.004	19.6	C
5	Main Street and Park Street/Driveway D	Signalized	HCM 6th Edition	EB Thru	0.191	16.3	B
6	Park Street and Driveway E	Two-way stop	HCM 6th Edition	NB Left	0.106	13.9	B
7	Driveway E and RS6/RS7	Two-way stop	HCM 6th Edition	EB Left	0.041	8.8	A
8	Park Street and East Street	All-way stop	HCM 6th Edition	EB Left	0.326	9.3	A
9	East Street and Driveway F	Two-way stop	HCM 6th Edition	WB Left	0.038	8.8	A
10	Center Street and East Street	Two-way stop	HCM 6th Edition	SB Thru	0.006	9.5	A
11	Main Street and East Street	Two-way stop	HCM 6th Edition	NB Left	0.017	9.5	A
12	Driveway G and Park Street	Two-way stop	HCM 6th Edition	SB Left	0.011	12.2	B
13	Dwy H/Dwl and Center Street	Two-way stop	HCM 6th Edition	NB Left	0.042	9.6	A
14	West Street/Dwy J and Park Street	Signalized	HCM 6th Edition	SB Right	0.253	12.0	B
15	West Street and Dwy K/Center Street	All-way stop	HCM 6th Edition	SB Thru	0.095	7.4	A
16	West Street/Dwy L	Two-way stop	HCM 6th Edition	WB Left	0.061	10.1	B
17	Main Street and West Street	Signalized	HCM 6th Edition	SB Right	0.290	10.8	B
18	North loop Road/West Street and Willow Road Tunnel	All-way stop	HCM 6th Edition	NB Thru	0.457	10.1	B




19	Willow Road and Driveway M	Two-way stop	HCM 6th Edition	WB Right	0.071	13.3	B
20	Willow Road and Driveway N	Two-way stop	HCM 6th Edition	WB Right	0.066	13.2	B

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: East Loop Road and Driveway A**

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.072

**Intersection Setup**

Name	East Loop Road		East Loop Road		Driveway A	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Loop Road		East Loop Road		Driveway A	
Base Volume Input [veh/h]	0	16	30	331	56	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	16	30	331	56	25
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	8	83	14	6
Total Analysis Volume [veh/h]	0	16	30	331	56	25
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.07	0.03
d_M, Delay for Movement [s/veh]	8.01	0.00	0.00	0.00	10.14	9.77
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.34	0.34
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	8.45	8.45
d_A, Approach Delay [s/veh]	0.00		0.00		10.03	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.77					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 2: East Loop Road and Driveway B**

Control Type:	Two-way stop	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.109

**Intersection Setup**

Name	East Loop Road		East Loop Road		Driveway B	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Loop Road		East Loop Road		Driveway B	
Base Volume Input [veh/h]	504	0	55	0	16	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	504	0	55	0	16	85
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	126	0	14	0	4	21
Total Analysis Volume [veh/h]	504	0	55	0	16	85
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.33	0.00	0.00	0.00	0.11	0.08
d_M, Delay for Movement [s/veh]	8.44	0.00	0.00	0.00	31.04	10.04
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	1.43	0.72	0.00	0.00	0.70	0.70
95th-Percentile Queue Length [ft/ln]	35.81	17.90	0.00	0.00	17.40	17.40
d_A, Approach Delay [s/veh]	8.44		0.00		13.37	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	8.49					
Intersection LOS	D					

**Intersection Level Of Service Report**  
**Intersection 3: East Loop Road and Adams Court**

Control Type:	Signalized	Delay (sec / veh):	4.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.165

**Intersection Setup**

Name	East Loop Road			East Loop Road			Adams Court			Adams Court		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑			↑↑			↑↑			↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	East Loop Road			East Loop Road			Adams Court			Adams Court		
Base Volume Input [veh/h]	0	496	6	2	139	0	0	0	30	8	0	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	496	6	2	139	0	0	0	30	8	0	8
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	124	2	1	35	0	0	0	8	2	0	2
Total Analysis Volume [veh/h]	0	496	6	2	139	0	0	0	30	8	0	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	71	0	0	71	0	0	19	0	0	19	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	67	67	67	67	15	15	
g / C, Green / Cycle	0.74	0.74	0.74	0.74	0.17	0.17	
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.04	0.04	0.00	0.02	
s, saturation flow rate [veh/h]	1870	1862	1851	1702	1870	1589	
c, Capacity [veh/h]	1392	1386	1419	1267	312	265	
d1, Uniform Delay [s]	3.39	3.40	3.06	3.06	0.00	31.85	
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.28	0.29	0.07	0.08	0.00	0.87	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.18	0.18	0.05	0.05	0.00	0.11	
d, Delay for Lane Group [s/veh]	3.68	3.68	3.13	3.14	0.00	32.72	
Lane Group LOS	A	A	A	A	A	C	
Critical Lane Group	No	Yes	No	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	1.13	1.13	0.30	0.27	0.00	0.61	
50th-Percentile Queue Length [ft/ln]	28.15	28.18	7.41	6.84	0.00	15.31	
95th-Percentile Queue Length [veh/ln]	2.03	2.03	0.53	0.49	0.00	1.10	
95th-Percentile Queue Length [ft/ln]	50.67	50.72	13.34	12.30	0.00	27.56	

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	0.00	3.68	3.68	3.13	3.13	0.00	0.00	0.00	32.72	0.00	0.00	0.00
Movement LOS		A	A	A	A		A	A	C			
d_A, Approach Delay [s/veh]		3.68		3.13			32.72			0.00		
Approach LOS		A		A			C			A		
d_I, Intersection Delay [s/veh]	4.86											
Intersection LOS	A											
Intersection V/C	0.165											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.296	2.288	1.951	1.947
Crosswalk LOS	B	B	A	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1489	1489	333	0
d_b, Bicycle Delay [s]	2.94	2.94	31.25	45.00
I_b,int, Bicycle LOS Score for Intersection	1.974	1.676	1.609	1.560
Bicycle LOS	A	A	A	A

**Sequence**




Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: East Loop Road and Driveway C**

Control Type:	Two-way stop	Delay (sec / veh):	19.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

**Intersection Setup**

Name	East Loop Road		East Loop Road		Driveway C	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Loop Road		East Loop Road		Driveway C	
Base Volume Input [veh/h]	234	501	112	5	1	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	234	501	112	5	1	51
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	125	28	1	0	13
Total Analysis Volume [veh/h]	234	501	112	5	1	51
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.16	0.01	0.00	0.00	0.00	0.05
d_M, Delay for Movement [s/veh]	7.91	0.00	0.00	0.00	19.61	8.84
Movement LOS	A	A	A	A	C	A
95th-Percentile Queue Length [veh/ln]	0.57	0.28	0.00	0.00	0.18	0.18
95th-Percentile Queue Length [ft/ln]	14.16	7.08	0.00	0.00	4.38	4.38
d_A, Approach Delay [s/veh]	2.52		0.00		9.05	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.57					
Intersection LOS	C					

**Intersection Level Of Service Report**  
**Intersection 5: Main Street and Park Street/Driveway D**

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.191

**Intersection Setup**

Name	Park Street			Driveway D			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇕			⇐⇕⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Park Street			Driveway D			Main Street			Main Street		
Base Volume Input [veh/h]	0	276	217	0	60	61	5	45	0	41	29	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	276	217	0	60	61	5	45	0	41	29	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	69	54	0	15	15	1	11	0	10	7	0
Total Analysis Volume [veh/h]	0	276	217	0	60	61	5	45	0	41	29	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	4	0	0	8	0	0	6	0	2	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	35	0	35	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	C	C	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	42	42	42	42	31	31	31
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.15	0.15	0.03	0.04	0.03	0.02	0.02
s, saturation flow rate [veh/h]	1870	1449	1870	1446	1865	1361	1762
c, Capacity [veh/h]	913	676	913	675	687	494	657
d1, Uniform Delay [s]	14.99	15.09	13.22	13.36	19.86	19.81	19.75
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.84	1.28	0.14	0.26	0.21	0.24	0.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.30	0.32	0.07	0.09	0.07	0.06	0.06
d, Delay for Lane Group [s/veh]	15.83	16.36	13.36	13.63	20.07	20.05	19.92
Lane Group LOS	B	B	B	B	C	C	B
Critical Lane Group	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.56	2.95	0.68	0.72	0.73	0.46	0.57
50th-Percentile Queue Length [ft/ln]	88.94	73.64	17.07	17.88	18.32	11.49	14.29
95th-Percentile Queue Length [veh/ln]	6.40	5.30	1.23	1.29	1.32	0.83	1.03
95th-Percentile Queue Length [ft/ln]	160.09	132.56	30.73	32.18	32.97	20.69	25.73

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	15.83	15.84	16.36	13.36	13.36	13.63	20.07	20.07	20.07	20.03	19.92	19.92
Movement LOS	B	B	B	B	B	B	C	C	C	C	B	B
d_A, Approach Delay [s/veh]	16.07			13.50			20.07			19.98		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	16.29											
Intersection LOS	B											
Intersection V/C	0.191											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0		9.0		9.0		9.0	
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	36.45		36.45		36.45		36.45	
I_p,int, Pedestrian LOS Score for Intersection	2.342		2.238		1.785		2.050	
Crosswalk LOS	B		B		A		B	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	933		933		689		689	
d_b, Bicycle Delay [s]	12.80		12.80		19.34		19.34	
I_b,int, Bicycle LOS Score for Intersection	1.966		1.659		1.642		1.675	
Bicycle LOS	A		A		A		A	

**Sequence**

Ring 1	2	4	10	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report  
Intersection 6: Park Street and Driveway E**

Control Type:	Two-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.106

**Intersection Setup**

Name	Dwy E		Park Street		Park Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Dwy E		Park Street		Park Street	
Base Volume Input [veh/h]	48	7	489	17	2	126
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	48	7	489	17	2	126
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	2	122	4	1	32
Total Analysis Volume [veh/h]	48	7	489	17	2	126
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.11	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	13.90	10.80	0.00	0.00	8.42	0.00
Movement LOS	B	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.39	0.39	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft/ln]	9.68	9.68	0.00	0.00	0.14	0.07
d_A, Approach Delay [s/veh]	13.50		0.00		0.13	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.10					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 7: Driveway E and RS6/RS7**

Control Type:	Two-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

**Intersection Setup**

Name	Dwy E		RS6		RS7	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↔		↵		↶	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Dwy E		RS6		RS7	
Base Volume Input [veh/h]	5	14	41	0	0	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	14	41	0	0	14
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	4	10	0	0	4
Total Analysis Volume [veh/h]	5	14	41	0	0	14
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.04	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.80	0.00	0.00	0.00
Movement LOS	A	A	A			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.13	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.24	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		8.80		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]				4.87		
Intersection LOS				A		

**Intersection Level Of Service Report**  
**Intersection 8: Park Street and East Street**

Control Type:	All-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.326

**Intersection Setup**

Name	East Street		Park Street		Park Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Street		Park Street		Park Street	
Base Volume Input [veh/h]	8	30	10	486	99	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	30	10	486	99	3
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	8	3	122	25	1
Total Analysis Volume [veh/h]	8	30	10	486	99	3
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	767	761	764	714	720
Degree of Utilization, x	0.05	0.33	0.32	0.07	0.07

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.16	1.42	1.41	0.23	0.23
95th-Percentile Queue Length [ft]	3.91	35.49	35.27	5.75	5.70
Approach Delay [s/veh]	7.94	9.68		8.11	
Approach LOS	A	A		A	
Intersection Delay [s/veh]	9.33				
Intersection LOS	A				

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**Intersection Level Of Service Report  
Intersection 9: East Street and Driveway F**

Control Type:	Two-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.038

**Intersection Setup**

Name	East Street		East Street		Driveway F	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↬		↵		↵	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Street		East Street		Driveway F	
Base Volume Input [veh/h]	0	13	7	0	38	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	7	0	38	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	3	2	0	10	5
Total Analysis Volume [veh/h]	0	13	7	0	38	20
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.04	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	7.25	0.00	8.84	8.56
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.01	0.18	0.18
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.33	0.33	4.52	4.52
d_A, Approach Delay [s/veh]	0.00		7.25		8.74	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.15					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 10: Center Street and East Street**

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

**Intersection Setup**

Name	East Street		East Street		Center Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Street		East Street		Center Street	
Base Volume Input [veh/h]	6	14	5	29	39	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	14	5	29	39	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	4	1	7	10	1
Total Analysis Volume [veh/h]	6	14	5	29	39	2
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane		No	
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.03	0.02	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.53	8.49	7.30	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.10	0.10	0.07	0.07
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.58	2.58	1.87	1.87
d_A, Approach Delay [s/veh]	0.00		8.65		6.94	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.09					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 11: Main Street and East Street**

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.017

**Intersection Setup**

Name	East Street		Main Street		Main Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Street		Main Street		Main Street	
Base Volume Input [veh/h]	14	39	11	5	29	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	39	11	5	29	61
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	10	3	1	7	15
Total Analysis Volume [veh/h]	14	39	11	5	29	61
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.04	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	9.46	8.58	0.00	0.00	7.29	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.17	0.17	0.00	0.00	0.06	0.06
95th-Percentile Queue Length [ft/ln]	4.20	4.20	0.00	0.00	1.38	1.38
d_A, Approach Delay [s/veh]	8.81		0.00		2.35	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.27					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 12: Driveway G and Park Street**

Control Type:	Two-way stop	Delay (sec / veh):	12.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

**Intersection Setup**

Name	Driveway G		Park Street		Park Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Driveway G		Park Street		Park Street	
Base Volume Input [veh/h]	6	51	18	499	172	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	51	18	499	172	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	13	5	125	43	1
Total Analysis Volume [veh/h]	6	51	18	499	172	2
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.05	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.17	9.06	7.60	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.21	0.21	0.04	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	5.20	5.20	0.98	0.49	0.00	0.00
d_A, Approach Delay [s/veh]	9.38		0.26		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.90					
Intersection LOS	B					



**Intersection Level Of Service Report**  
**Intersection 13: Dwy H/Dwl and Center Street**

Control Type:	Two-way stop	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.042

**Intersection Setup**

Name	Dwy H			Dwy I			Center Street			Center Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Dwy H			Dwy I			Center Street			Center Street		
Base Volume Input [veh/h]	34	0	6	20	0	33	27	14	12	2	14	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	0	6	20	0	33	27	14	12	2	14	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	0	2	5	0	8	7	4	3	1	4	5
Total Analysis Volume [veh/h]	34	0	6	20	0	33	27	14	12	2	14	19
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.04	0.00	0.01	0.02	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.60	9.92	8.61	9.41	9.90	8.63	7.32	0.00	0.00	7.27	0.00	0.00
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.15	0.15	0.15	0.17	0.17	0.17	0.05	0.05	0.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3.71	3.71	3.71	4.33	4.33	4.33	1.30	1.30	1.30	0.09	0.09	0.09
d_A, Approach Delay [s/veh]	9.46			8.93			3.73			0.42		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	5.88											
Intersection LOS	A											

**Intersection Level Of Service Report**  
**Intersection 14: West Street/Dwy J and Park Street**

Control Type:	Signalized	Delay (sec / veh):	12.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.253

**Intersection Setup**

Name	Dwy J			West Street			Park Street			Park Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+ +			+ +		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Dwy J			West Street			Park Street			Park Street		
Base Volume Input [veh/h]	1	0	0	0	0	129	57	517	2	0	222	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	0	0	0	129	57	517	2	0	222	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	0	0	32	14	129	1	0	56	0
Total Analysis Volume [veh/h]	1	0	0	0	0	129	57	517	2	0	222	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	35	0	0	35	0	0	55	0	0	55	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	31	31	51	51	51	51
g / C, Green / Cycle	0.34	0.34	0.57	0.57	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.00	0.08	0.17	0.17	0.06	0.06
s, saturation flow rate [veh/h]	1382	1589	1702	1700	1870	1702
c, Capacity [veh/h]	556	587	1012	963	1100	964
d1, Uniform Delay [s]	19.35	21.05	10.01	10.15	9.01	9.01
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.86	0.72	0.78	0.19	0.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.00	0.22	0.29	0.30	0.11	0.11
d, Delay for Lane Group [s/veh]	19.36	21.91	10.73	10.93	9.20	9.24
Lane Group LOS	B	C	B	B	A	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.01	2.04	2.95	2.92	1.04	0.96
50th-Percentile Queue Length [ft/ln]	0.36	50.91	73.72	73.08	26.11	23.95
95th-Percentile Queue Length [veh/ln]	0.03	3.67	5.31	5.26	1.88	1.72
95th-Percentile Queue Length [ft/ln]	0.65	91.63	132.70	131.54	46.99	43.11

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	19.36	19.36	19.36	21.91	21.91	21.91	10.73	10.84	10.93	9.20	9.22	9.24
Movement LOS	B	B	B	C	C	C	B	B	B	A	A	A
d_A, Approach Delay [s/veh]	19.36			21.91			10.83			9.22		
Approach LOS	B			C			B			A		
d_I, Intersection Delay [s/veh]	11.99											
Intersection LOS	B											
Intersection V/C	0.253											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	1.718	1.888	2.360	2.313
Crosswalk LOS	A	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	689	689	1133	1133
d_b, Bicycle Delay [s]	19.34	19.34	8.45	8.45
I_b,int, Bicycle LOS Score for Intersection	1.561	1.772	2.035	1.743
Bicycle LOS	A	A	B	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: West Street and Dwy K/Center Street**

Control Type:	All-way stop	Delay (sec / veh):	7.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.095

**Intersection Setup**

Name	West Street			West Street			Dwy K			Center Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	West Street			West Street			Dwy K			Center Street		
Base Volume Input [veh/h]	0	27	27	14	47	21	0	12	49	33	8	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	27	27	14	47	21	0	12	49	33	8	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	7	7	4	12	5	0	3	12	8	2	10
Total Analysis Volume [veh/h]	0	27	27	14	47	21	0	12	49	33	8	40
Pedestrian Volume [ped/h]	0			0			0			0		



**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	898	866	942	885
Degree of Utilization, x	0.06	0.09	0.06	0.09

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.19	0.31	0.21	0.30
95th-Percentile Queue Length [ft]	4.79	7.83	5.19	7.53
Approach Delay [s/veh]	7.27	7.60	7.09	7.48
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.39			
Intersection LOS	A			

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**Intersection Level Of Service Report**  
**Intersection 16: West Street/Dwy L**

Control Type: Two-way stop  
 Analysis Method: HCM 6th Edition  
 Analysis Period: 15 minutes

Delay (sec / veh): 10.1  
 Level Of Service: B  
 Volume to Capacity (v/c): 0.061

**Intersection Setup**

Name	West Street		West Street		Driveway L	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	West Street		West Street		Driveway L	
Base Volume Input [veh/h]	41	27	51	35	47	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	27	51	35	47	23
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	7	13	9	12	6
Total Analysis Volume [veh/h]	41	27	51	35	47	23
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.03	0.00	0.06	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	7.43	0.00	10.07	8.95
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.10	0.10	0.27	0.27
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.58	2.58	6.83	6.83
d_A, Approach Delay [s/veh]	0.00		4.41		9.70	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.72					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 17: Main Street and West Street**

Control Type:	Signalized	Delay (sec / veh):	10.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.290

**Intersection Setup**

Name	West Street			West Street			Driveway N			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+ +			+ +		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	West Street			West Street			Driveway N			Main Street		
Base Volume Input [veh/h]	64	0	0	0	0	72	331	16	86	0	15	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	0	0	0	0	72	331	16	86	0	15	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	0	0	0	0	18	83	4	22	0	4	15
Total Analysis Volume [veh/h]	64	0	0	0	0	72	331	16	86	0	15	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	19	0	0	19	0	0	71	0	0	71	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C	C	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	67	67	67	67
g / C, Green / Cycle	0.17	0.17	0.74	0.74	0.74	0.74
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.24	0.07	0.01	0.04
s, saturation flow rate [veh/h]	1496	1589	1353	1481	1870	1589
c, Capacity [veh/h]	329	305	1087	1103	1432	1183
d1, Uniform Delay [s]	32.41	32.73	4.62	3.16	2.96	3.05
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.31	1.82	0.72	0.17	0.01	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.19	0.24	0.30	0.09	0.01	0.05
d, Delay for Lane Group [s/veh]	33.73	34.55	5.34	3.32	2.98	3.14
Lane Group LOS	C	C	A	A	A	A
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.31	1.51	2.00	0.43	0.06	0.25
50th-Percentile Queue Length [ft/ln]	32.79	37.69	50.04	10.87	1.46	6.13
95th-Percentile Queue Length [veh/ln]	2.36	2.71	3.60	0.78	0.10	0.44
95th-Percentile Queue Length [ft/ln]	59.03	67.83	90.07	19.57	2.62	11.04

**Movement, Approach, & Intersection Results**

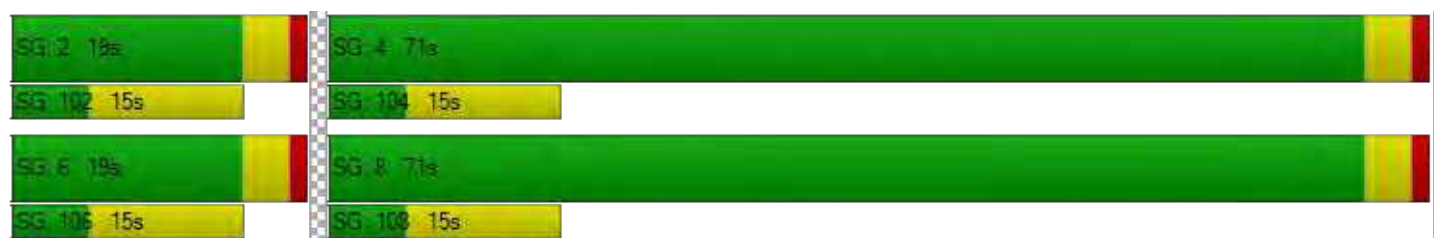
d_M, Delay for Movement [s/veh]	33.73	33.73	33.73	34.55	34.55	34.55	5.34	3.32	3.32	2.98	2.98	3.14
Movement LOS	C	C	C	C	C	C	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	33.73			34.55			4.87			3.10		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	10.85											
Intersection LOS	B											
Intersection V/C	0.290											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	1.789	2.413	2.223	2.155
Crosswalk LOS	A	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	333	333	1489	1489
d_b, Bicycle Delay [s]	31.25	31.25	2.94	2.94
I_b,int, Bicycle LOS Score for Intersection	1.665	1.678	1.917	1.683
Bicycle LOS	A	A	A	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report****Intersection 18: North loop Road/West Street and Willow Road Tunnel**

Control Type:	All-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.457

**Intersection Setup**

Name	West Street		North Loop Road		Willow Road Tunnel	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	West Street		North Loop Road		Willow Road Tunnel	
Base Volume Input [veh/h]	60	331	72	0	60	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	331	72	0	60	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	83	18	0	15	0
Total Analysis Volume [veh/h]	60	331	72	0	60	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	855	800	698
Degree of Utilization, x	0.46	0.09	0.09

**Movement, Approach, & Intersection Results**



95th-Percentile Queue Length [veh]	2.43	0.30	0.28
95th-Percentile Queue Length [ft]	60.66	7.39	7.03
Approach Delay [s/veh]	10.71	7.94	8.64
Approach LOS	B	A	A
Intersection Delay [s/veh]	10.09		
Intersection LOS	B		

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**Intersection Level Of Service Report**  
**Intersection 19: Willow Road and Driveway M**

Control Type:	Two-way stop	Delay (sec / veh):	13.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.071

**Intersection Setup**

Name	Willow Road		Willow Road		Driveway M	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	1	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	100.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road		Willow Road		Driveway M	
Base Volume Input [veh/h]	1105	31	0	1460	0	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1105	31	0	1460	0	33
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	276	8	0	365	0	8
Total Analysis Volume [veh/h]	1105	31	0	1460	0	33
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	13.31
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.23
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	5.69
d_A, Approach Delay [s/veh]	0.00		0.00		13.31	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.17					
Intersection LOS	B					

**Intersection Level Of Service Report  
Intersection 20: Willow Road and Driveway N**

Control Type:	Two-way stop	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.066

**Intersection Setup**

Name	Willow Road		Willow Road		Driveway N	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	<b>↑↑</b>		<b>↑↑</b>		<b>↗</b>	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road		Willow Road		Driveway N	
Base Volume Input [veh/h]	1099	23	0	1768	0	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1099	23	0	1768	0	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	275	6	0	442	0	8
Total Analysis Volume [veh/h]	1099	23	0	1768	0	31
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.02	0.00	0.07
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	13.18
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.21
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	5.26
d_A, Approach Delay [s/veh]	0.00		0.00		13.18	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.14					
Intersection LOS	B					

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**Turning Movement Volume: Summary**

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
1	East Loop Road and Driveway A	0	16	30	331	56	25	458

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
2	East Loop Road and Driveway B	504	0	55	0	16	85	660

ID	Intersection Name	Northbound		Southbound		Eastbound			Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Thru	Right	Left	Right	
3	East Loop Road and Adams Court	496	6	2	139	0	0	30	8	8	689

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
4	East Loop Road and Driveway C	234	501	112	5	1	51	904

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
5	Main Street and Park Street/Driveway D	0	276	217	0	60	61	5	45	0	41	29	0	734

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
6	Park Street and Driveway E	48	7	489	17	2	126	689

ID	Intersection Name	Southbound		Eastbound	Westbound	Total Volume
		Left	Right	Left	Right	
7	Driveway E and RS6/RS7	5	14	41	14	74

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
8	Park Street and East Street	8	30	10	486	99	3	636

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
9	East Street and Driveway F	0	13	7	0	38	20	78

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
10	Center Street and East Street	6	14	5	29	39	2	95

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
11	Main Street and East Street	14	39	11	5	29	61	159

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
12	Driveway G and Park Street	6	51	18	499	172	2	748

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
13	Dwy H/Dwl and Center Street	34	0	6	20	0	33	27	14	12	2	14	19	181

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14	West Street/Dwy J and Park Street	1	0	0	0	0	129	57	517	2	0	222	0	928



ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
15	West Street and Dwy K/Center Street	0	27	27	14	47	21	0	12	49	33	8	40	278

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
16	West Street/Dwy L	41	27	51	35	47	23	224

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Main Street and West Street	64	0	0	0	0	72	331	16	86	0	15	60	644

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	North loop Road/West Street and Willow Road Tunnel	60	331	72	0	60	0	523

ID	Intersection Name	Northbound		Southbound	Westbound	Total Volume
		Thru	Right	Thru	Right	
19	Willow Road and Driveway M	1105	31	1460	33	2629

ID	Intersection Name	Northbound		Southbound	Westbound	Total Volume
		Thru	Right	Thru	Right	
20	Willow Road and Driveway N	1099	23	1768	31	2921

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**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
1	East Loop Road and Driveway A	Final Base	0	16	30	331	56	25	458
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>0</b>	<b>16</b>	<b>30</b>	<b>331</b>	<b>56</b>	<b>25</b>	<b>458</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
2	East Loop Road and Driveway B	Final Base	504	0	55	0	16	85	660
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>504</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>16</b>	<b>85</b>	<b>660</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound			Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Thru	Right	Left	Right	
3	East Loop Road and Adams Court	Final Base	496	6	2	139	0	0	30	8	8	689
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>496</b>	<b>6</b>	<b>2</b>	<b>139</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>8</b>	<b>8</b>	<b>689</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
4	East Loop Road and Driveway C	Final Base	234	501	112	5	1	51	904
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>234</b>	<b>501</b>	<b>112</b>	<b>5</b>	<b>1</b>	<b>51</b>	<b>904</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
5	Main Street and Park Street/Driveway D	Final Base	0	276	217	0	60	61	5	45	0	41	29	0	734
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>0</b>	<b>276</b>	<b>217</b>	<b>0</b>	<b>60</b>	<b>61</b>	<b>5</b>	<b>45</b>	<b>0</b>	<b>41</b>	<b>29</b>	<b>0</b>	<b>734</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
6	Park Street and Driveway E	Final Base	48	7	489	17	2	126	689
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>48</b>	<b>7</b>	<b>489</b>	<b>17</b>	<b>2</b>	<b>126</b>	<b>689</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound	Westbound	Total Volume
			Left	Right	Left	Right	
7	Driveway E and RS6/RS7	Final Base	5	14	41	14	74
		Growth Factor	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0
		Net New Trips	0	0	0	0	0
		Other	0	0	0	0	0
		<b>Future Total</b>	<b>5</b>	<b>14</b>	<b>41</b>	<b>14</b>	<b>74</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
8	Park Street and East Street	Final Base	8	30	10	486	99	3	636
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>8</b>	<b>30</b>	<b>10</b>	<b>486</b>	<b>99</b>	<b>3</b>	<b>636</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
9	East Street and Driveway F	Final Base	0	13	7	0	38	20	78
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>0</b>	<b>13</b>	<b>7</b>	<b>0</b>	<b>38</b>	<b>20</b>	<b>78</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
10	Center Street and East Street	Final Base	6	14	5	29	39	2	95
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>6</b>	<b>14</b>	<b>5</b>	<b>29</b>	<b>39</b>	<b>2</b>	<b>95</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
11	Main Street and East Street	Final Base	14	39	11	5	29	61	159
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>14</b>	<b>39</b>	<b>11</b>	<b>5</b>	<b>29</b>	<b>61</b>	<b>159</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
12	Driveway G and Park Street	Final Base	6	51	18	499	172	2	748
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>6</b>	<b>51</b>	<b>18</b>	<b>499</b>	<b>172</b>	<b>2</b>	<b>748</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
13	Dwy H/Dwl and Center Street	Final Base	34	0	6	20	0	33	27	14	12	2	14	19	181
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>34</b>	<b>0</b>	<b>6</b>	<b>20</b>	<b>0</b>	<b>33</b>	<b>27</b>	<b>14</b>	<b>12</b>	<b>2</b>	<b>14</b>	<b>19</b>	<b>181</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14	West Street/Dwy J and Park Street	Final Base	1	0	0	0	0	129	57	517	2	0	222	0	928
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>129</b>	<b>57</b>	<b>517</b>	<b>2</b>	<b>0</b>	<b>222</b>	<b>0</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
15	West Street and Dwy K/Center Street	Final Base	0	27	27	14	47	21	0	12	49	33	8	40	278
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>0</b>	<b>27</b>	<b>27</b>	<b>14</b>	<b>47</b>	<b>21</b>	<b>0</b>	<b>12</b>	<b>49</b>	<b>33</b>	<b>8</b>	<b>40</b>	<b>278</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
16	West Street/Dwy L	Final Base	41	27	51	35	47	23	224
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>41</b>	<b>27</b>	<b>51</b>	<b>35</b>	<b>47</b>	<b>23</b>	<b>224</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Main Street and West Street	Final Base	64	0	0	0	0	72	331	16	86	0	15	60	644
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>64</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>72</b>	<b>331</b>	<b>16</b>	<b>86</b>	<b>0</b>	<b>15</b>	<b>60</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	North loop Road/West Street and Willow Road Tunnel	Final Base	60	331	72	0	60	0	523
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>60</b>	<b>331</b>	<b>72</b>	<b>0</b>	<b>60</b>	<b>0</b>	<b>523</b>

ID	Intersection Name	Volume Type	Northbound		Southbound	Westbound	Total Volume
			Thru	Right	Thru	Right	
19	Willow Road and Driveway M	Final Base	1105	31	1460	33	2629
		Growth Factor	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0
		Net New Trips	0	0	0	0	0
		Other	0	0	0	0	0
		<b>Future Total</b>	<b>1105</b>	<b>31</b>	<b>1460</b>	<b>33</b>	<b>2629</b>

ID	Intersection Name	Volume Type	Northbound		Southbound	Westbound	Total Volume
			Thru	Right	Thru	Right	
20	Willow Road and Driveway N	Final Base	1099	23	1768	31	2921
		Growth Factor	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0
		Net New Trips	0	0	0	0	0
		Other	0	0	0	0	0
		<b>Future Total</b>	<b>1099</b>	<b>23</b>	<b>1768</b>	<b>31</b>	<b>2921</b>

## Signal Warrants Report For Intersection 1: East Loop Road and Driveway A

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	W
1	361	16	81
2	350	16	79
3	343	15	77
4	321	14	72
5	285	13	64
6	282	12	63
7	278	12	62
8	253	11	57
9	249	11	56
10	245	11	55
11	213	9	48
12	199	9	45
13	195	9	44
14	144	6	32
15	144	6	32
16	101	4	23
17	58	3	13
18	58	3	13
19	32	1	7
20	18	1	4
21	11	0	2
22	4	0	1
23	4	0	1
24	4	0	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	377	1	81	No	No	No	No	No	No	No	No	No	No
2	2	366	1	79	No	No	No	No	No	No	No	No	No	No
3	2	358	1	77	No	No	No	No	No	No	No	No	No	No
4	2	335	1	72	No	No	No	No	No	No	No	No	No	No
5	2	298	1	64	No	No	No	No	No	No	No	No	No	No
6	2	294	1	63	No	No	No	No	No	No	No	No	No	No
7	2	290	1	62	No	No	No	No	No	No	No	No	No	No
8	2	264	1	57	No	No	No	No	No	No	No	No	No	No
9	2	260	1	56	No	No	No	No	No	No	No	No	No	No
10	2	256	1	55	No	No	No	No	No	No	No	No	No	No
11	2	222	1	48	No	No	No	No	No	No	No	No	No	No
12	2	208	1	45	No	No	No	No	No	No	No	No	No	No
13	2	204	1	44	No	No	No	No	No	No	No	No	No	No
14	2	150	1	32	No	No	No	No	No	No	No	No	No	No
15	2	150	1	32	No	No	No	No	No	No	No	No	No	No
16	2	105	1	23	No	No	No	No	No	No	No	No	No	No
17	2	61	1	13	No	No	No	No	No	No	No	No	No	No
18	2	61	1	13	No	No	No	No	No	No	No	No	No	No
19	2	33	1	7	No	No	No	No	No	No	No	No	No	No
20	2	19	1	4	No	No	No	No	No	No	No	No	No	No
21	2	11	1	2	No	No	No	No	No	No	No	No	No	No
22	2	4	1	1	No	No	No	No	No	No	No	No	No	No
23	2	4	1	1	No	No	No	No	No	No	No	No	No	No
24	2	4	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	10
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:13
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	81
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	458
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 2: East Loop Road and Driveway B

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	W
1	55	504	101
2	53	489	98
3	52	479	96
4	49	449	90
5	43	398	80
6	43	393	79
7	42	388	78
8	39	353	71
9	38	348	70
10	37	343	69
11	32	297	60
12	30	277	56
13	30	272	55
14	22	202	40
15	22	202	40
16	15	141	28
17	9	81	16
18	9	81	16
19	5	45	9
20	3	25	5
21	2	15	3
22	1	5	1
23	1	5	1
24	1	5	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	559	1	101	No	No	No	Yes	No	No	No	Yes	No	No
2	2	542	1	98	No	No	No	Yes	No	No	No	Yes	No	No
3	2	531	1	96	No	No	No	Yes	No	No	No	Yes	No	No
4	2	498	1	90	No	No	No	Yes	No	No	No	No	No	No
5	2	441	1	80	No	No	No	No	No	No	No	No	No	No
6	2	436	1	79	No	No	No	No	No	No	No	No	No	No
7	2	430	1	78	No	No	No	No	No	No	No	No	No	No
8	2	392	1	71	No	No	No	No	No	No	No	No	No	No
9	2	386	1	70	No	No	No	No	No	No	No	No	No	No
10	2	380	1	69	No	No	No	No	No	No	No	No	No	No
11	2	329	1	60	No	No	No	No	No	No	No	No	No	No
12	2	307	1	56	No	No	No	No	No	No	No	No	No	No
13	2	302	1	55	No	No	No	No	No	No	No	No	No	No
14	2	224	1	40	No	No	No	No	No	No	No	No	No	No
15	2	224	1	40	No	No	No	No	No	No	No	No	No	No
16	2	156	1	28	No	No	No	No	No	No	No	No	No	No
17	2	90	1	16	No	No	No	No	No	No	No	No	No	No
18	2	90	1	16	No	No	No	No	No	No	No	No	No	No
19	2	50	1	9	No	No	No	No	No	No	No	No	No	No
20	2	28	1	5	No	No	No	No	No	No	No	No	No	No
21	2	17	1	3	No	No	No	No	No	No	No	No	No	No
22	2	6	1	1	No	No	No	No	No	No	No	No	No	No
23	2	6	1	1	No	No	No	No	No	No	No	No	No	No
24	2	6	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	3	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:22
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	101
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	660
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 4: East Loop Road and Driveway C

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	W
1	117	735	52
2	113	713	50
3	111	698	49
4	104	654	46
5	92	581	41
6	91	573	41
7	90	566	40
8	82	515	36
9	81	507	36
10	80	500	35
11	69	434	31
12	64	404	29
13	63	397	28
14	47	294	21
15	47	294	21
16	33	206	15
17	19	118	8
18	19	118	8
19	11	66	5
20	6	37	3
21	4	22	2
22	1	7	1
23	1	7	1
24	1	7	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	852	1	52	No	No	No	No	No	No	Yes	Yes	No	No
2	2	826	1	50	No	No	No	No	No	No	No	Yes	No	No
3	2	809	1	49	No	No	No	No	No	No	No	Yes	No	No
4	2	758	1	46	No	No	No	No	No	No	No	Yes	No	No
5	2	673	1	41	No	No	No	No	No	No	No	No	No	No
6	2	664	1	41	No	No	No	No	No	No	No	No	No	No
7	2	656	1	40	No	No	No	No	No	No	No	No	No	No
8	2	597	1	36	No	No	No	No	No	No	No	No	No	No
9	2	588	1	36	No	No	No	No	No	No	No	No	No	No
10	2	580	1	35	No	No	No	No	No	No	No	No	No	No
11	2	503	1	31	No	No	No	No	No	No	No	No	No	No
12	2	468	1	29	No	No	No	No	No	No	No	No	No	No
13	2	460	1	28	No	No	No	No	No	No	No	No	No	No
14	2	341	1	21	No	No	No	No	No	No	No	No	No	No
15	2	341	1	21	No	No	No	No	No	No	No	No	No	No
16	2	239	1	15	No	No	No	No	No	No	No	No	No	No
17	2	137	1	8	No	No	No	No	No	No	No	No	No	No
18	2	137	1	8	No	No	No	No	No	No	No	No	No	No
19	2	77	1	5	No	No	No	No	No	No	No	No	No	No
20	2	43	1	3	No	No	No	No	No	No	No	No	No	No
21	2	26	1	2	No	No	No	No	No	No	No	No	No	No
22	2	8	1	1	No	No	No	No	No	No	No	No	No	No
23	2	8	1	1	No	No	No	No	No	No	No	No	No	No
24	2	8	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	1	4	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	52
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	904
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 6: Park Street and Driveway E

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	128	506	55
2	124	491	53
3	122	481	52
4	114	450	49
5	101	400	43
6	100	395	43
7	99	390	42
8	90	354	39
9	88	349	38
10	87	344	37
11	76	299	32
12	70	278	30
13	69	273	30
14	51	202	22
15	51	202	22
16	36	142	15
17	20	81	9
18	20	81	9
19	12	46	5
20	6	25	3
21	4	15	2
22	1	5	1
23	1	5	1
24	1	5	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	634	1	55	No	No	No	No	No	No	Yes	Yes	No	No
2	2	615	1	53	No	No	No	No	No	No	No	Yes	No	No
3	2	603	1	52	No	No	No	No	No	No	No	Yes	No	No
4	2	564	1	49	No	No	No	No	No	No	No	Yes	No	No
5	2	501	1	43	No	No	No	No	No	No	No	No	No	No
6	2	495	1	43	No	No	No	No	No	No	No	No	No	No
7	2	489	1	42	No	No	No	No	No	No	No	No	No	No
8	2	444	1	39	No	No	No	No	No	No	No	No	No	No
9	2	437	1	38	No	No	No	No	No	No	No	No	No	No
10	2	431	1	37	No	No	No	No	No	No	No	No	No	No
11	2	375	1	32	No	No	No	No	No	No	No	No	No	No
12	2	348	1	30	No	No	No	No	No	No	No	No	No	No
13	2	342	1	30	No	No	No	No	No	No	No	No	No	No
14	2	253	1	22	No	No	No	No	No	No	No	No	No	No
15	2	253	1	22	No	No	No	No	No	No	No	No	No	No
16	2	178	1	15	No	No	No	No	No	No	No	No	No	No
17	2	101	1	9	No	No	No	No	No	No	No	No	No	No
18	2	101	1	9	No	No	No	No	No	No	No	No	No	No
19	2	58	1	5	No	No	No	No	No	No	No	No	No	No
20	2	31	1	3	No	No	No	No	No	No	No	No	No	No
21	2	19	1	2	No	No	No	No	No	No	No	No	No	No
22	2	6	1	1	No	No	No	No	No	No	No	No	No	No
23	2	6	1	1	No	No	No	No	No	No	No	No	No	No
24	2	6	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	1	4	0	0

## Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.5
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:12
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	55
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	689
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 7: Driveway E and RS6/RS7

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	N	W
1	14	19	41
2	14	18	40
3	13	18	39
4	12	17	36
5	11	15	32
6	11	15	32
7	11	15	32
8	10	13	29
9	10	13	28
10	10	13	28
11	8	11	24
12	8	10	23
13	8	10	22
14	6	8	16
15	6	8	16
16	4	5	11
17	2	3	7
18	2	3	7
19	1	2	4
20	1	1	2
21	0	1	1
22	0	0	0
23	0	0	0
24	0	0	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	33	1	41	No	No	No	No	No	No	No	No	No	No
2	1	32	1	40	No	No	No	No	No	No	No	No	No	No
3	1	31	1	39	No	No	No	No	No	No	No	No	No	No
4	1	29	1	36	No	No	No	No	No	No	No	No	No	No
5	1	26	1	32	No	No	No	No	No	No	No	No	No	No
6	1	26	1	32	No	No	No	No	No	No	No	No	No	No
7	1	26	1	32	No	No	No	No	No	No	No	No	No	No
8	1	23	1	29	No	No	No	No	No	No	No	No	No	No
9	1	23	1	28	No	No	No	No	No	No	No	No	No	No
10	1	23	1	28	No	No	No	No	No	No	No	No	No	No
11	1	19	1	24	No	No	No	No	No	No	No	No	No	No
12	1	18	1	23	No	No	No	No	No	No	No	No	No	No
13	1	18	1	22	No	No	No	No	No	No	No	No	No	No
14	1	14	1	16	No	No	No	No	No	No	No	No	No	No
15	1	14	1	16	No	No	No	No	No	No	No	No	No	No
16	1	9	1	11	No	No	No	No	No	No	No	No	No	No
17	1	5	1	7	No	No	No	No	No	No	No	No	No	No
18	1	5	1	7	No	No	No	No	No	No	No	No	No	No
19	1	3	1	4	No	No	No	No	No	No	No	No	No	No
20	1	2	1	2	No	No	No	No	No	No	No	No	No	No
21	1	1	1	1	No	No	No	No	No	No	No	No	No	No
22	1	0	1	0	No	No	No	No	No	No	No	No	No	No
23	1	0	1	0	No	No	No	No	No	No	No	No	No	No
24	1	0	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	41
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	74
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 8: Park Street and East Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	102	496	38
2	99	481	37
3	97	471	36
4	91	441	34
5	81	392	30
6	80	387	30
7	79	382	29
8	71	347	27
9	70	342	26
10	69	337	26
11	60	293	22
12	56	273	21
13	55	268	21
14	41	198	15
15	41	198	15
16	29	139	11
17	16	79	6
18	16	79	6
19	9	45	3
20	5	25	2
21	3	15	1
22	1	5	0
23	1	5	0
24	1	5	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	598	1	38	No	No	No	No	No	No	No	No	No	No
2	2	580	1	37	No	No	No	No	No	No	No	No	No	No
3	2	568	1	36	No	No	No	No	No	No	No	No	No	No
4	2	532	1	34	No	No	No	No	No	No	No	No	No	No
5	2	473	1	30	No	No	No	No	No	No	No	No	No	No
6	2	467	1	30	No	No	No	No	No	No	No	No	No	No
7	2	461	1	29	No	No	No	No	No	No	No	No	No	No
8	2	418	1	27	No	No	No	No	No	No	No	No	No	No
9	2	412	1	26	No	No	No	No	No	No	No	No	No	No
10	2	406	1	26	No	No	No	No	No	No	No	No	No	No
11	2	353	1	22	No	No	No	No	No	No	No	No	No	No
12	2	329	1	21	No	No	No	No	No	No	No	No	No	No
13	2	323	1	21	No	No	No	No	No	No	No	No	No	No
14	2	239	1	15	No	No	No	No	No	No	No	No	No	No
15	2	239	1	15	No	No	No	No	No	No	No	No	No	No
16	2	168	1	11	No	No	No	No	No	No	No	No	No	No
17	2	95	1	6	No	No	No	No	No	No	No	No	No	No
18	2	95	1	6	No	No	No	No	No	No	No	No	No	No
19	2	54	1	3	No	No	No	No	No	No	No	No	No	No
20	2	30	1	2	No	No	No	No	No	No	No	No	No	No
21	2	18	1	1	No	No	No	No	No	No	No	No	No	No
22	2	6	1	0	No	No	No	No	No	No	No	No	No	No
23	2	6	1	0	No	No	No	No	No	No	No	No	No	No
24	2	6	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	7.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	38
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	636
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 9: East Street and Driveway F

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	7	13	58
2	7	13	56
3	7	12	55
4	6	12	52
5	6	10	46
6	5	10	45
7	5	10	45
8	5	9	41
9	5	9	40
10	5	9	39
11	4	8	34
12	4	7	32
13	4	7	31
14	3	5	23
15	3	5	23
16	2	4	16
17	1	2	9
18	1	2	9
19	1	1	5
20	0	1	3
21	0	0	2
22	0	0	1
23	0	0	1
24	0	0	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	20	1	58	No	No	No	No	No	No	No	No	No	No
2	1	20	1	56	No	No	No	No	No	No	No	No	No	No
3	1	19	1	55	No	No	No	No	No	No	No	No	No	No
4	1	18	1	52	No	No	No	No	No	No	No	No	No	No
5	1	16	1	46	No	No	No	No	No	No	No	No	No	No
6	1	15	1	45	No	No	No	No	No	No	No	No	No	No
7	1	15	1	45	No	No	No	No	No	No	No	No	No	No
8	1	14	1	41	No	No	No	No	No	No	No	No	No	No
9	1	14	1	40	No	No	No	No	No	No	No	No	No	No
10	1	14	1	39	No	No	No	No	No	No	No	No	No	No
11	1	12	1	34	No	No	No	No	No	No	No	No	No	No
12	1	11	1	32	No	No	No	No	No	No	No	No	No	No
13	1	11	1	31	No	No	No	No	No	No	No	No	No	No
14	1	8	1	23	No	No	No	No	No	No	No	No	No	No
15	1	8	1	23	No	No	No	No	No	No	No	No	No	No
16	1	6	1	16	No	No	No	No	No	No	No	No	No	No
17	1	3	1	9	No	No	No	No	No	No	No	No	No	No
18	1	3	1	9	No	No	No	No	No	No	No	No	No	No
19	1	2	1	5	No	No	No	No	No	No	No	No	No	No
20	1	1	1	3	No	No	No	No	No	No	No	No	No	No
21	1	0	1	2	No	No	No	No	No	No	No	No	No	No
22	1	0	1	1	No	No	No	No	No	No	No	No	No	No
23	1	0	1	1	No	No	No	No	No	No	No	No	No	No
24	1	0	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:08
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	58
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	78
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 10: Center Street and East Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	W, S
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	W	S	N
1	41	20	34
2	40	19	33
3	39	19	32
4	36	18	30
5	32	16	27
6	32	16	27
7	32	15	26
8	29	14	24
9	28	14	23
10	28	14	23
11	24	12	20
12	23	11	19
13	22	11	18
14	16	8	14
15	16	8	14
16	11	6	10
17	7	3	5
18	7	3	5
19	4	2	3
20	2	1	2
21	1	1	1
22	0	0	0
23	0	0	0
24	0	0	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	61	1	34	No	No	No	No	No	No	No	No	No	No
2	1	59	1	33	No	No	No	No	No	No	No	No	No	No
3	1	58	1	32	No	No	No	No	No	No	No	No	No	No
4	1	54	1	30	No	No	No	No	No	No	No	No	No	No
5	1	48	1	27	No	No	No	No	No	No	No	No	No	No
6	1	48	1	27	No	No	No	No	No	No	No	No	No	No
7	1	47	1	26	No	No	No	No	No	No	No	No	No	No
8	1	43	1	24	No	No	No	No	No	No	No	No	No	No
9	1	42	1	23	No	No	No	No	No	No	No	No	No	No
10	1	42	1	23	No	No	No	No	No	No	No	No	No	No
11	1	36	1	20	No	No	No	No	No	No	No	No	No	No
12	1	34	1	19	No	No	No	No	No	No	No	No	No	No
13	1	33	1	18	No	No	No	No	No	No	No	No	No	No
14	1	24	1	14	No	No	No	No	No	No	No	No	No	No
15	1	24	1	14	No	No	No	No	No	No	No	No	No	No
16	1	17	1	10	No	No	No	No	No	No	No	No	No	No
17	1	10	1	5	No	No	No	No	No	No	No	No	No	No
18	1	10	1	5	No	No	No	No	No	No	No	No	No	No
19	1	6	1	3	No	No	No	No	No	No	No	No	No	No
20	1	3	1	2	No	No	No	No	No	No	No	No	No	No
21	1	2	1	1	No	No	No	No	No	No	No	No	No	No
22	1	0	1	0	No	No	No	No	No	No	No	No	No	No
23	1	0	1	0	No	No	No	No	No	No	No	No	No	No
24	1	0	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:04
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	34
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	95
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 11: Main Street and East Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	90	16	53
2	87	16	51
3	86	15	50
4	80	14	47
5	71	13	42
6	70	12	41
7	69	12	41
8	63	11	37
9	62	11	37
10	61	11	36
11	53	9	31
12	50	9	29
13	49	9	29
14	36	6	21
15	36	6	21
16	25	4	15
17	14	3	8
18	14	3	8
19	8	1	5
20	5	1	3
21	3	0	2
22	1	0	1
23	1	0	1
24	1	0	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	106	1	53	No	No	No	No	No	No	No	No	No	No
2	1	103	1	51	No	No	No	No	No	No	No	No	No	No
3	1	101	1	50	No	No	No	No	No	No	No	No	No	No
4	1	94	1	47	No	No	No	No	No	No	No	No	No	No
5	1	84	1	42	No	No	No	No	No	No	No	No	No	No
6	1	82	1	41	No	No	No	No	No	No	No	No	No	No
7	1	81	1	41	No	No	No	No	No	No	No	No	No	No
8	1	74	1	37	No	No	No	No	No	No	No	No	No	No
9	1	73	1	37	No	No	No	No	No	No	No	No	No	No
10	1	72	1	36	No	No	No	No	No	No	No	No	No	No
11	1	62	1	31	No	No	No	No	No	No	No	No	No	No
12	1	59	1	29	No	No	No	No	No	No	No	No	No	No
13	1	58	1	29	No	No	No	No	No	No	No	No	No	No
14	1	42	1	21	No	No	No	No	No	No	No	No	No	No
15	1	42	1	21	No	No	No	No	No	No	No	No	No	No
16	1	29	1	15	No	No	No	No	No	No	No	No	No	No
17	1	17	1	8	No	No	No	No	No	No	No	No	No	No
18	1	17	1	8	No	No	No	No	No	No	No	No	No	No
19	1	9	1	5	No	No	No	No	No	No	No	No	No	No
20	1	6	1	3	No	No	No	No	No	No	No	No	No	No
21	1	3	1	2	No	No	No	No	No	No	No	No	No	No
22	1	1	1	1	No	No	No	No	No	No	No	No	No	No
23	1	1	1	1	No	No	No	No	No	No	No	No	No	No
24	1	1	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	53
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	159
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 12: Driveway G and Park Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	174	517	57
2	169	501	55
3	165	491	54
4	155	460	51
5	137	408	45
6	136	403	44
7	134	398	44
8	122	362	40
9	120	357	39
10	118	352	39
11	103	305	34
12	96	284	31
13	94	279	31
14	70	207	23
15	70	207	23
16	49	145	16
17	28	83	9
18	28	83	9
19	16	47	5
20	9	26	3
21	5	16	2
22	2	5	1
23	2	5	1
24	2	5	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	691	1	57	No	No	No	No	No	No	Yes	Yes	No	No
2	2	670	1	55	No	No	No	No	No	No	Yes	Yes	No	No
3	2	656	1	54	No	No	No	No	No	No	Yes	Yes	No	No
4	2	615	1	51	No	No	No	No	No	No	No	Yes	No	No
5	2	545	1	45	No	No	No	No	No	No	No	Yes	No	No
6	2	539	1	44	No	No	No	No	No	No	No	Yes	No	No
7	2	532	1	44	No	No	No	No	No	No	No	Yes	No	No
8	2	484	1	40	No	No	No	No	No	No	No	No	No	No
9	2	477	1	39	No	No	No	No	No	No	No	No	No	No
10	2	470	1	39	No	No	No	No	No	No	No	No	No	No
11	2	408	1	34	No	No	No	No	No	No	No	No	No	No
12	2	380	1	31	No	No	No	No	No	No	No	No	No	No
13	2	373	1	31	No	No	No	No	No	No	No	No	No	No
14	2	277	1	23	No	No	No	No	No	No	No	No	No	No
15	2	277	1	23	No	No	No	No	No	No	No	No	No	No
16	2	194	1	16	No	No	No	No	No	No	No	No	No	No
17	2	111	1	9	No	No	No	No	No	No	No	No	No	No
18	2	111	1	9	No	No	No	No	No	No	No	No	No	No
19	2	63	1	5	No	No	No	No	No	No	No	No	No	No
20	2	35	1	3	No	No	No	No	No	No	No	No	No	No
21	2	21	1	2	No	No	No	No	No	No	No	No	No	No
22	2	7	1	1	No	No	No	No	No	No	No	No	No	No
23	2	7	1	1	No	No	No	No	No	No	No	No	No	No
24	2	7	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	3	7	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:08
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	57
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	748
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 13: Dwy H/Dwl and Center Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	35	53	53	40
2	34	51	51	39
3	33	50	50	38
4	31	47	47	36
5	28	42	42	32
6	27	41	41	31
7	27	41	41	31
8	25	37	37	28
9	24	37	37	28
10	24	36	36	27
11	21	31	31	24
12	19	29	29	22
13	19	29	29	22
14	14	21	21	16
15	14	21	21	16
16	10	15	15	11
17	6	8	8	6
18	6	8	8	6
19	3	5	5	4
20	2	3	3	2
21	1	2	2	1
22	0	1	1	0
23	0	1	1	0
24	0	1	1	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	88	1	53	No	No	No	No	No	No	No	No	No	No
2	1	85	1	51	No	No	No	No	No	No	No	No	No	No
3	1	83	1	50	No	No	No	No	No	No	No	No	No	No
4	1	78	1	47	No	No	No	No	No	No	No	No	No	No
5	1	70	1	42	No	No	No	No	No	No	No	No	No	No
6	1	68	1	41	No	No	No	No	No	No	No	No	No	No
7	1	68	1	41	No	No	No	No	No	No	No	No	No	No
8	1	62	1	37	No	No	No	No	No	No	No	No	No	No
9	1	61	1	37	No	No	No	No	No	No	No	No	No	No
10	1	60	1	36	No	No	No	No	No	No	No	No	No	No
11	1	52	1	31	No	No	No	No	No	No	No	No	No	No
12	1	48	1	29	No	No	No	No	No	No	No	No	No	No
13	1	48	1	29	No	No	No	No	No	No	No	No	No	No
14	1	35	1	21	No	No	No	No	No	No	No	No	No	No
15	1	35	1	21	No	No	No	No	No	No	No	No	No	No
16	1	25	1	15	No	No	No	No	No	No	No	No	No	No
17	1	14	1	8	No	No	No	No	No	No	No	No	No	No
18	1	14	1	8	No	No	No	No	No	No	No	No	No	No
19	1	8	1	5	No	No	No	No	No	No	No	No	No	No
20	1	5	1	3	No	No	No	No	No	No	No	No	No	No
21	1	3	1	2	No	No	No	No	No	No	No	No	No	No
22	1	1	1	1	No	No	No	No	No	No	No	No	No	No
23	1	1	1	1	No	No	No	No	No	No	No	No	No	No
24	1	1	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.9	9.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:07	0:06
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	53	40
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	181	181
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 15: West Street and Dwy K/Center Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	82	54	81	61
2	80	52	79	59
3	78	51	77	58
4	73	48	72	54
5	65	43	64	48
6	64	42	63	48
7	63	42	62	47
8	57	38	57	43
9	57	37	56	42
10	56	37	55	41
11	48	32	48	36
12	45	30	45	34
13	44	29	44	33
14	33	22	32	24
15	33	22	32	24
16	23	15	23	17
17	13	9	13	10
18	13	9	13	10
19	7	5	7	5
20	4	3	4	3
21	2	2	2	2
22	1	1	1	1
23	1	1	1	1
24	1	1	1	1

### Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	136	1	81	No	No	No	No	No	No	No	No	No	No
2	1	132	1	79	No	No	No	No	No	No	No	No	No	No
3	1	129	1	77	No	No	No	No	No	No	No	No	No	No
4	1	121	1	72	No	No	No	No	No	No	No	No	No	No
5	1	108	1	64	No	No	No	No	No	No	No	No	No	No
6	1	106	1	63	No	No	No	No	No	No	No	No	No	No
7	1	105	1	62	No	No	No	No	No	No	No	No	No	No
8	1	95	1	57	No	No	No	No	No	No	No	No	No	No
9	1	94	1	56	No	No	No	No	No	No	No	No	No	No
10	1	93	1	55	No	No	No	No	No	No	No	No	No	No
11	1	80	1	48	No	No	No	No	No	No	No	No	No	No
12	1	75	1	45	No	No	No	No	No	No	No	No	No	No
13	1	73	1	44	No	No	No	No	No	No	No	No	No	No
14	1	55	1	32	No	No	No	No	No	No	No	No	No	No
15	1	55	1	32	No	No	No	No	No	No	No	No	No	No
16	1	38	1	23	No	No	No	No	No	No	No	No	No	No
17	1	22	1	13	No	No	No	No	No	No	No	No	No	No
18	1	22	1	13	No	No	No	No	No	No	No	No	No	No
19	1	12	1	7	No	No	No	No	No	No	No	No	No	No
20	1	7	1	4	No	No	No	No	No	No	No	No	No	No
21	1	4	1	2	No	No	No	No	No	No	No	No	No	No
22	1	2	1	1	No	No	No	No	No	No	No	No	No	No
23	1	2	1	1	No	No	No	No	No	No	No	No	No	No
24	1	2	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

### Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	7.5	7.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:10	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	81	61
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	278	278
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 16: West Street/Dwy L

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	86	68	70
2	83	66	68
3	82	65	67
4	77	61	62
5	68	54	55
6	67	53	55
7	66	52	54
8	60	48	49
9	59	47	48
10	58	46	48
11	51	40	41
12	47	37	39
13	46	37	38
14	34	27	28
15	34	27	28
16	24	19	20
17	14	11	11
18	14	11	11
19	8	6	6
20	4	3	4
21	3	2	2
22	1	1	1
23	1	1	1
24	1	1	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	154	1	70	No	No	No	No	No	No	No	No	No	No
2	1	149	1	68	No	No	No	No	No	No	No	No	No	No
3	1	147	1	67	No	No	No	No	No	No	No	No	No	No
4	1	138	1	62	No	No	No	No	No	No	No	No	No	No
5	1	122	1	55	No	No	No	No	No	No	No	No	No	No
6	1	120	1	55	No	No	No	No	No	No	No	No	No	No
7	1	118	1	54	No	No	No	No	No	No	No	No	No	No
8	1	108	1	49	No	No	No	No	No	No	No	No	No	No
9	1	106	1	48	No	No	No	No	No	No	No	No	No	No
10	1	104	1	48	No	No	No	No	No	No	No	No	No	No
11	1	91	1	41	No	No	No	No	No	No	No	No	No	No
12	1	84	1	39	No	No	No	No	No	No	No	No	No	No
13	1	83	1	38	No	No	No	No	No	No	No	No	No	No
14	1	61	1	28	No	No	No	No	No	No	No	No	No	No
15	1	61	1	28	No	No	No	No	No	No	No	No	No	No
16	1	43	1	20	No	No	No	No	No	No	No	No	No	No
17	1	25	1	11	No	No	No	No	No	No	No	No	No	No
18	1	25	1	11	No	No	No	No	No	No	No	No	No	No
19	1	14	1	6	No	No	No	No	No	No	No	No	No	No
20	1	7	1	4	No	No	No	No	No	No	No	No	No	No
21	1	5	1	2	No	No	No	No	No	No	No	No	No	No
22	1	2	1	1	No	No	No	No	No	No	No	No	No	No
23	1	2	1	1	No	No	No	No	No	No	No	No	No	No
24	1	2	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:11
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	70
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	224
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 18: North loop Road/West Street and Willow Road Tunnel

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	W
1	72	391	60
2	70	379	58
3	68	371	57
4	64	348	53
5	57	309	47
6	56	305	47
7	55	301	46
8	50	274	42
9	50	270	41
10	49	266	41
11	42	231	35
12	40	215	33
13	39	211	32
14	29	156	24
15	29	156	24
16	20	109	17
17	12	63	10
18	12	63	10
19	6	35	5
20	4	20	3
21	2	12	2
22	1	4	1
23	1	4	1
24	1	4	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	463	1	60	No	No	No	No	No	No	No	Yes	No	No
2	1	449	1	58	No	No	No	No	No	No	No	Yes	No	No
3	1	439	1	57	No	No	No	No	No	No	No	Yes	No	No
4	1	412	1	53	No	No	No	No	No	No	No	No	No	No
5	1	366	1	47	No	No	No	No	No	No	No	No	No	No
6	1	361	1	47	No	No	No	No	No	No	No	No	No	No
7	1	356	1	46	No	No	No	No	No	No	No	No	No	No
8	1	324	1	42	No	No	No	No	No	No	No	No	No	No
9	1	320	1	41	No	No	No	No	No	No	No	No	No	No
10	1	315	1	41	No	No	No	No	No	No	No	No	No	No
11	1	273	1	35	No	No	No	No	No	No	No	No	No	No
12	1	255	1	33	No	No	No	No	No	No	No	No	No	No
13	1	250	1	32	No	No	No	No	No	No	No	No	No	No
14	1	185	1	24	No	No	No	No	No	No	No	No	No	No
15	1	185	1	24	No	No	No	No	No	No	No	No	No	No
16	1	129	1	17	No	No	No	No	No	No	No	No	No	No
17	1	75	1	10	No	No	No	No	No	No	No	No	No	No
18	1	75	1	10	No	No	No	No	No	No	No	No	No	No
19	1	41	1	5	No	No	No	No	No	No	No	No	No	No
20	1	24	1	3	No	No	No	No	No	No	No	No	No	No
21	1	14	1	2	No	No	No	No	No	No	No	No	No	No
22	1	5	1	1	No	No	No	No	No	No	No	No	No	No
23	1	5	1	1	No	No	No	No	No	No	No	No	No	No
24	1	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	3	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:08
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	60
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	523
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 19: Willow Road and Driveway M

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	1460	1136	33
2	1416	1102	32
3	1387	1079	31
4	1299	1011	29
5	1153	897	26
6	1139	886	26
7	1124	875	25
8	1022	795	23
9	1007	784	23
10	993	772	22
11	861	670	19
12	803	625	18
13	788	613	18
14	584	454	13
15	584	454	13
16	409	318	9
17	234	182	5
18	234	182	5
19	131	102	3
20	73	57	2
21	44	34	1
22	15	11	0
23	15	11	0
24	15	11	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	2596	1	33	No	No	No	No	No	No	No	No	No	No
2	2	2518	1	32	No	No	No	No	No	No	No	No	No	No
3	2	2466	1	31	No	No	No	No	No	No	No	No	No	No
4	2	2310	1	29	No	No	No	No	No	No	No	No	No	No
5	2	2050	1	26	No	No	No	No	No	No	No	No	No	No
6	2	2025	1	26	No	No	No	No	No	No	No	No	No	No
7	2	1999	1	25	No	No	No	No	No	No	No	No	No	No
8	2	1817	1	23	No	No	No	No	No	No	No	No	No	No
9	2	1791	1	23	No	No	No	No	No	No	No	No	No	No
10	2	1765	1	22	No	No	No	No	No	No	No	No	No	No
11	2	1531	1	19	No	No	No	No	No	No	No	No	No	No
12	2	1428	1	18	No	No	No	No	No	No	No	No	No	No
13	2	1401	1	18	No	No	No	No	No	No	No	No	No	No
14	2	1038	1	13	No	No	No	No	No	No	No	No	No	No
15	2	1038	1	13	No	No	No	No	No	No	No	No	No	No
16	2	727	1	9	No	No	No	No	No	No	No	No	No	No
17	2	416	1	5	No	No	No	No	No	No	No	No	No	No
18	2	416	1	5	No	No	No	No	No	No	No	No	No	No
19	2	233	1	3	No	No	No	No	No	No	No	No	No	No
20	2	130	1	2	No	No	No	No	No	No	No	No	No	No
21	2	78	1	1	No	No	No	No	No	No	No	No	No	No
22	2	26	1	0	No	No	No	No	No	No	No	No	No	No
23	2	26	1	0	No	No	No	No	No	No	No	No	No	No
24	2	26	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.3
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	33
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	2629
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 20: Willow Road and Driveway N

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	1768	1122	31
2	1715	1088	30
3	1680	1066	29
4	1574	999	28
5	1397	886	24
6	1379	875	24
7	1361	864	24
8	1238	785	22
9	1220	774	21
10	1202	763	21
11	1043	662	18
12	972	617	17
13	955	606	17
14	707	449	12
15	707	449	12
16	495	314	9
17	283	180	5
18	283	180	5
19	159	101	3
20	88	56	2
21	53	34	1
22	18	11	0
23	18	11	0
24	18	11	0

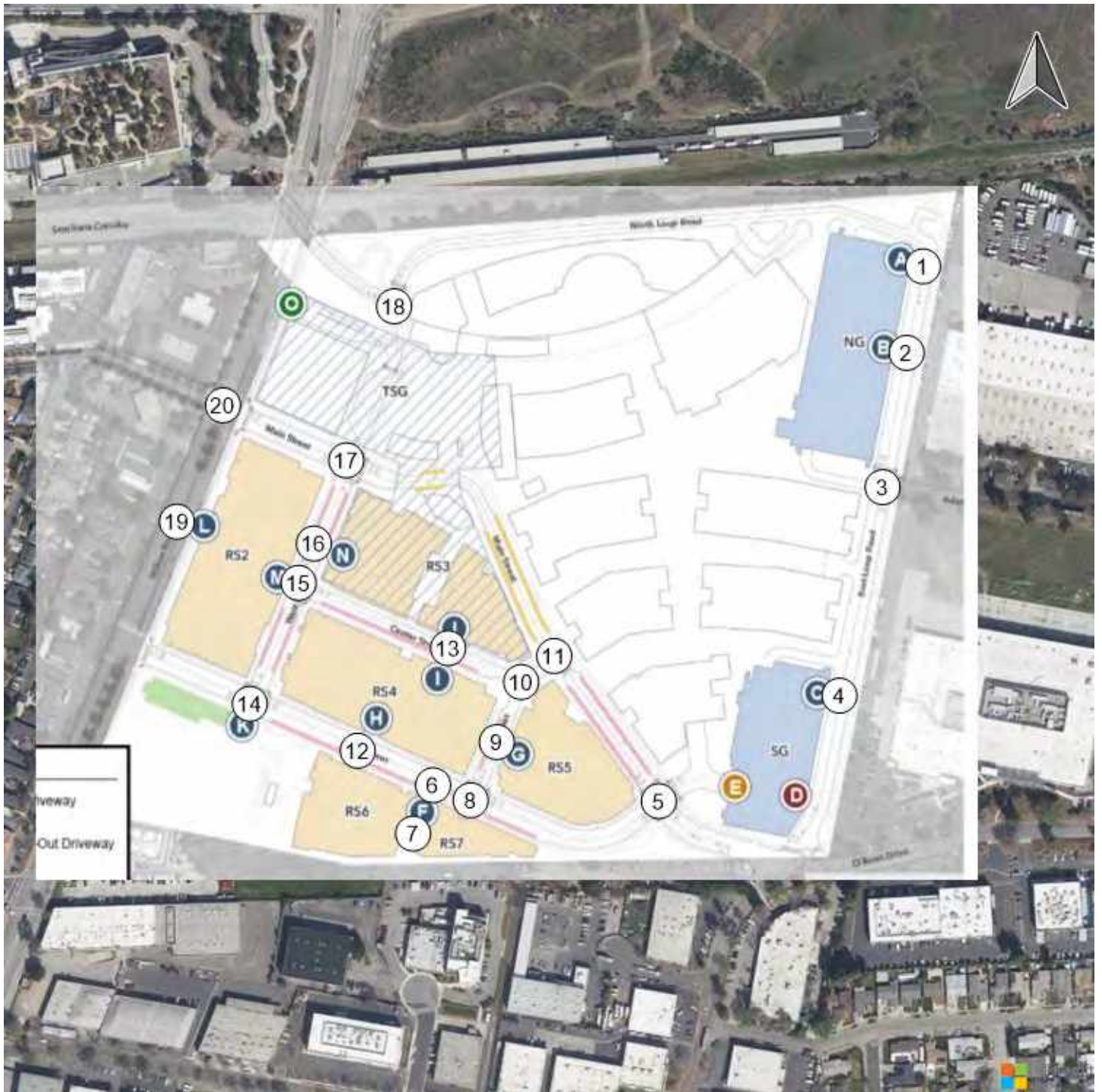
## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	2890	1	31	No	No	No	No	No	No	No	No	No	No
2	2	2803	1	30	No	No	No	No	No	No	No	No	No	No
3	2	2746	1	29	No	No	No	No	No	No	No	No	No	No
4	2	2573	1	28	No	No	No	No	No	No	No	No	No	No
5	2	2283	1	24	No	No	No	No	No	No	No	No	No	No
6	2	2254	1	24	No	No	No	No	No	No	No	No	No	No
7	2	2225	1	24	No	No	No	No	No	No	No	No	No	No
8	2	2023	1	22	No	No	No	No	No	No	No	No	No	No
9	2	1994	1	21	No	No	No	No	No	No	No	No	No	No
10	2	1965	1	21	No	No	No	No	No	No	No	No	No	No
11	2	1705	1	18	No	No	No	No	No	No	No	No	No	No
12	2	1589	1	17	No	No	No	No	No	No	No	No	No	No
13	2	1561	1	17	No	No	No	No	No	No	No	No	No	No
14	2	1156	1	12	No	No	No	No	No	No	No	No	No	No
15	2	1156	1	12	No	No	No	No	No	No	No	No	No	No
16	2	809	1	9	No	No	No	No	No	No	No	No	No	No
17	2	463	1	5	No	No	No	No	No	No	No	No	No	No
18	2	463	1	5	No	No	No	No	No	No	No	No	No	No
19	2	260	1	3	No	No	No	No	No	No	No	No	No	No
20	2	144	1	2	No	No	No	No	No	No	No	No	No	No
21	2	87	1	1	No	No	No	No	No	No	No	No	No	No
22	2	29	1	0	No	No	No	No	No	No	No	No	No	No
23	2	29	1	0	No	No	No	No	No	No	No	No	No	No
24	2	29	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

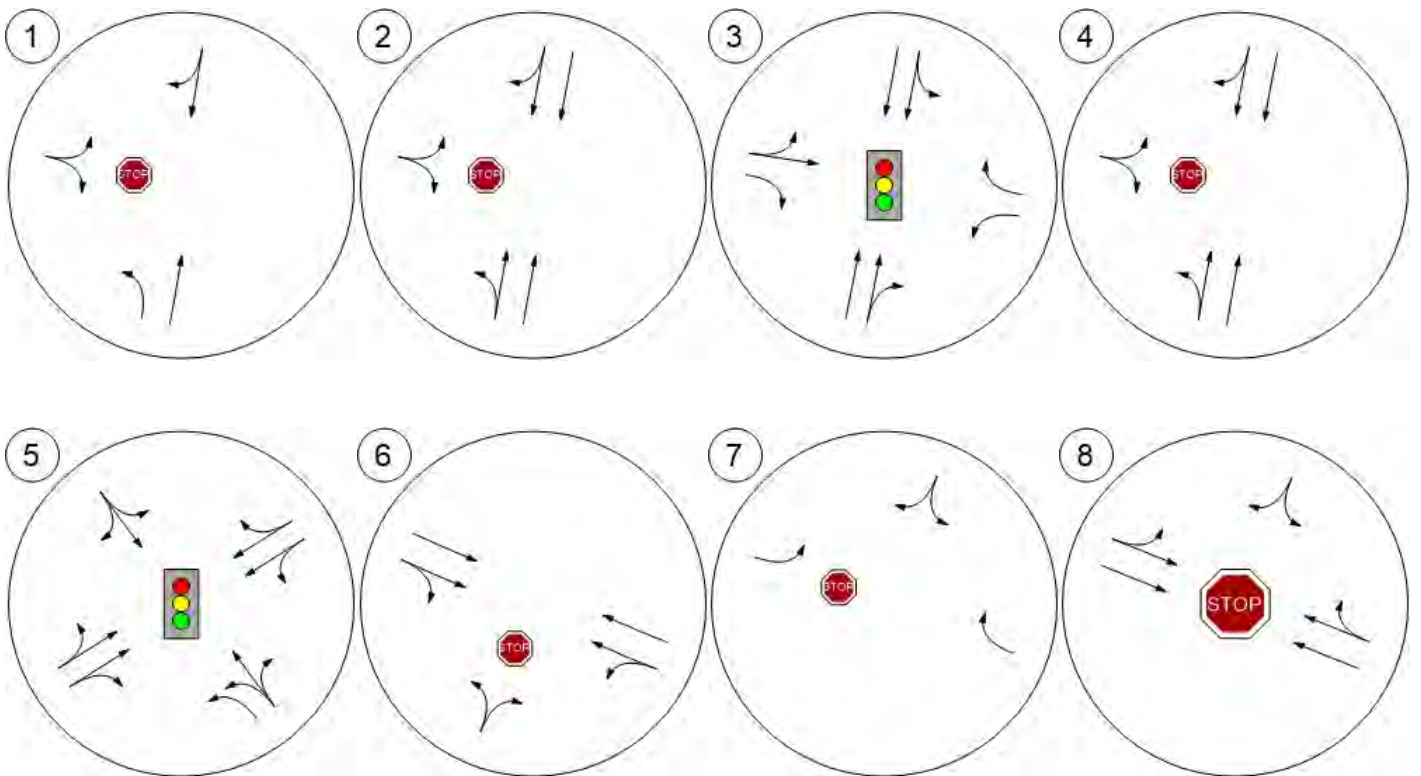
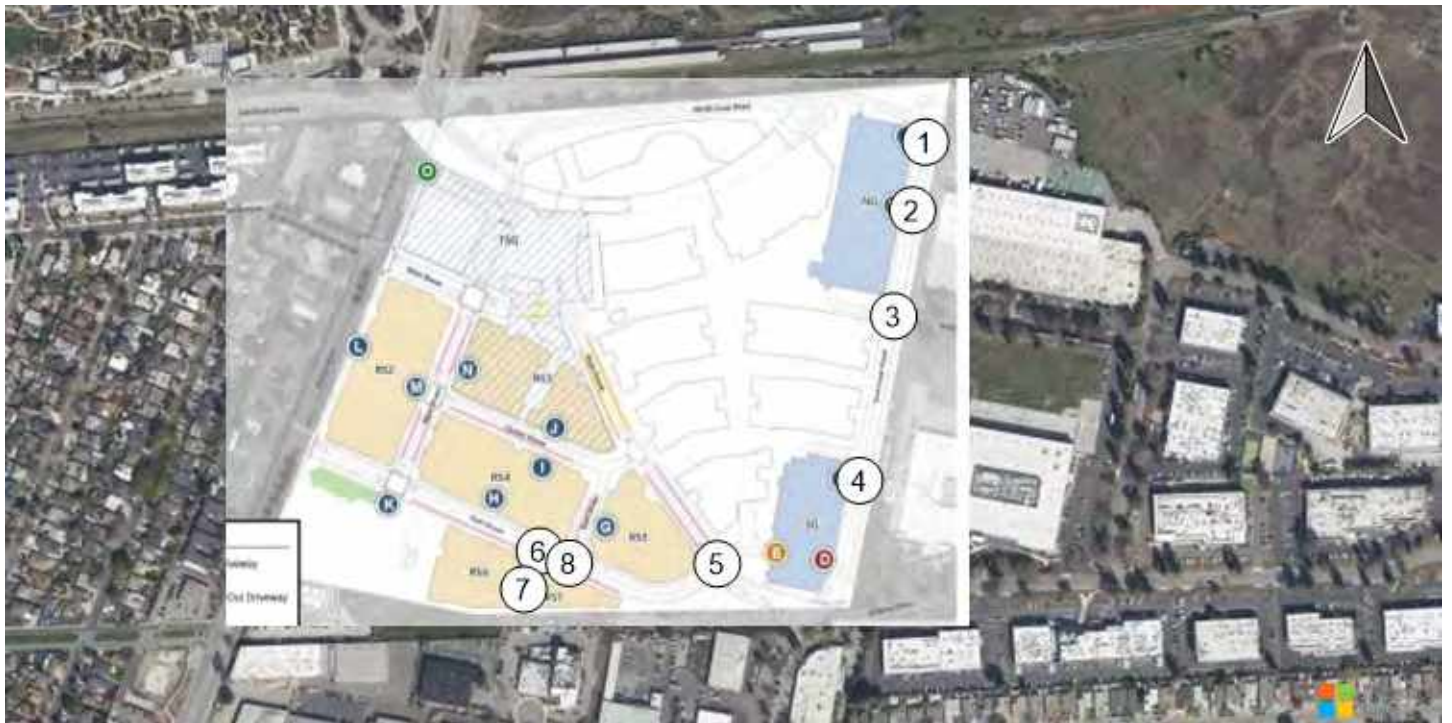
## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	31
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	2921
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

### Study Intersections

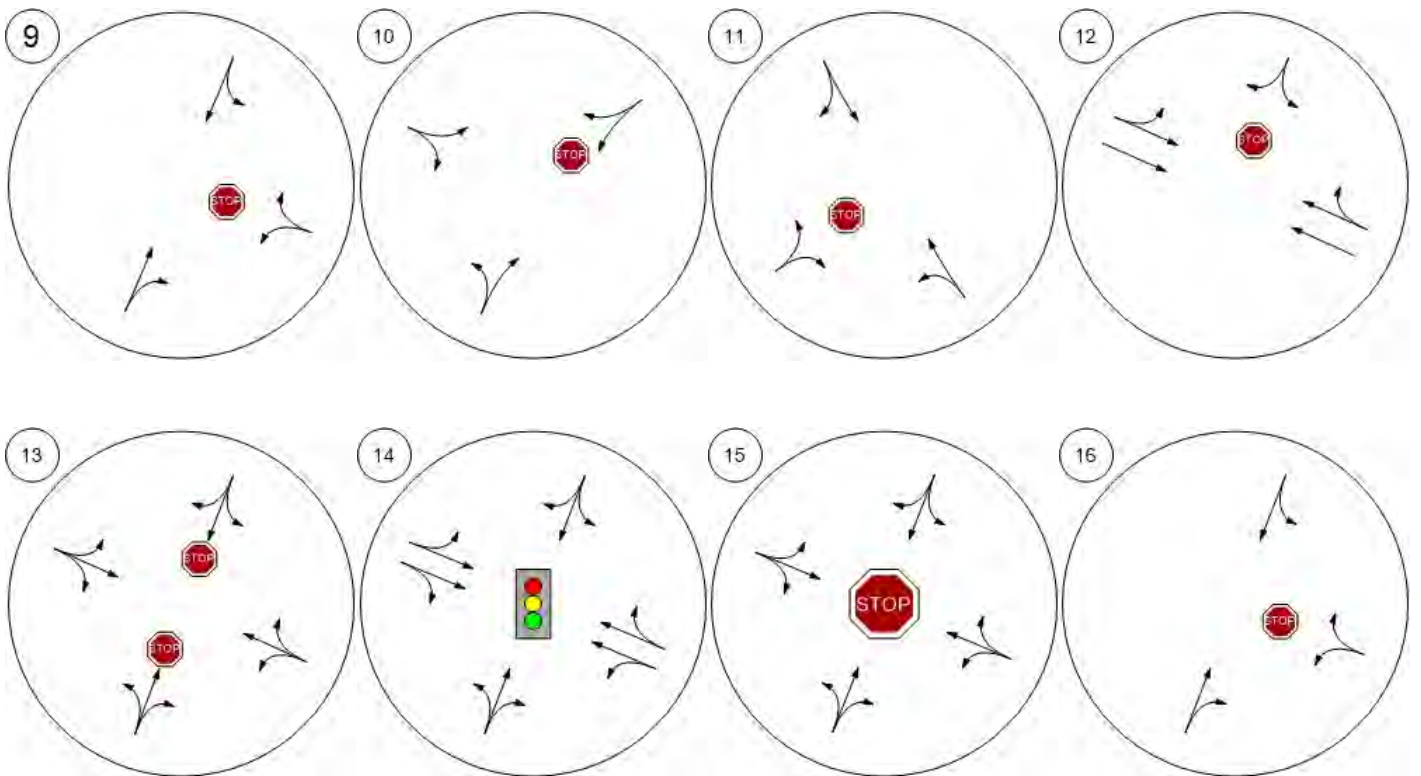


### Lane Configuration and Traffic Control

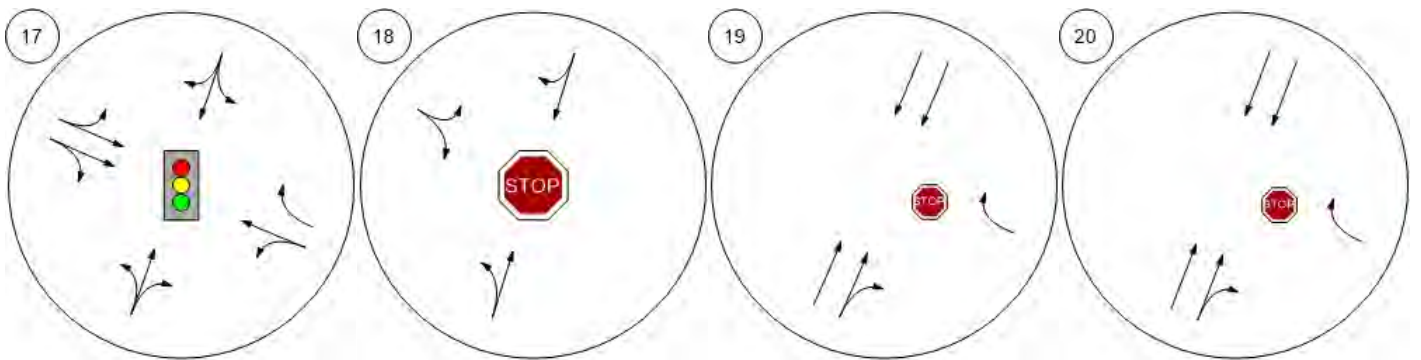




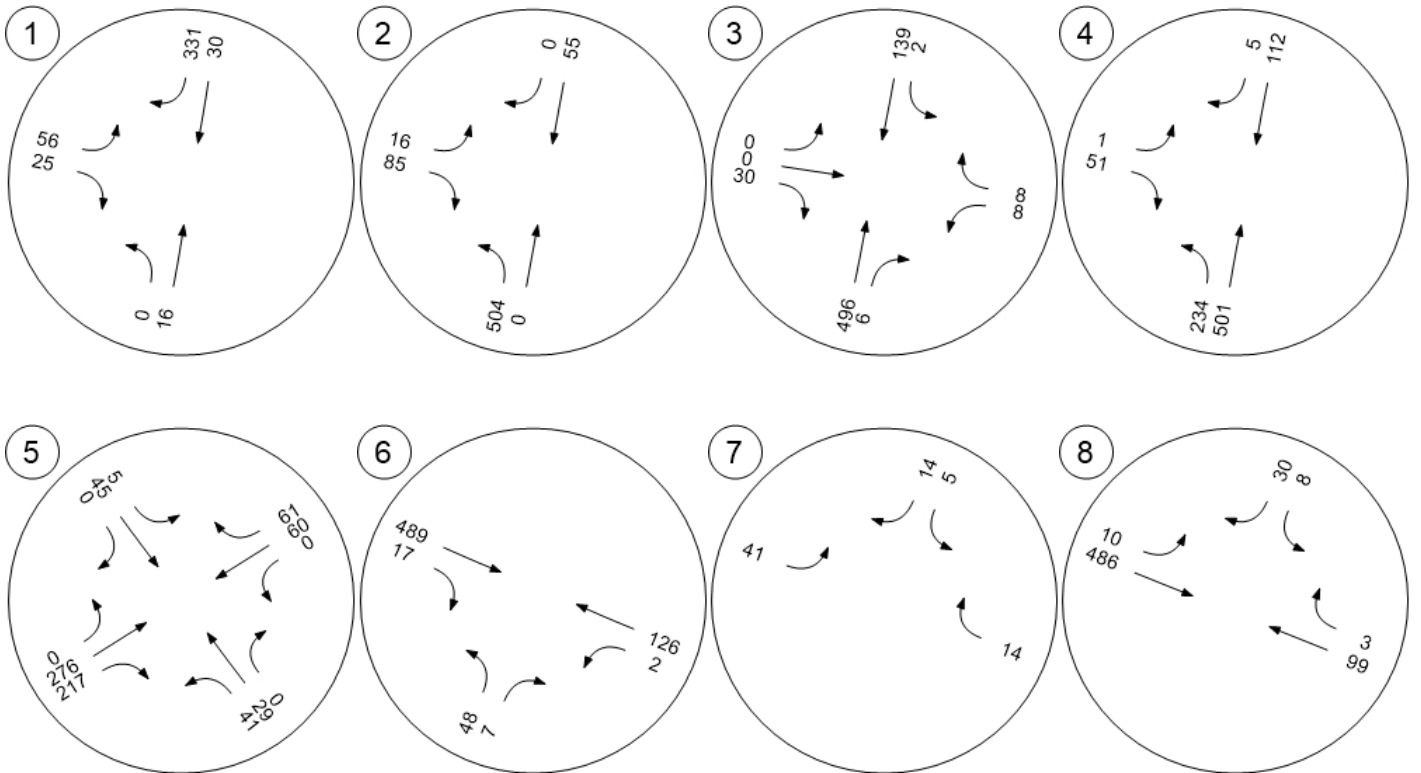
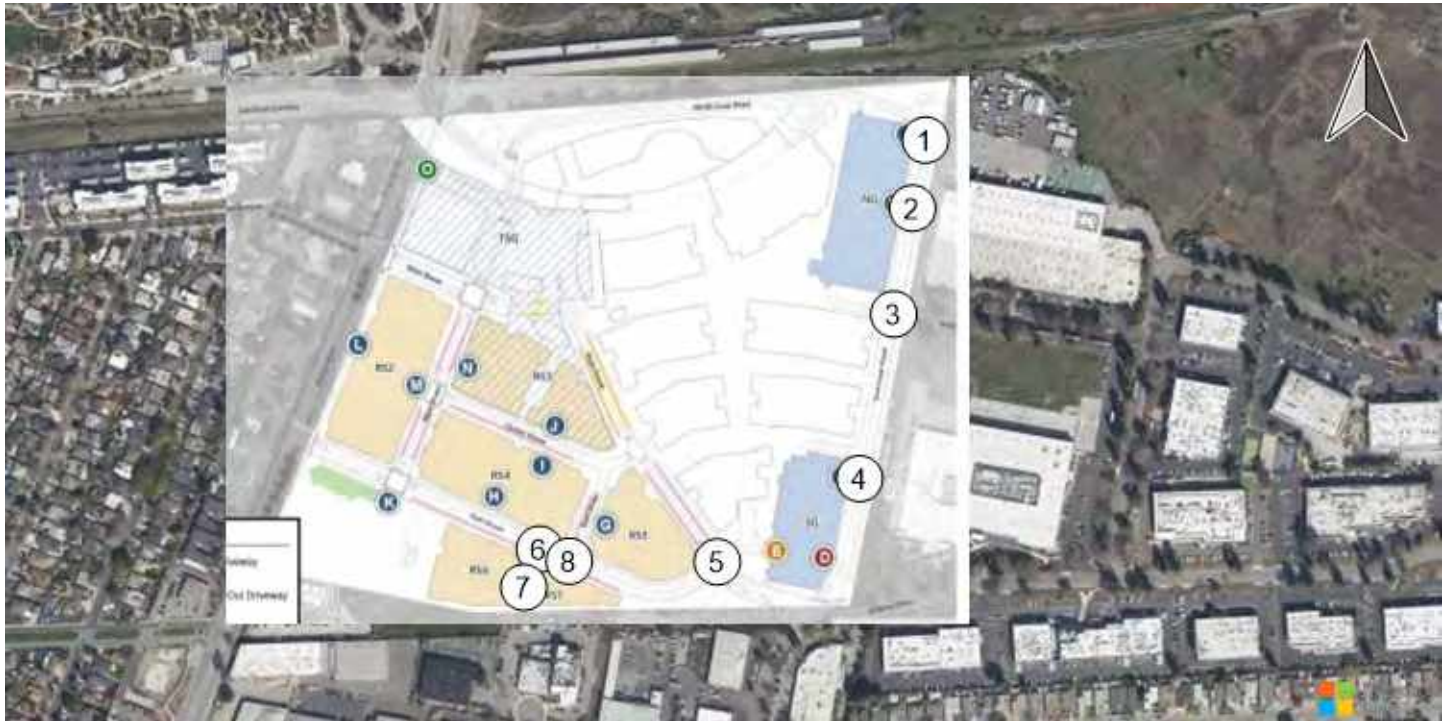
### Lane Configuration and Traffic Control



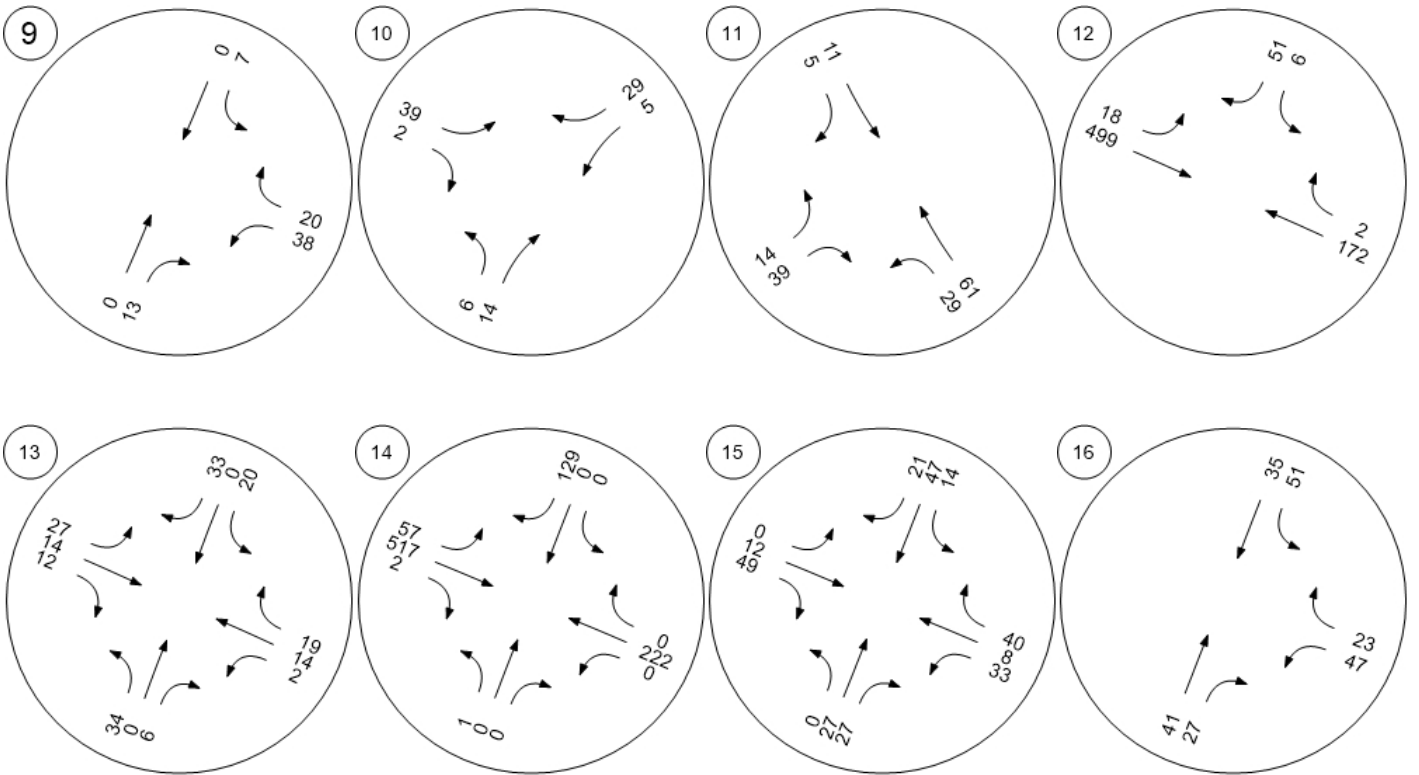
### Lane Configuration and Traffic Control



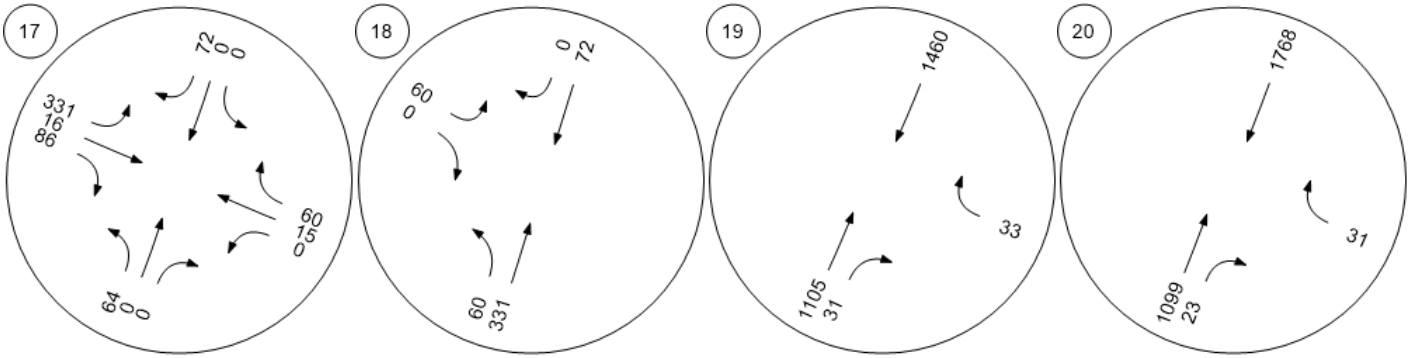
Traffic Volume - Base Volume



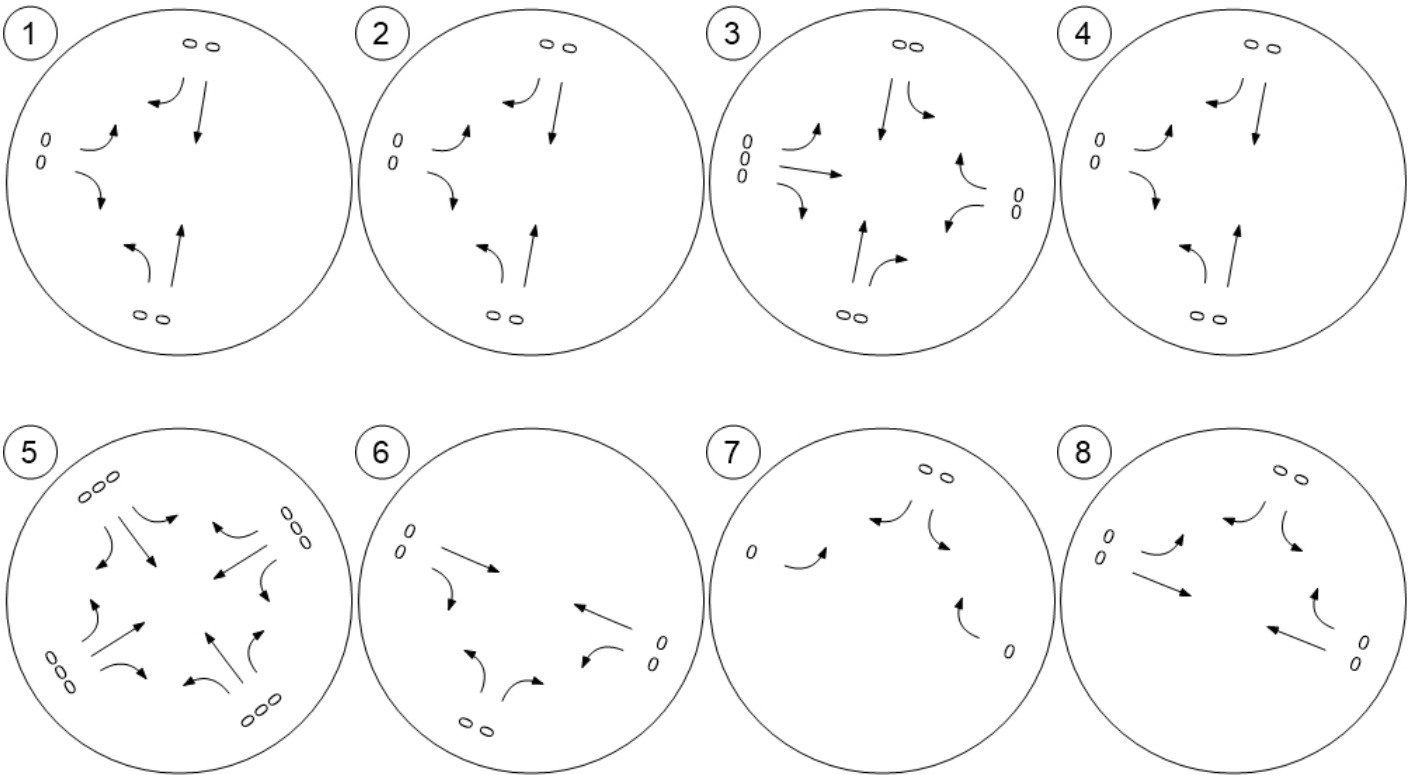
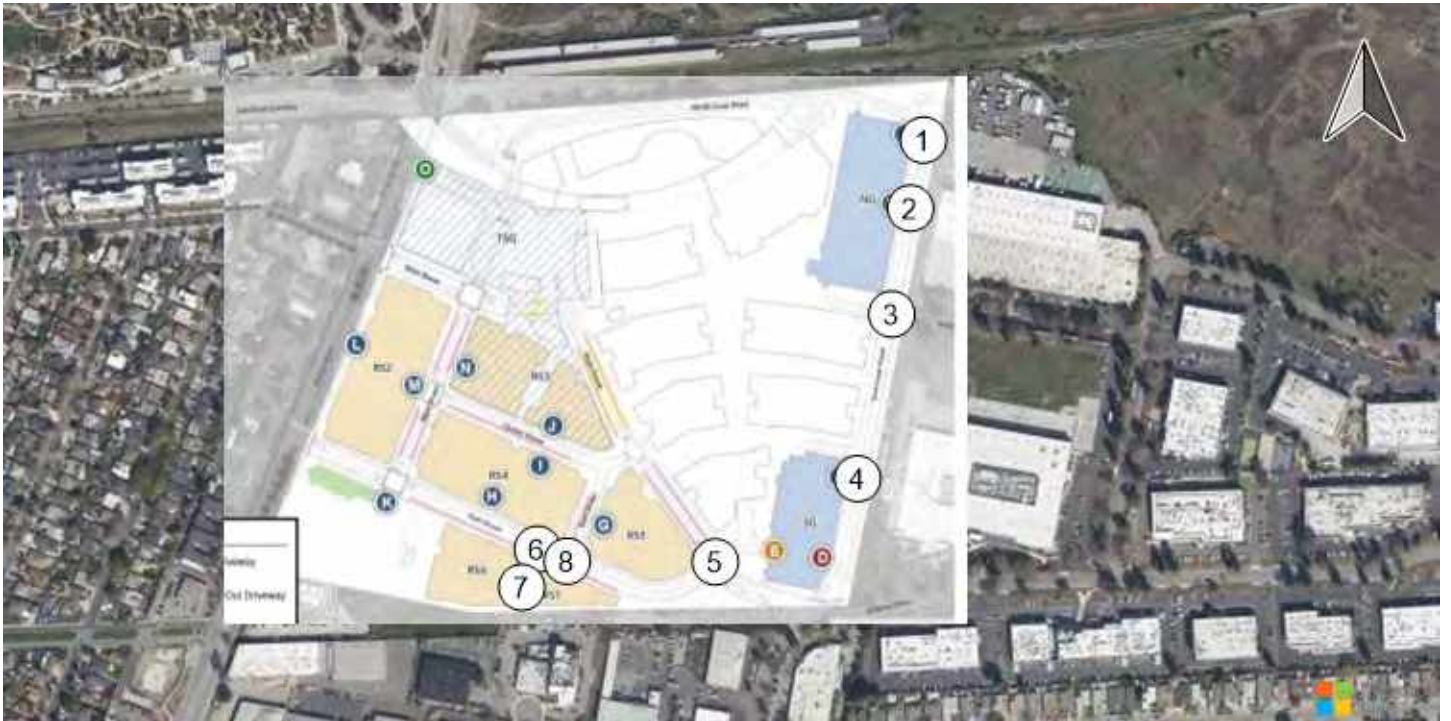
Traffic Volume - Base Volume



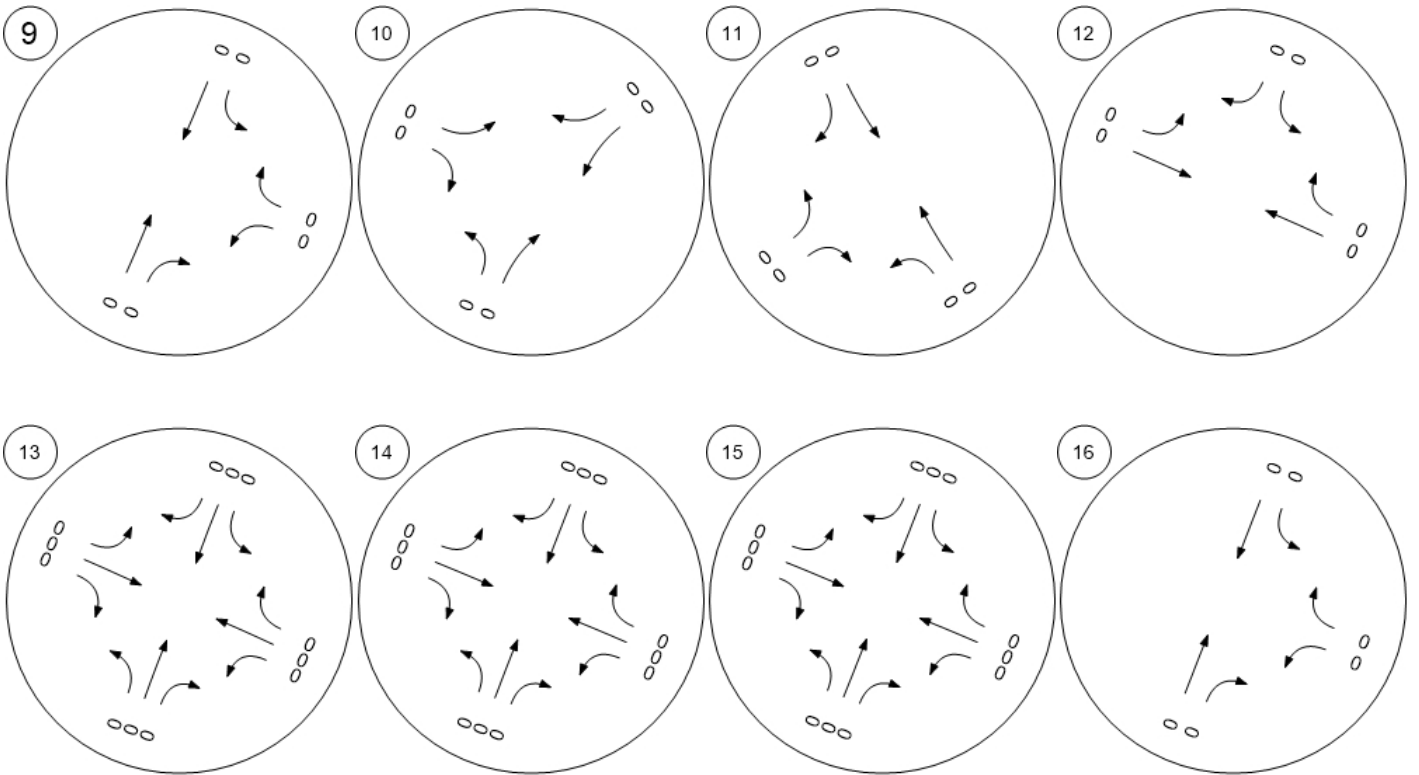
Traffic Volume - Base Volume



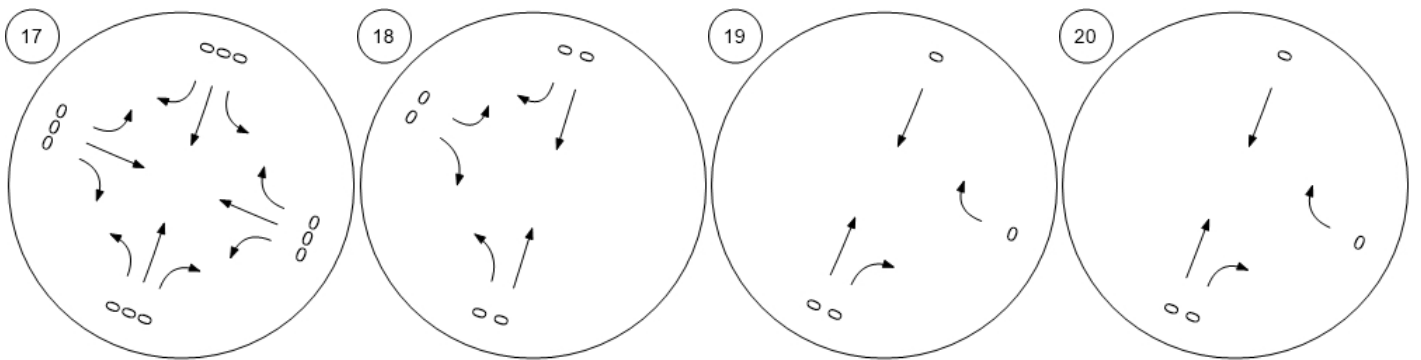
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume

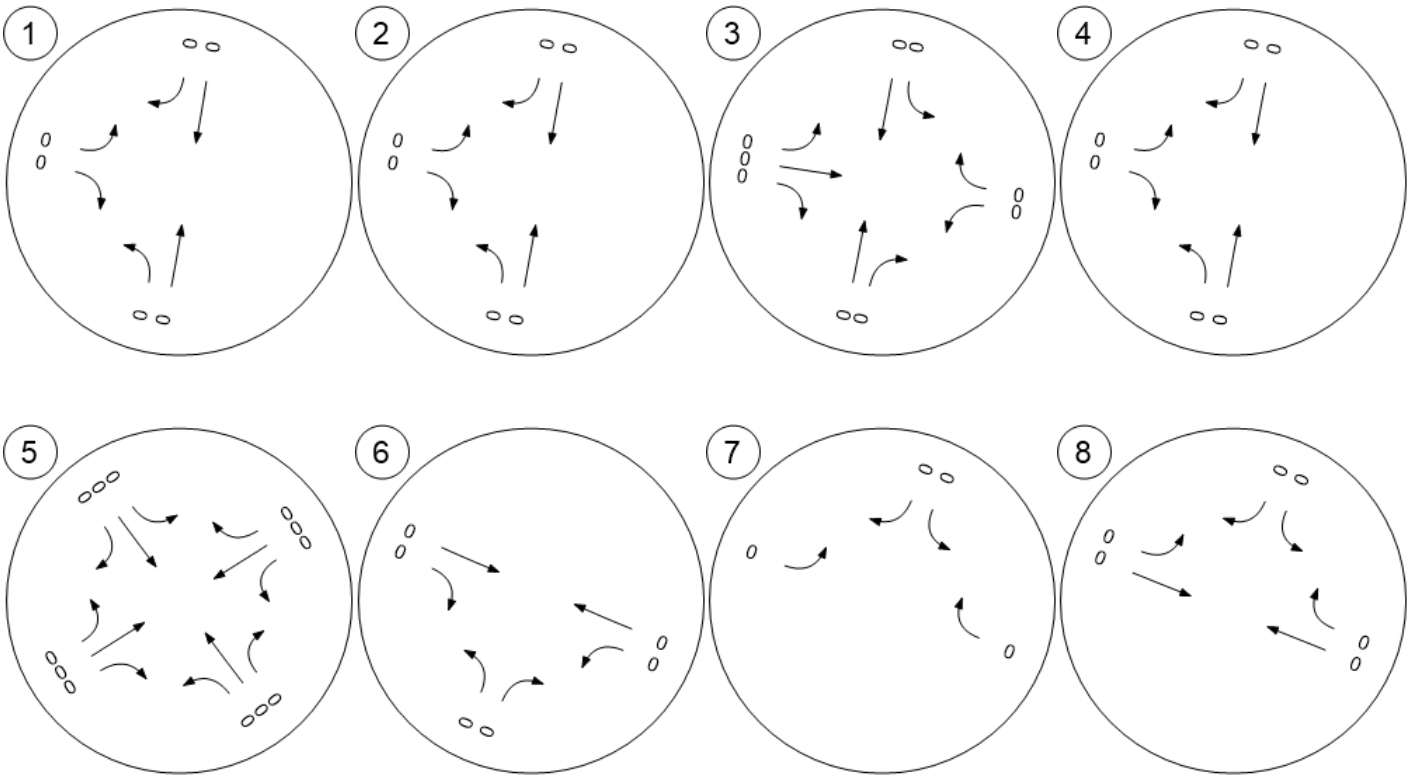
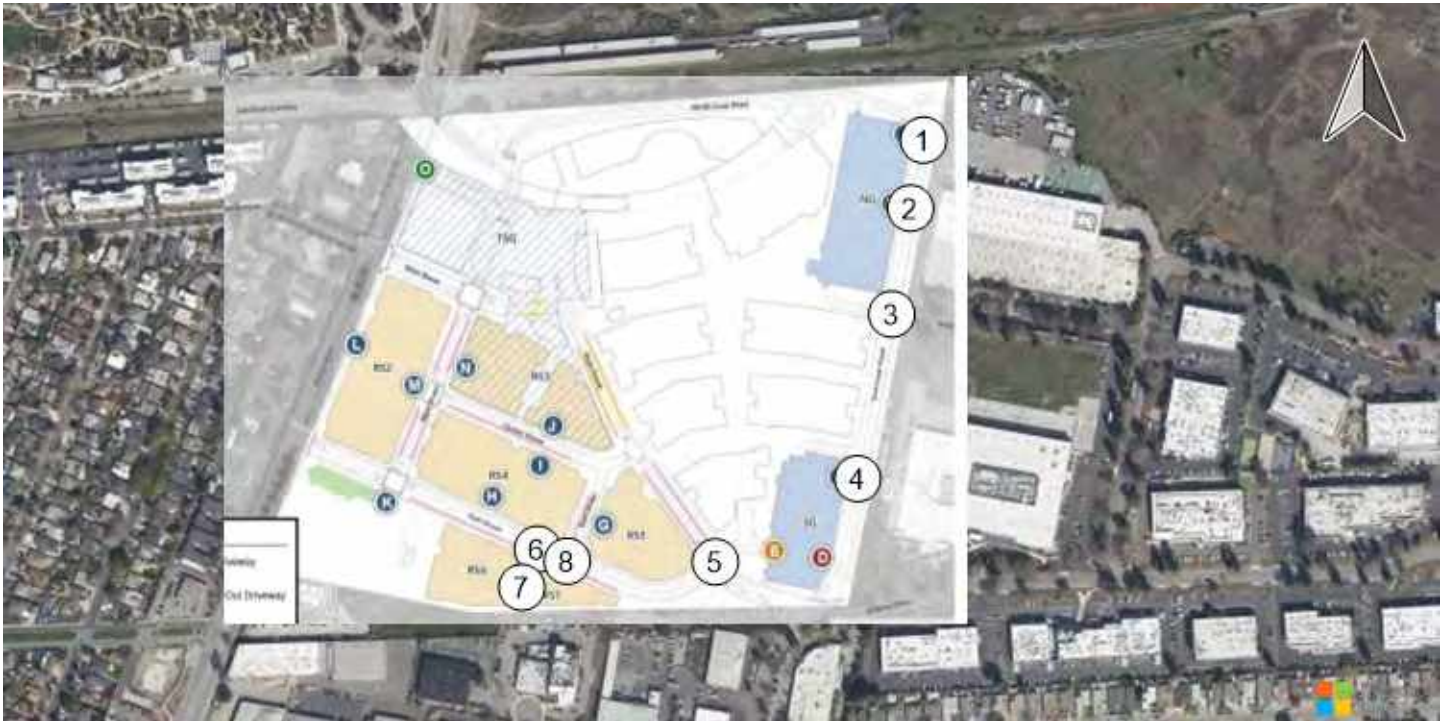


Traffic Volume - In-Process Volume

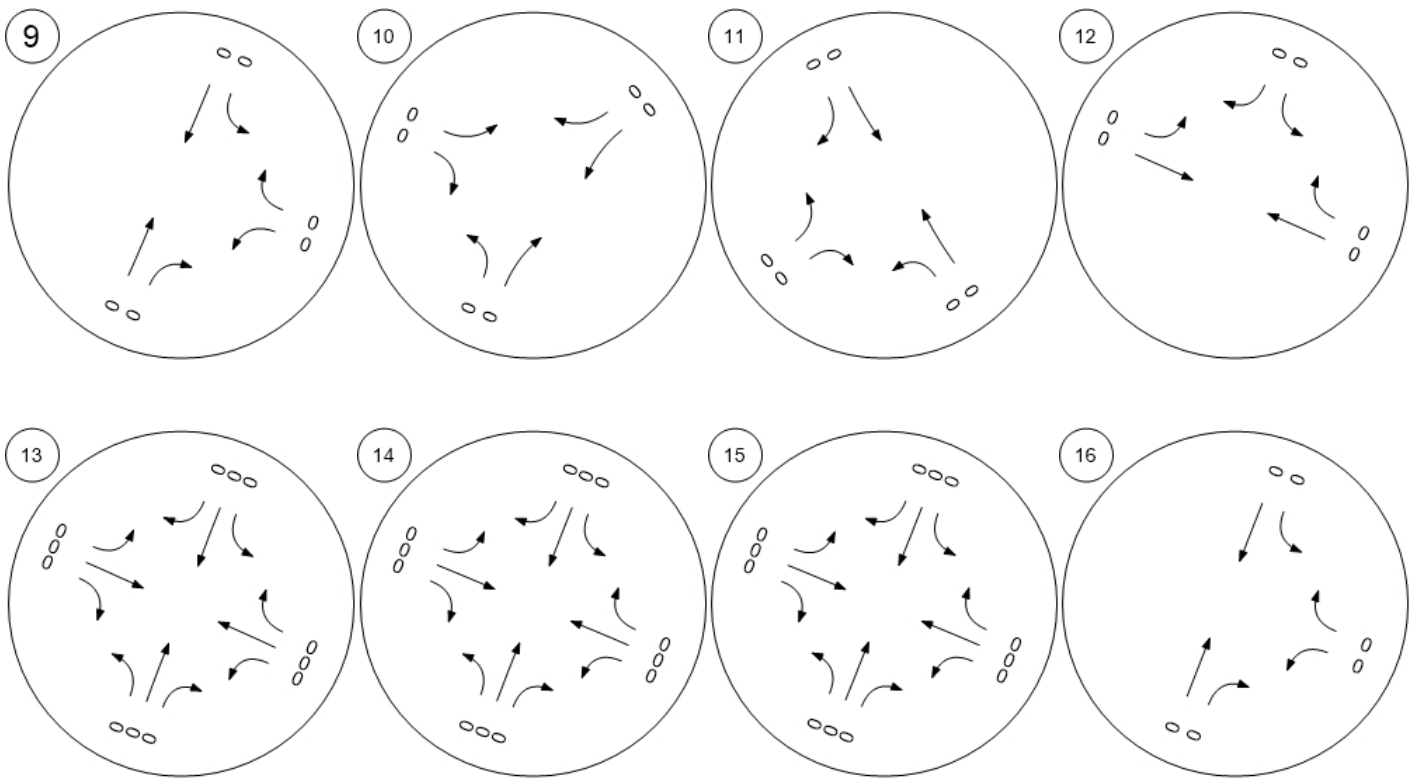




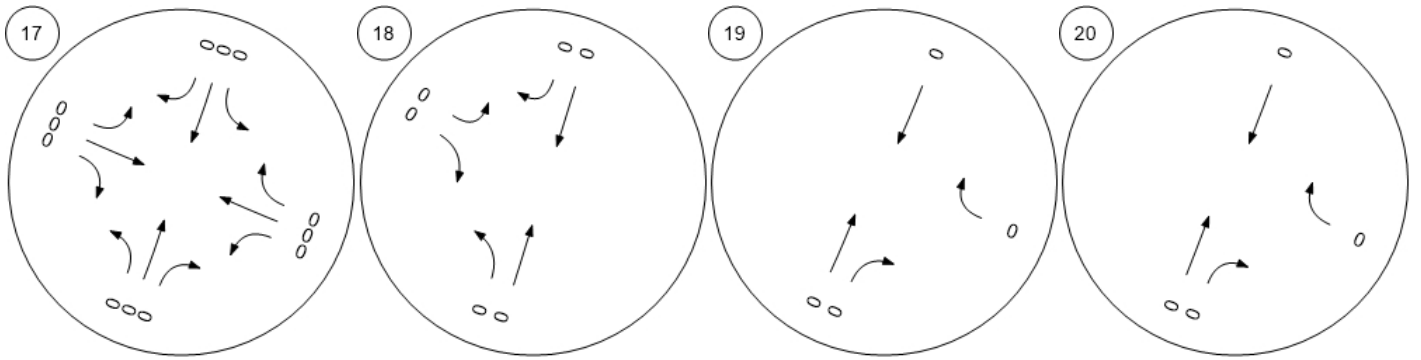
Traffic Volume - Net New Site Trips



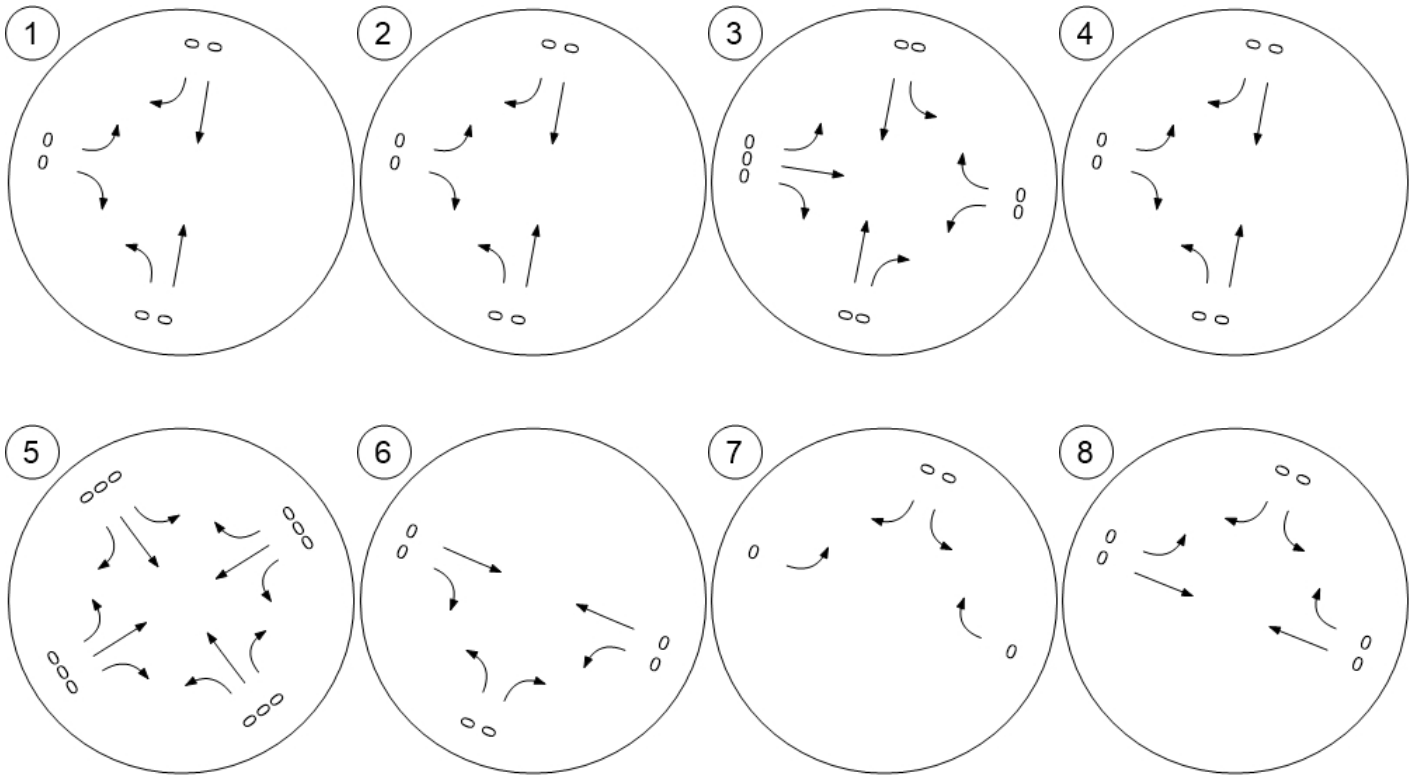
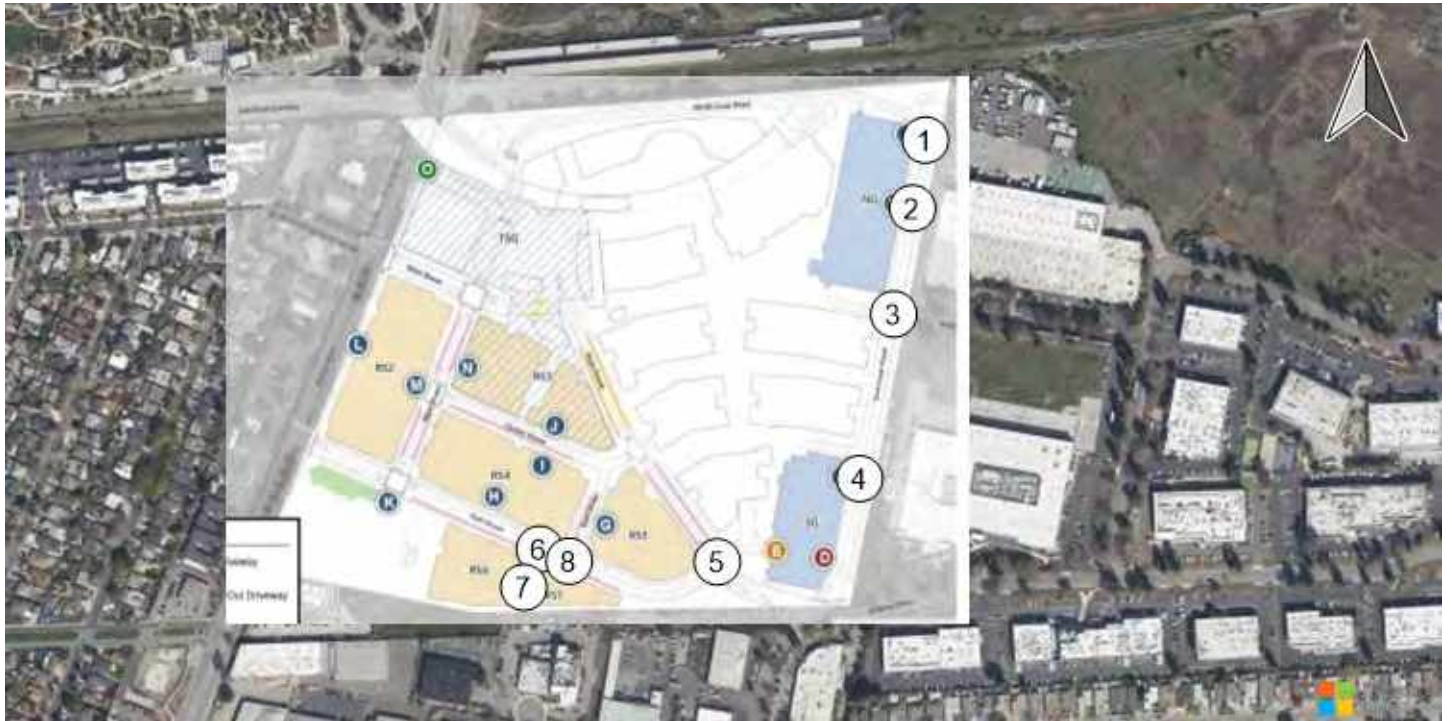
Traffic Volume - Net New Site Trips



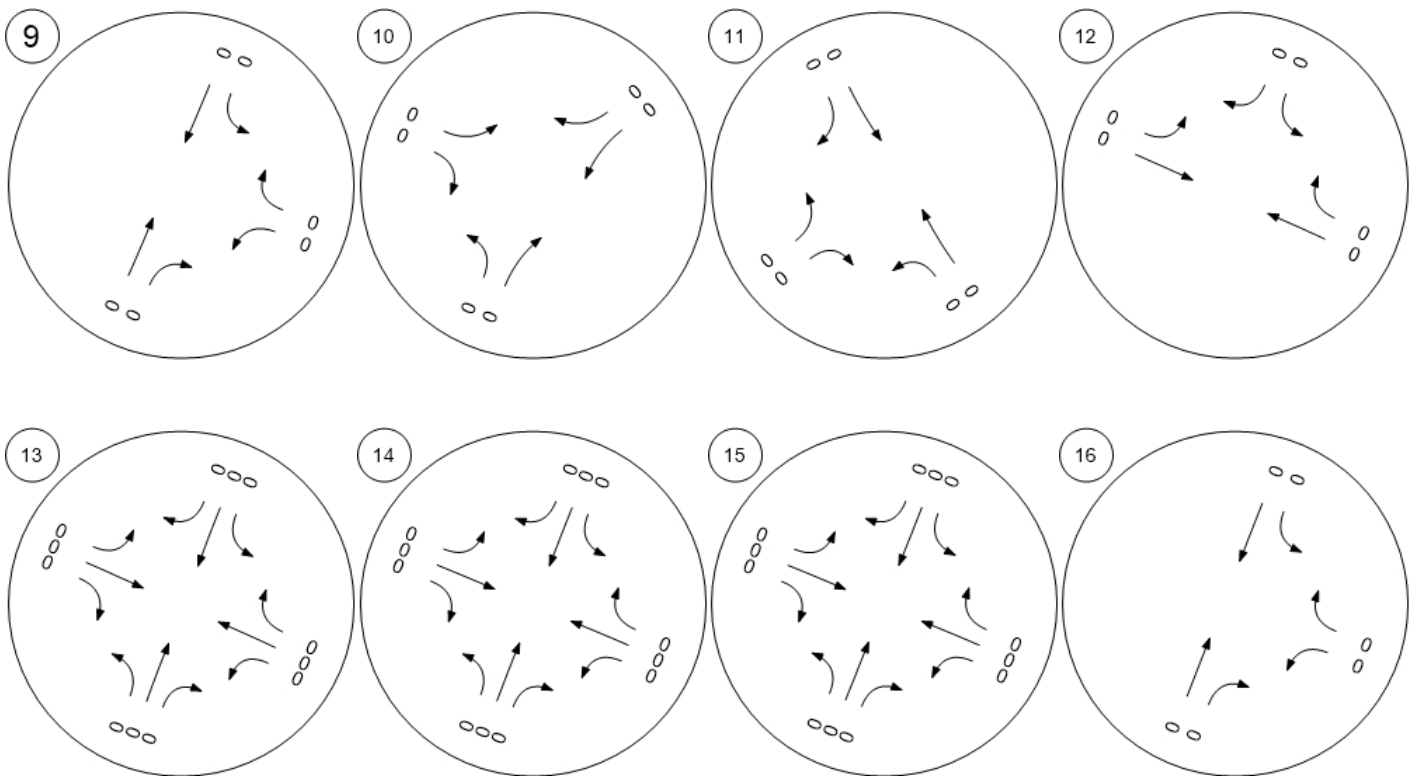
Traffic Volume - Net New Site Trips



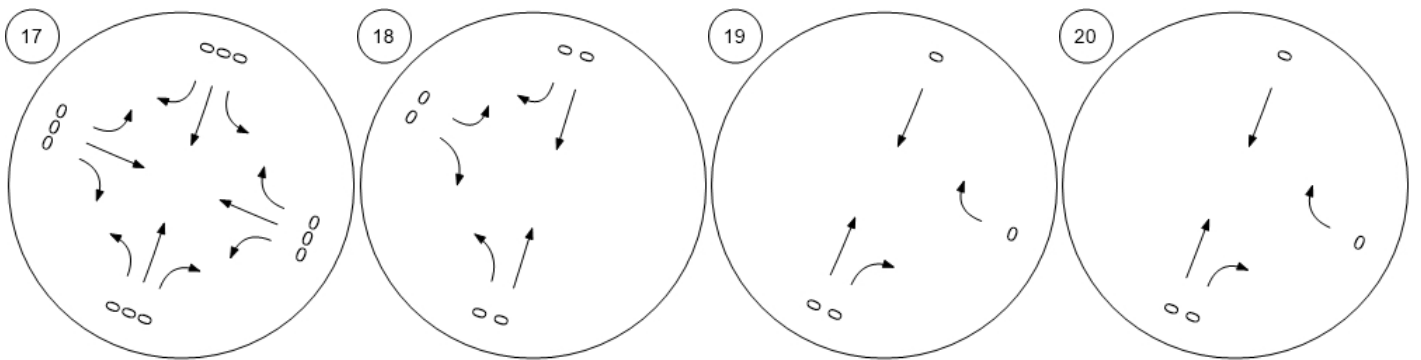
Traffic Volume - Other Volume



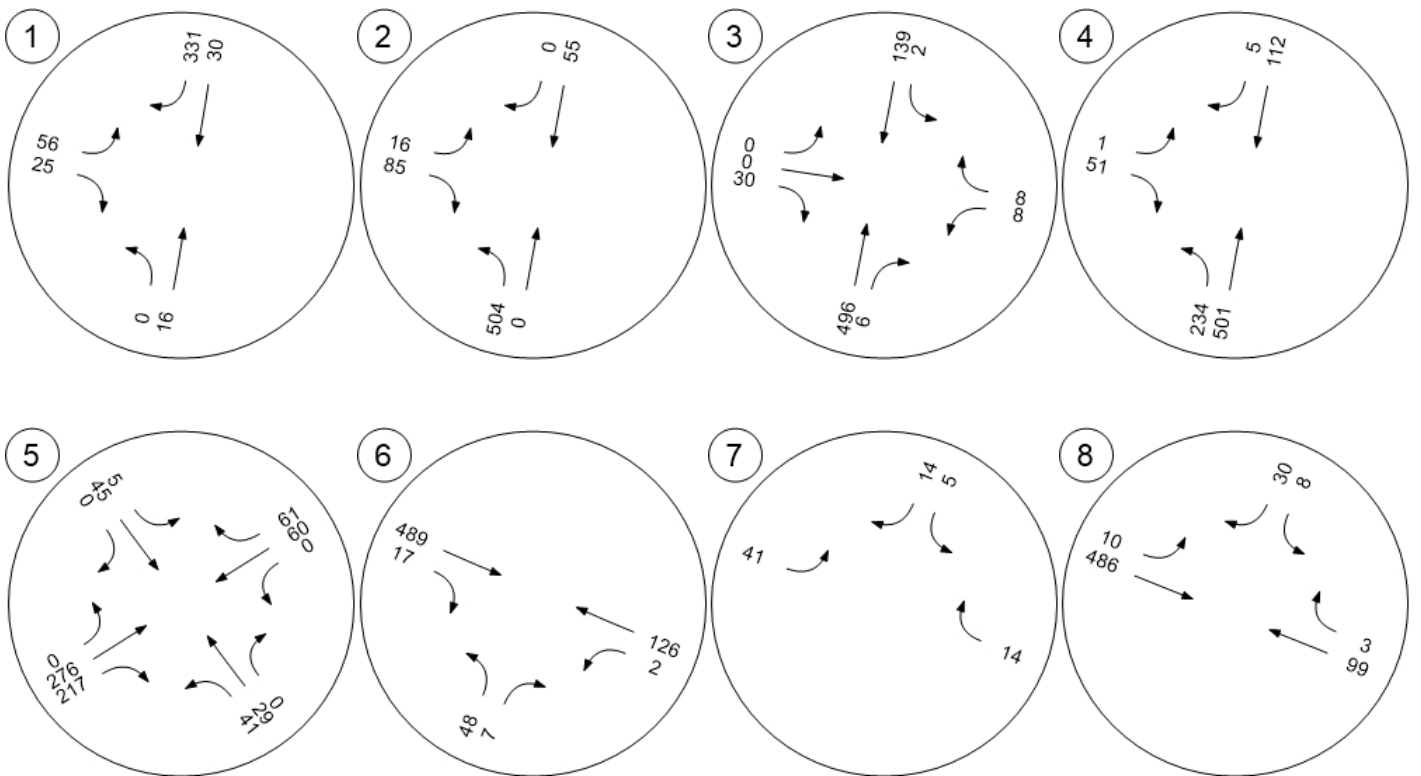
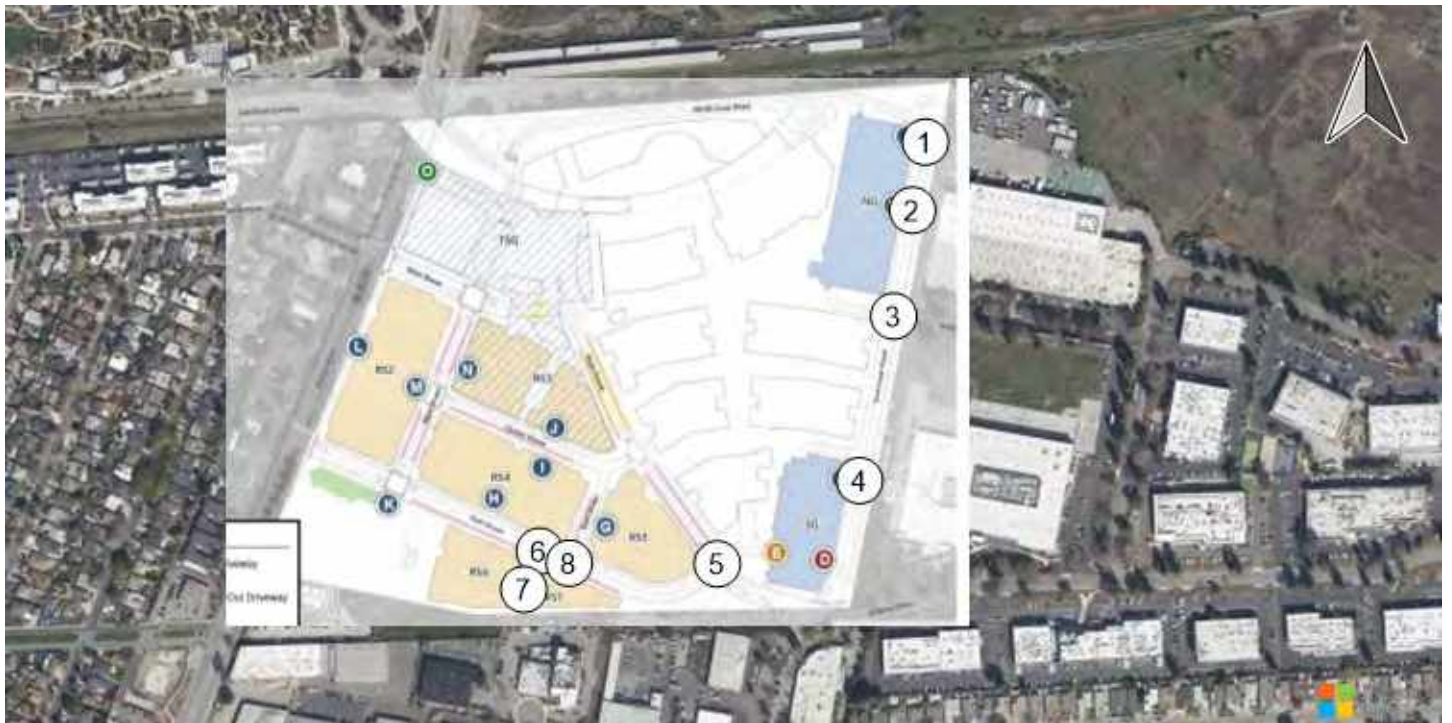
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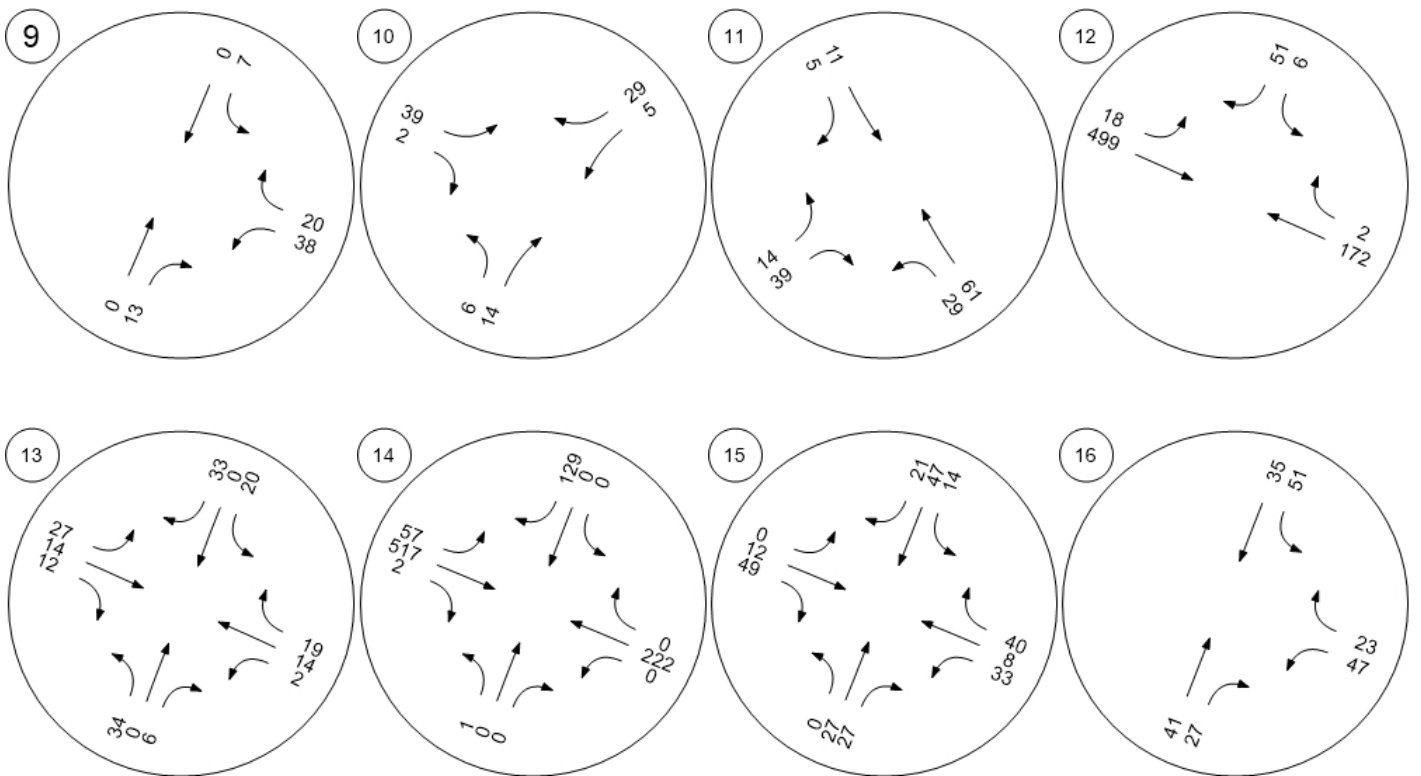
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume

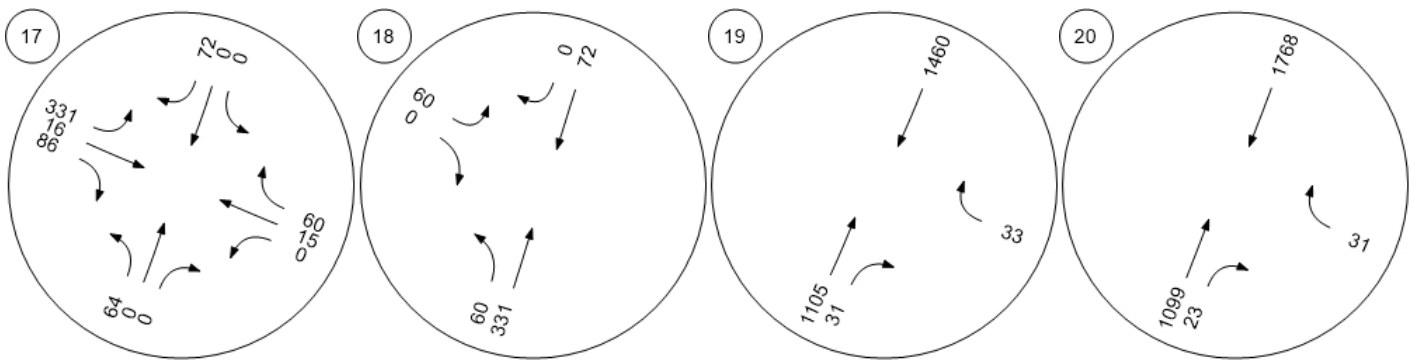


Traffic Volume - Future Total Volume

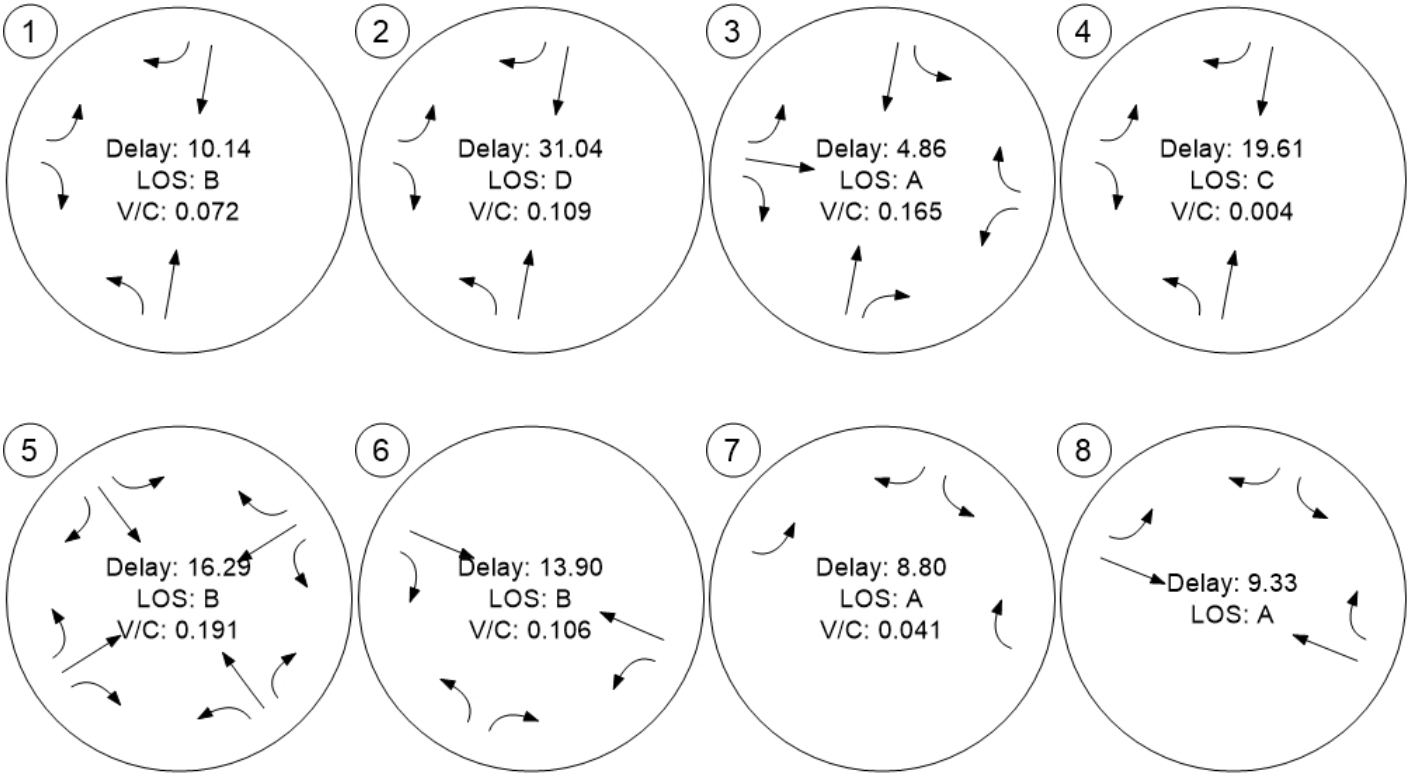
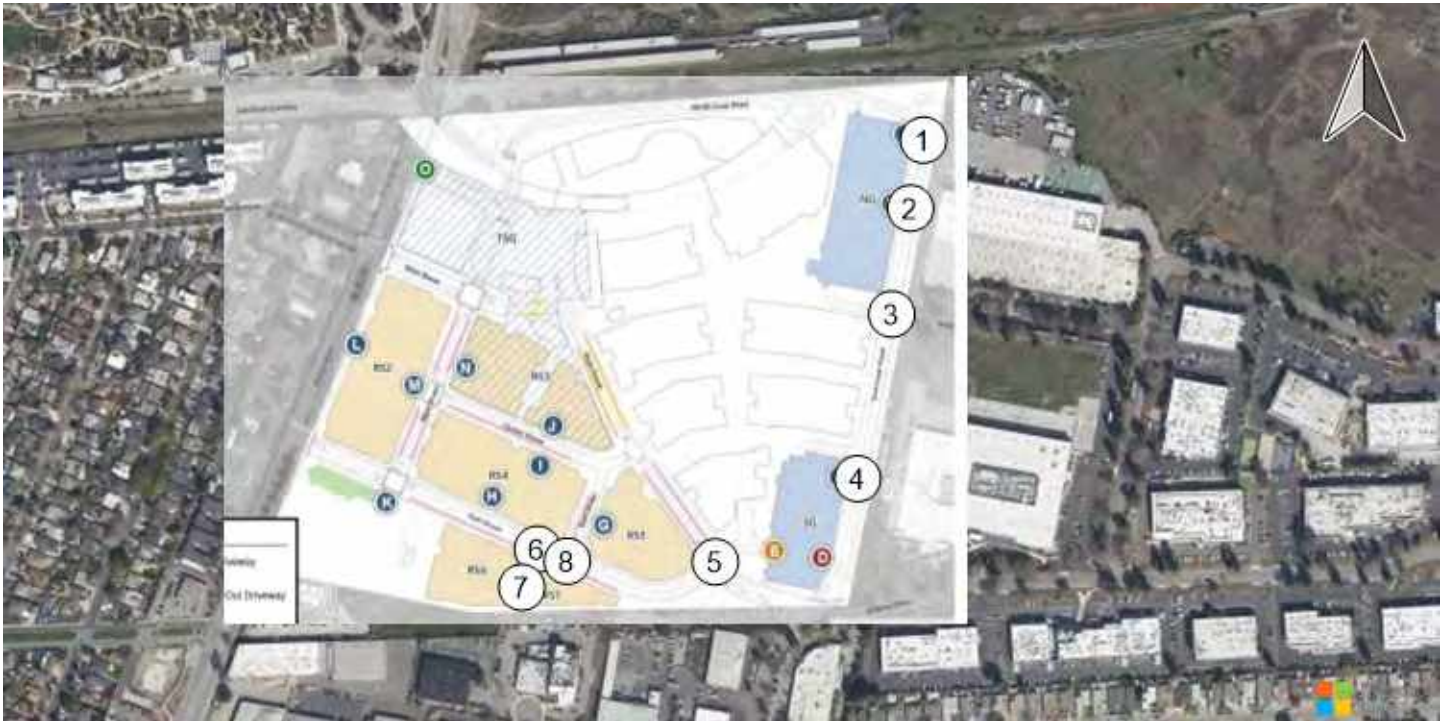




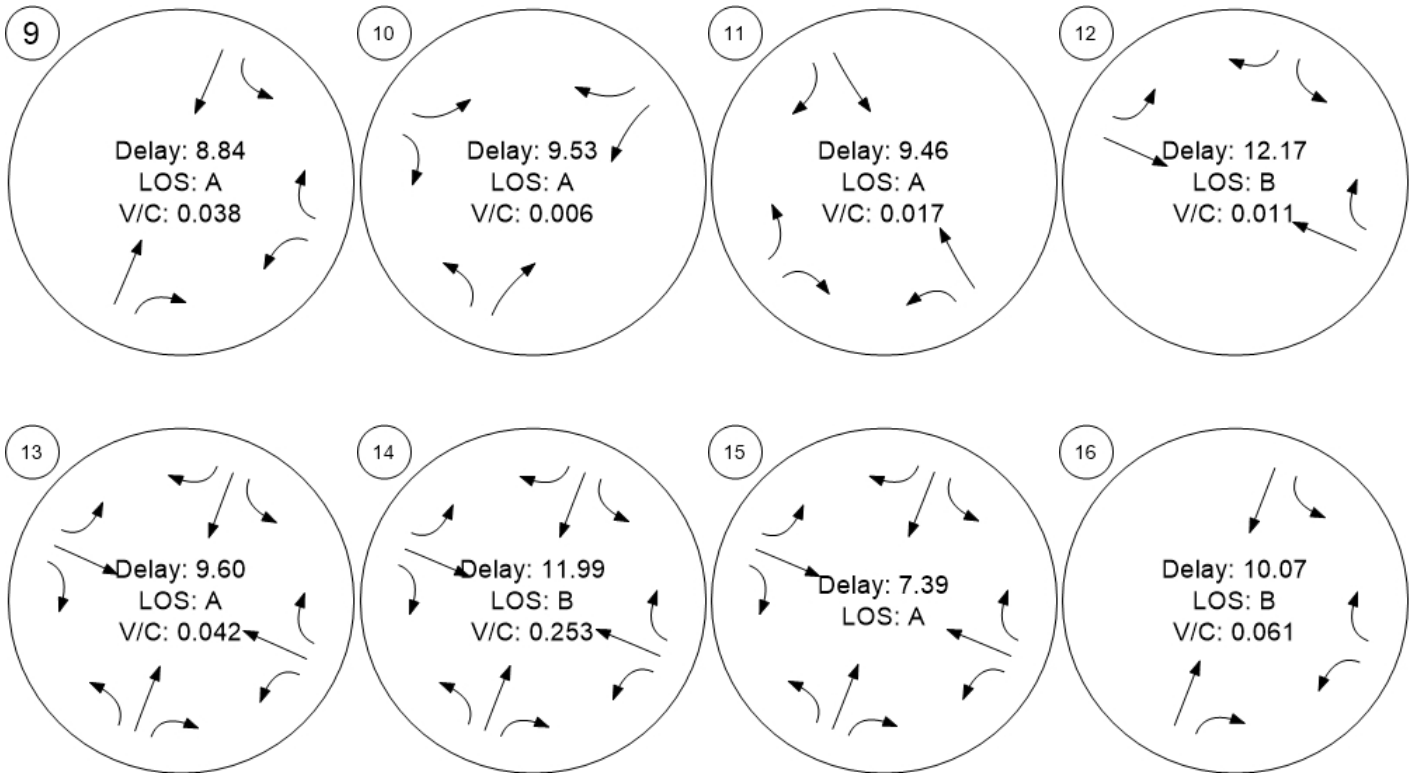
Traffic Volume - Future Total Volume



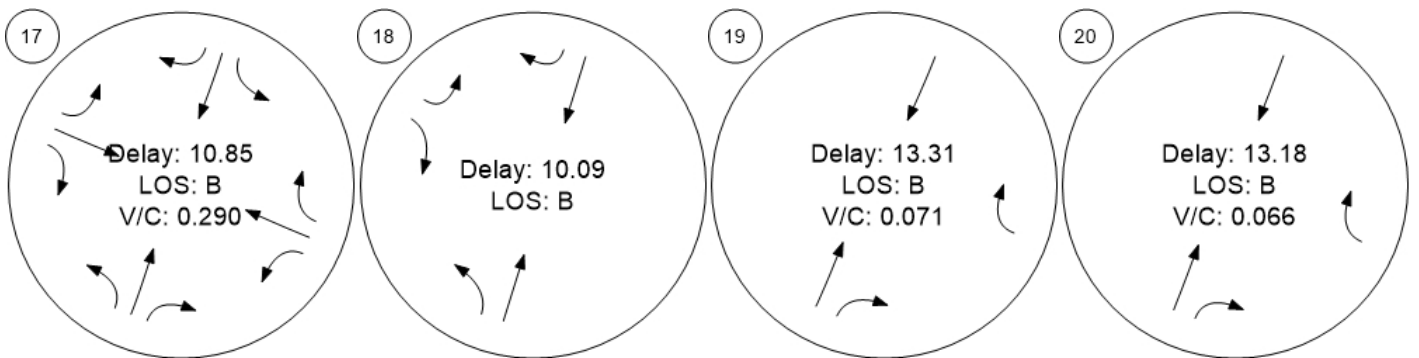
Traffic Conditions



Traffic Conditions



Traffic Conditions



Time Space Diagram - Flowing Off

Route 2:



Route 2:

Time Space Diagram - Arterial Band

Route 2:



Route 2:



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Scenario 2 Internal Analysis PM

Report File: \...\Internal Site Analysis PM.pdf

12/6/2021

**Intersection Analysis Summary**

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	East Loop Road and Driveway A	Two-way stop	HCM 6th Edition	EB Left	0.284	11.9	B
2	East Loop Road and Driveway B	Two-way stop	HCM 6th Edition	EB Left	0.141	16.5	C
3	East Loop Road and Adams Court	Signalized	HCM 6th Edition	SB Thru	0.172	15.2	B
4	East Loop Road and Driveway C	Two-way stop	HCM 6th Edition	EB Left	0.014	17.0	C
5	Main Street and Park Street/Driveway D	Signalized	HCM 6th Edition	WB Left	0.205	17.1	B
6	Park Street and Driveway E	Two-way stop	HCM 6th Edition	NB Left	0.059	12.7	B
7	Driveway E and RS6/RS7	Two-way stop	HCM 6th Edition	EB Left	0.025	8.8	A
8	Park Street and East Street	All-way stop	HCM 6th Edition	WB Thru	0.290	9.1	A
9	East Street and Driveway F	Two-way stop	HCM 6th Edition	WB Left	0.024	8.9	A
10	Center Street and East Street	Two-way stop	HCM 6th Edition	SB Thru	0.016	9.7	A
11	Main Street and East Street	Two-way stop	HCM 6th Edition	NB Left	0.012	10.0	A
12	Driveway G and Park Street	Two-way stop	HCM 6th Edition	SB Left	0.011	15.4	C
13	Dwy H/Dwl and Center Street	Two-way stop	HCM 6th Edition	NB Left	0.029	10.4	B
14	West Street/Dwy J and Park Street	Signalized	HCM 6th Edition	SB Right	0.352	15.7	B
15	West Street and Dwy K/Center Street	All-way stop	HCM 6th Edition	SB Thru	0.235	8.3	A
16	West Street/Dwy L	Two-way stop	HCM 6th Edition	WB Left	0.170	12.8	B
17	Main Street and West Street	Signalized	HCM 6th Edition	EB Right	0.339	16.9	B
18	North loop Road/West Street and Willow Road Tunnel	All-way stop	HCM 6th Edition	SB Thru	0.367	9.3	A




19	Willow Road and Driveway M	Two-way stop	HCM 6th Edition	WB Right	0.150	16.0	C
20	Willow Road and Driveway N	Two-way stop	HCM 6th Edition	WB Right	0.211	20.2	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

**Intersection Level Of Service Report**  
**Intersection 1: East Loop Road and Driveway A**

Control Type:	Two-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.284

**Intersection Setup**

Name	East Loop Road		East Loop Road		Driveway A	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Loop Road		East Loop Road		Driveway A	
Base Volume Input [veh/h]	0	71	30	93	240	108
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	71	30	93	240	108
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	18	8	23	60	27
Total Analysis Volume [veh/h]	0	71	30	93	240	108
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.28	0.11
d_M, Delay for Movement [s/veh]	7.46	0.00	0.00	0.00	11.88	11.28
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	1.90	1.90
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	47.39	47.39
d_A, Approach Delay [s/veh]	0.00		0.00		11.70	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	7.51					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 2: East Loop Road and Driveway B**

Control Type:	Two-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.141

**Intersection Setup**

Name	East Loop Road		East Loop Road		Driveway B	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Loop Road		East Loop Road		Driveway B	
Base Volume Input [veh/h]	142	0	138	0	71	365
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	0	138	0	71	365
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	0	35	0	18	91
Total Analysis Volume [veh/h]	142	0	138	0	71	365
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.10	0.00	0.00	0.00	0.14	0.37
d_M, Delay for Movement [s/veh]	7.77	0.00	0.00	0.00	16.51	13.05
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.33	0.16	0.00	0.00	2.99	2.99
95th-Percentile Queue Length [ft/ln]	8.17	4.08	0.00	0.00	74.74	74.74
d_A, Approach Delay [s/veh]	7.77		0.00		13.62	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	9.83					
Intersection LOS	C					

**Intersection Level Of Service Report**  
**Intersection 3: East Loop Road and Adams Court**

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.172

**Intersection Setup**

Name	East Loop Road			East Loop Road			Adams Court			Adams Court		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↑↑			↑↑			↑↑			↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	East Loop Road			East Loop Road			Adams Court			Adams Court		
Base Volume Input [veh/h]	0	140	10	8	496	0	0	0	30	7	0	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	140	10	8	496	0	0	0	30	7	0	2
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	35	3	2	124	0	0	0	8	2	0	1
Total Analysis Volume [veh/h]	0	140	10	8	496	0	0	0	30	7	0	2
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		



**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	44	0	0	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No				
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No				
Maximum Recall		No			No			No				
Pedestrian Recall		No			No			No				
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C	C	R	
C, Cycle Length [s]	90	90	90	90	90	90	
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	2.00	0.00	0.00	0.00	
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	
g_i, Effective Green Time [s]	42	42	42	42	40	40	
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.44	0.44	
(v / s)_i Volume / Saturation Flow Rate	0.04	0.04	0.14	0.14	0.00	0.02	
s, saturation flow rate [veh/h]	1870	1827	1861	1702	1870	1589	
c, Capacity [veh/h]	873	853	910	794	831	706	
d1, Uniform Delay [s]	13.33	13.35	14.90	14.91	0.00	14.16	
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	
d2, Incremental Delay [s]	0.19	0.20	0.81	0.98	0.00	0.11	
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	

**Lane Group Results**

X, volume / capacity	0.09	0.09	0.29	0.30	0.00	0.04	
d, Delay for Lane Group [s/veh]	13.53	13.55	15.71	15.89	0.00	14.27	
Lane Group LOS	B	B	B	B	A	B	
Critical Lane Group	No	No	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	0.86	0.87	3.41	3.14	0.00	0.36	
50th-Percentile Queue Length [ft/ln]	21.59	21.64	85.24	78.55	0.00	8.97	
95th-Percentile Queue Length [veh/ln]	1.55	1.56	6.14	5.66	0.00	0.65	
95th-Percentile Queue Length [ft/ln]	38.85	38.94	153.43	141.38	0.00	16.14	

**Movement, Approach, & Intersection Results**

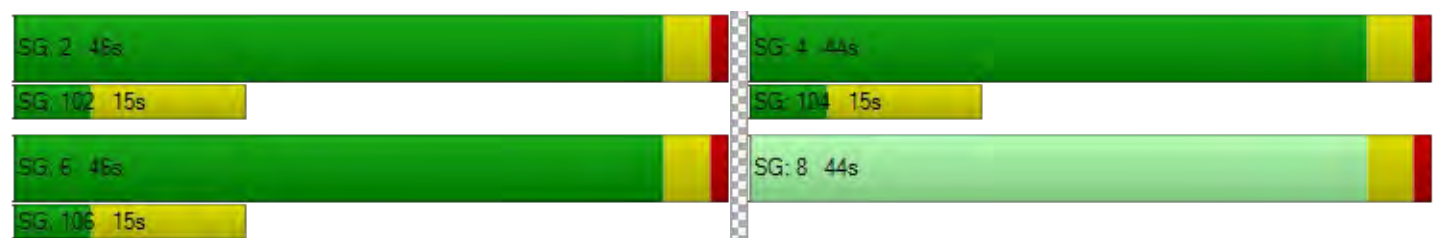
d_M, Delay for Movement [s/veh]	0.00	13.54	13.55	15.71	15.79	0.00	0.00	0.00	14.27	0.00	0.00	0.00
Movement LOS		B	B	B	B		A	A	B			
d_A, Approach Delay [s/veh]		13.54		15.79			14.27			0.00		
Approach LOS		B		B			B			A		
d_I, Intersection Delay [s/veh]		15.23										
Intersection LOS		B										
Intersection V/C		0.172										

**Other Modes**

g_Walk,mi, Effective Walk Time [s]		9.0		9.0		9.0		9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]		0.00		0.00		0.00		0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]		0.00		0.00		0.00		0.00
d_p, Pedestrian Delay [s]		36.45		36.45		36.45		36.45
I_p,int, Pedestrian LOS Score for Intersection		2.297		2.290		1.951		1.959
Crosswalk LOS		B		B		A		A
s_b, Saturation Flow Rate of the bicycle lane		2000		2000		2000		2000
c_b, Capacity of the bicycle lane [bicycles/h]		933		933		889		0
d_b, Bicycle Delay [s]		12.80		12.80		13.89		45.00
I_b,int, Bicycle LOS Score for Intersection		1.683		1.975		1.609		1.560
Bicycle LOS		A		A		A		A

**Sequence**




Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 4: East Loop Road and Driveway C**

Control Type:	Two-way stop	Delay (sec / veh):	17.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

**Intersection Setup**

Name	East Loop Road		East Loop Road		Driveway C	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [ft]	0.00	49.21	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Loop Road		East Loop Road		Driveway C	
Base Volume Input [veh/h]	66	144	472	1	5	220
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	144	472	1	5	220
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	36	118	0	1	55
Total Analysis Volume [veh/h]	66	144	472	1	5	220
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.00	0.01	0.29
d_M, Delay for Movement [s/veh]	8.53	0.00	0.00	0.00	17.01	11.77
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.19	0.10	0.00	0.00	1.27	1.27
95th-Percentile Queue Length [ft/ln]	4.85	2.42	0.00	0.00	31.74	31.74
d_A, Approach Delay [s/veh]	2.68		0.00		11.89	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	3.57					
Intersection LOS	C					

**Intersection Level Of Service Report**  
**Intersection 5: Main Street and Park Street/Driveway D**

Control Type:	Signalized	Delay (sec / veh):	17.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.205

**Intersection Setup**

Name	Park Street			Driveway D			Main Street			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐			⇐⇐			+			⇐+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Park Street			Driveway D			Main Street			Main Street		
Base Volume Input [veh/h]	0	77	151	0	259	65	1	48	0	176	81	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	2.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	77	151	0	259	65	1	48	0	176	81	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	19	38	0	65	16	0	12	0	44	20	0
Total Analysis Volume [veh/h]	0	77	151	0	259	65	1	48	0	176	81	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	6.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	4	0	0	8	0	0	6	0	2	2	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lag	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	5	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	46	0	0	46	0	0	35	0	35	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	5	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	10	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0



**Lane Group Calculations**

Lane Group	C	C	C	C	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	42	42	42	42	31	31	31
g / C, Green / Cycle	0.47	0.47	0.47	0.47	0.34	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.04	0.10	0.09	0.10	0.03	0.08	0.09
s, saturation flow rate [veh/h]	1870	1446	1870	1582	1898	1357	1660
c, Capacity [veh/h]	913	675	913	738	694	494	629
d1, Uniform Delay [s]	13.35	14.29	14.10	14.15	19.85	21.18	20.95
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	0.77	0.46	0.63	0.20	1.08	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.08	0.22	0.19	0.20	0.07	0.23	0.23
d, Delay for Lane Group [s/veh]	13.53	15.06	14.57	14.78	20.05	22.26	21.80
Lane Group LOS	B	B	B	B	C	C	C
Critical Lane Group	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.89	1.91	2.11	1.87	0.72	1.82	2.26
50th-Percentile Queue Length [ft/ln]	22.13	47.64	52.71	46.83	17.93	45.47	56.40
95th-Percentile Queue Length [veh/ln]	1.59	3.43	3.80	3.37	1.29	3.27	4.06
95th-Percentile Queue Length [ft/ln]	39.83	85.75	94.88	84.29	32.27	81.85	101.51

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.53	13.53	15.06	14.57	14.64	14.78	20.05	20.05	20.05	22.11	21.80	21.80
Movement LOS	B	B	B	B	B	B	C	C	C	C	C	C
d_A, Approach Delay [s/veh]	14.54			14.66			20.05			22.00		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	17.14											
Intersection LOS	B											
Intersection V/C	0.205											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	2.567	2.232	1.811	2.090
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	933	689	689
d_b, Bicycle Delay [s]	12.80	12.80	19.34	19.34
I_b,int, Bicycle LOS Score for Intersection	1.748	1.827	1.640	1.984
Bicycle LOS	A	A	A	A

**Sequence**

Ring 1	2	4	10	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 6: Park Street and Driveway E**

Control Type:	Two-way stop	Delay (sec / veh):	12.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.059

**Intersection Setup**

Name	Dwy E		Park Street		Park Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Dwy E		Park Street		Park Street	
Base Volume Input [veh/h]	29	4	247	43	7	440
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	4	247	43	7	440
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	1	62	11	2	110
Total Analysis Volume [veh/h]	29	4	247	43	7	440
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.06	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	12.73	9.57	0.00	0.00	7.85	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.20	0.20	0.00	0.00	0.02	0.01
95th-Percentile Queue Length [ft/ln]	5.04	5.04	0.00	0.00	0.42	0.21
d_A, Approach Delay [s/veh]	12.35		0.00		0.12	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.60					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 7: Driveway E and RS6/RS7**

Control Type:	Two-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

**Intersection Setup**

Name	Dwy E		RS6		RS7	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration	↔		↵		↶	
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Dwy E		RS6		RS7	
Base Volume Input [veh/h]	13	37	24	0	0	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	37	24	0	0	9
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	9	6	0	0	2
Total Analysis Volume [veh/h]	13	37	24	0	0	9
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0


**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	8.80	0.00	0.00	0.00
Movement LOS	A	A	A			A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.08	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.90	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	0.00		8.80		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.55					
Intersection LOS	A					

**Intersection Level Of Service Report  
Intersection 8: Park Street and East Street**

Control Type:	All-way stop	Delay (sec / veh):	9.1
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.290

**Intersection Setup**

Name	East Street		Park Street		Park Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	49.21
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Street		Park Street		Park Street	
Base Volume Input [veh/h]	5	18	27	224	429	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	18	27	224	429	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	5	7	56	107	2
Total Analysis Volume [veh/h]	5	18	27	224	429	7
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	735	712	727	751	754
Degree of Utilization, x	0.03	0.18	0.17	0.29	0.29

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.10	0.64	0.62	1.21	1.20
95th-Percentile Queue Length [ft]	2.42	15.91	15.51	30.15	29.96
Approach Delay [s/veh]	8.06	8.76		9.42	
Approach LOS	A	A		A	
Intersection Delay [s/veh]	9.14				
Intersection LOS	A				

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**Intersection Level Of Service Report  
Intersection 9: East Street and Driveway F**

Control Type:	Two-way stop	Delay (sec / veh):	8.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

**Intersection Setup**

Name	East Street		East Street		Driveway F	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Street		East Street		Driveway F	
Base Volume Input [veh/h]	0	34	18	0	23	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	34	18	0	23	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	9	5	0	6	3
Total Analysis Volume [veh/h]	0	34	18	0	23	12
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.31	0.00	8.95	8.53
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.03	0.03	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.87	0.87	2.77	2.77
d_A, Approach Delay [s/veh]	0.00		7.31		8.80	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	5.05					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 10: Center Street and East Street**

Control Type:	Two-way stop	Delay (sec / veh):	9.7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.016

**Intersection Setup**

Name	East Street		East Street		Center Street	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Street		East Street		Center Street	
Base Volume Input [veh/h]	4	9	13	54	48	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	9	13	54	48	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	3	14	12	1
Total Analysis Volume [veh/h]	4	9	13	54	48	5
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Stop	Free
Flared Lane		No	
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance		No	
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.05	0.03	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	9.73	8.61	7.30	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.21	0.21	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	5.33	5.33	2.30	2.30
d_A, Approach Delay [s/veh]	0.00		8.83		6.61	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	7.08					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 11: Main Street and East Street**

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

**Intersection Setup**

Name	East Street		Main Street		Main Street	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	East Street		Main Street		Main Street	
Base Volume Input [veh/h]	9	48	1	13	54	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	48	1	13	54	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	12	0	3	14	23
Total Analysis Volume [veh/h]	9	48	1	13	54	92
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0




**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.04	0.00	0.00	0.03	0.00
d_M, Delay for Movement [s/veh]	9.99	8.56	0.00	0.00	7.32	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.18	0.18	0.00	0.00	0.10	0.10
95th-Percentile Queue Length [ft/ln]	4.49	4.49	0.00	0.00	2.61	2.61
d_A, Approach Delay [s/veh]	8.79		0.00		2.71	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.13					
Intersection LOS	A					

**Intersection Level Of Service Report**  
**Intersection 12: Driveway G and Park Street**

Control Type:	Two-way stop	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

**Intersection Setup**

Name	Driveway G		Park Street		Park Street	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Driveway G		Park Street		Park Street	
Base Volume Input [veh/h]	4	30	46	287	463	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	30	46	287	463	6
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	8	12	72	116	2
Total Analysis Volume [veh/h]	4	30	46	287	463	6
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.04	0.04	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	15.41	9.97	8.45	0.00	0.00	0.00
Movement LOS	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.16	0.16	0.13	0.07	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3.97	3.97	3.30	1.65	0.00	0.00
d_A, Approach Delay [s/veh]	10.61		1.17		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.90					
Intersection LOS	C					



**Intersection Level Of Service Report**  
**Intersection 13: Dwy H/Dwl and Center Street**

Control Type:	Two-way stop	Delay (sec / veh):	10.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.029

**Intersection Setup**

Name	Dwy H			Dwy I			Center Street			Center Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Dwy H			Dwy I			Center Street			Center Street		
Base Volume Input [veh/h]	20	0	4	29	0	48	52	20	31	6	21	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	0	4	29	0	48	52	20	31	6	21	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	1	7	0	12	13	5	8	2	5	8
Total Analysis Volume [veh/h]	20	0	4	29	0	48	52	20	31	6	21	31
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.00	0.04	0.00	0.05	0.03	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.39	10.57	8.64	10.21	10.78	8.85	7.40	0.00	0.00	7.32	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.10	0.10	0.10	0.28	0.28	0.28	0.10	0.10	0.10	0.01	0.01	0.01
95th-Percentile Queue Length [ft/ln]	2.55	2.55	2.55	6.97	6.97	6.97	2.60	2.60	2.60	0.29	0.29	0.29
d_A, Approach Delay [s/veh]	10.10			9.36			3.73			0.76		
Approach LOS	B			A			A			A		
d_I, Intersection Delay [s/veh]	5.31											
Intersection LOS	B											

**Intersection Level Of Service Report**  
**Intersection 14: West Street/Dwy J and Park Street**

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.352

**Intersection Setup**

Name	Dwy J			West Street			Park Street			Park Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+ +			+ +		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Dwy J			West Street			Park Street			Park Street		
Base Volume Input [veh/h]	12	0	2	0	0	218	136	330	22	3	490	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	0	2	0	0	218	136	330	22	3	490	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	1	0	0	55	34	83	6	1	123	0
Total Analysis Volume [veh/h]	12	0	2	0	0	218	136	330	22	3	490	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	40	0	0	40	0	0	50	0	0	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	36	36	46	46	46	46
g / C, Green / Cycle	0.40	0.40	0.51	0.51	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.01	0.14	0.22	0.18	0.14	0.14
s, saturation flow rate [veh/h]	1381	1589	888	1680	1866	1702
c, Capacity [veh/h]	627	676	522	859	994	870
d1, Uniform Delay [s]	16.33	18.78	17.35	13.06	12.48	12.48
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	1.26	1.98	1.10	0.63	0.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.02	0.32	0.37	0.35	0.26	0.27
d, Delay for Lane Group [s/veh]	16.39	20.04	19.32	14.17	13.11	13.24
Lane Group LOS	B	C	B	B	B	B
Critical Lane Group	No	Yes	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	0.18	3.30	2.96	3.63	2.97	2.73
50th-Percentile Queue Length [ft/ln]	4.56	82.45	73.93	90.72	74.24	68.27
95th-Percentile Queue Length [veh/ln]	0.33	5.94	5.32	6.53	5.35	4.92
95th-Percentile Queue Length [ft/ln]	8.21	148.42	133.07	163.30	133.63	122.88

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	16.39	16.39	16.39	20.04	20.04	20.04	19.32	15.03	14.17	13.11	13.17	13.24
Movement LOS	B	B	B	C	C	C	B	B	B	B	B	B
d_A, Approach Delay [s/veh]	16.39			20.04			16.19			13.17		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	15.66											
Intersection LOS	B											
Intersection V/C	0.352											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
I_p,int, Pedestrian LOS Score for Intersection	1.740	2.082	2.444	2.334
Crosswalk LOS	A	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	800	1022	1022
d_b, Bicycle Delay [s]	16.20	16.20	10.76	10.76
I_b,int, Bicycle LOS Score for Intersection	1.583	1.919	1.962	1.966
Bicycle LOS	A	A	A	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**  
**Intersection 15: West Street and Dwy K/Center Street**

Control Type:	All-way stop	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.235

**Intersection Setup**

Name	West Street			West Street			Dwy K			Center Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	West Street			West Street			Dwy K			Center Street		
Base Volume Input [veh/h]	0	85	52	36	97	61	0	14	74	48	17	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	85	52	36	97	61	0	14	74	48	17	24
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	21	13	9	24	15	0	4	19	12	4	6
Total Analysis Volume [veh/h]	0	85	52	36	97	61	0	14	74	48	17	24
Pedestrian Volume [ped/h]	0			0			0			0		



**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	829	827	839	761
Degree of Utilization, x	0.17	0.23	0.10	0.12

**Movement, Approach, & Intersection Results**

95th-Percentile Queue Length [veh]	0.59	0.91	0.35	0.40
95th-Percentile Queue Length [ft]	14.75	22.74	8.76	9.89
Approach Delay [s/veh]	8.20	8.68	7.79	8.36
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.34			
Intersection LOS	A			

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**Intersection Level Of Service Report  
Intersection 16: West Street/Dwy L**

Control Type:	Two-way stop	Delay (sec / veh):	12.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.170

**Intersection Setup**

Name	West Street		West Street		Driveway L	
Approach	Northbound		Southbound		Westbound	
Lane Configuration	↬		↵		↵	
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	West Street		West Street		Driveway L	
Base Volume Input [veh/h]	24	85	110	97	97	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	85	110	97	97	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	21	28	24	24	13
Total Analysis Volume [veh/h]	24	85	110	97	97	50
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.07	0.00	0.17	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	7.63	0.00	12.82	10.13
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.24	0.24	0.84	0.84
95th-Percentile Queue Length [ft/ln]	0.00	0.00	6.01	6.01	20.90	20.90
d_A, Approach Delay [s/veh]	0.00		4.05		11.91	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.59					
Intersection LOS	B					

**Intersection Level Of Service Report**  
**Intersection 17: Main Street and West Street**

Control Type:	Signalized	Delay (sec / veh):	16.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.339

**Intersection Setup**

Name	West Street			West Street			Driveway N			Main Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+ +			+ +		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	West Street			West Street			Driveway N			Main Street		
Base Volume Input [veh/h]	75	0	0	0	0	310	93	14	208	0	40	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	0	0	0	0	310	93	14	208	0	40	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	0	0	0	0	78	23	4	52	0	10	15
Total Analysis Volume [veh/h]	75	0	0	0	0	310	93	14	208	0	40	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing in	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	2	0	0	6	0	0	4	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	0	10	0	0	10	0	0	10	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	50	0	0	50	0	0	40	0	0	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	C	C	C	C	C	R
C, Cycle Length [s]	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	46	46	36	36	36	36
g / C, Green / Cycle	0.51	0.51	0.40	0.40	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.20	0.08	0.14	0.02	0.04
s, saturation flow rate [veh/h]	1265	1589	1307	1446	1870	1589
c, Capacity [veh/h]	727	852	598	579	788	636
d1, Uniform Delay [s]	11.23	13.36	19.21	18.92	16.55	16.84
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	1.20	0.66	1.74	0.12	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.10	0.36	0.18	0.36	0.05	0.09
d, Delay for Lane Group [s/veh]	11.51	14.56	19.87	20.66	16.68	17.13
Lane Group LOS	B	B	B	C	B	B
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.79	3.88	1.60	3.22	0.52	0.81
50th-Percentile Queue Length [ft/ln]	19.72	97.02	40.02	80.56	13.05	20.19
95th-Percentile Queue Length [veh/ln]	1.42	6.99	2.88	5.80	0.94	1.45
95th-Percentile Queue Length [ft/ln]	35.49	174.63	72.03	145.00	23.49	36.34

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	11.51	11.51	11.51	14.56	14.56	14.56	19.87	19.87	20.66	16.68	16.68	17.13
Movement LOS	B	B	B	B	B	B	B	B	C	B	B	B
d_A, Approach Delay [s/veh]	11.51			14.56			20.39			16.95		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	16.87											
Intersection LOS	B											
Intersection V/C	0.339											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersection	1.854	2.074	2.289	2.160
Crosswalk LOS	A	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1022	1022	800	800
d_b, Bicycle Delay [s]	10.76	10.76	16.20	16.20
l_b,int, Bicycle LOS Score for Intersection	1.683	2.071	1.819	1.725
Bicycle LOS	A	B	A	A

**Sequence**

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-





**Intersection Level Of Service Report****Intersection 18: North loop Road/West Street and Willow Road Tunnel**

Control Type:	All-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.367

**Intersection Setup**

Name	West Street		North Loop Road		Willow Road Tunnel	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration	↶		↷		↷	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	West Street		North Loop Road		Willow Road Tunnel	
Base Volume Input [veh/h]	60	93	310	0	60	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	93	310	0	60	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	23	78	0	15	0
Total Analysis Volume [veh/h]	60	93	310	0	60	0
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

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**Lanes**

Capacity per Entry Lane [veh/h]	801	844	698
Degree of Utilization, x	0.19	0.37	0.09

**Movement, Approach, & Intersection Results**



95th-Percentile Queue Length [veh]	0.70	1.70	0.28
95th-Percentile Queue Length [ft]	17.57	42.48	7.03
Approach Delay [s/veh]	8.56	9.72	8.65
Approach LOS	A	A	A
Intersection Delay [s/veh]	9.26		
Intersection LOS	A		

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**Intersection Level Of Service Report**  
**Intersection 19: Willow Road and Driveway M**

Control Type:	Two-way stop	Delay (sec / veh):	16.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.150

**Intersection Setup**

Name	Willow Road		Willow Road		Driveway M	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	1	0	1	0	0
Exit Pocket Length [ft]	0.00	100.00	0.00	100.00	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road		Willow Road		Driveway M	
Base Volume Input [veh/h]	1301	86	0	1056	0	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1301	86	0	1056	0	58
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	325	22	0	264	0	15
Total Analysis Volume [veh/h]	1301	86	0	1056	0	58
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0


**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.15
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	15.98
Movement LOS	A	A		A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.52
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	13.11
d_A, Approach Delay [s/veh]	0.00		0.00		15.98	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	0.37					
Intersection LOS	C					

**Intersection Level Of Service Report**  
**Intersection 20: Willow Road and Driveway N**

Control Type:	Two-way stop	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.211

**Intersection Setup**

Name	Willow Road		Willow Road		Driveway N	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Willow Road		Willow Road		Driveway N	
Base Volume Input [veh/h]	1698	23	0	1283	0	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1698	23	0	1283	0	63
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	425	6	0	321	0	16
Total Analysis Volume [veh/h]	1698	23	0	1283	0	63
Pedestrian Volume [ped/h]	0		0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.01	0.00	0.21
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	20.22
Movement LOS	A	A		A		C
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.78
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	19.50
d_A, Approach Delay [s/veh]	0.00		0.00		20.22	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]				0.42		
Intersection LOS				C		

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**Turning Movement Volume: Summary**

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
1	East Loop Road and Driveway A	0	71	30	93	240	108	542

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
2	East Loop Road and Driveway B	142	0	138	0	71	365	716

ID	Intersection Name	Northbound		Southbound		Eastbound			Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Thru	Right	Left	Right	
3	East Loop Road and Adams Court	140	10	8	496	0	0	30	7	2	693

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
4	East Loop Road and Driveway C	66	144	472	1	5	220	908

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
5	Main Street and Park Street/Driveway D	0	77	151	0	259	65	1	48	0	176	81	0	858

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
6	Park Street and Driveway E	29	4	247	43	7	440	770

ID	Intersection Name	Southbound		Eastbound	Westbound	Total Volume
		Left	Right	Left	Right	
7	Driveway E and RS6/RS7	13	37	24	9	83

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
8	Park Street and East Street	5	18	27	224	429	7	710

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
9	East Street and Driveway F	0	34	18	0	23	12	87

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
10	Center Street and East Street	4	9	13	54	48	5	133

ID	Intersection Name	Northbound		Eastbound		Westbound		Total Volume
		Left	Right	Thru	Right	Left	Thru	
11	Main Street and East Street	9	48	1	13	54	92	217

ID	Intersection Name	Southbound		Eastbound		Westbound		Total Volume
		Left	Right	Left	Thru	Thru	Right	
12	Driveway G and Park Street	4	30	46	287	463	6	836

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
13	Dwy H/Dwl and Center Street	20	0	4	29	0	48	52	20	31	6	21	31	262

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14	West Street/Dwy J and Park Street	12	0	2	0	0	218	136	330	22	3	490	0	1213



ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
15	West Street and Dwy K/Center Street	0	85	52	36	97	61	0	14	74	48	17	24	508

ID	Intersection Name	Northbound		Southbound		Westbound		Total Volume
		Thru	Right	Left	Thru	Left	Right	
16	West Street/Dwy L	24	85	110	97	97	50	463

ID	Intersection Name	Northbound			Southbound			Eastbound			Westbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Main Street and West Street	75	0	0	0	0	310	93	14	208	0	40	60	800

ID	Intersection Name	Northbound		Southbound		Eastbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
18	North loop Road/West Street and Willow Road Tunnel	60	93	310	0	60	0	523

ID	Intersection Name	Northbound		Southbound	Westbound	Total Volume
		Thru	Right	Thru	Right	
19	Willow Road and Driveway M	1301	86	1056	58	2501

ID	Intersection Name	Northbound		Southbound	Westbound	Total Volume
		Thru	Right	Thru	Right	
20	Willow Road and Driveway N	1698	23	1283	63	3067

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**Turning Movement Volume: Detail**

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
1	East Loop Road and Driveway A	Final Base	0	71	30	93	240	108	542
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>0</b>	<b>71</b>	<b>30</b>	<b>93</b>	<b>240</b>	<b>108</b>	<b>542</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
2	East Loop Road and Driveway B	Final Base	142	0	138	0	71	365	716
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>142</b>	<b>0</b>	<b>138</b>	<b>0</b>	<b>71</b>	<b>365</b>	<b>716</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound			Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Thru	Right	Left	Right	
3	East Loop Road and Adams Court	Final Base	140	10	8	496	0	0	30	7	2	693
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>140</b>	<b>10</b>	<b>8</b>	<b>496</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>7</b>	<b>2</b>	<b>693</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
4	East Loop Road and Driveway C	Final Base	66	144	472	1	5	220	908
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>66</b>	<b>144</b>	<b>472</b>	<b>1</b>	<b>5</b>	<b>220</b>	<b>908</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
5	Main Street and Park Street/Driveway D	Final Base	0	77	151	0	259	65	1	48	0	176	81	0	858
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>0</b>	<b>77</b>	<b>151</b>	<b>0</b>	<b>259</b>	<b>65</b>	<b>1</b>	<b>48</b>	<b>0</b>	<b>176</b>	<b>81</b>	<b>0</b>	<b>858</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
6	Park Street and Driveway E	Final Base	29	4	247	43	7	440	770
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>29</b>	<b>4</b>	<b>247</b>	<b>43</b>	<b>7</b>	<b>440</b>	<b>770</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound	Westbound	Total Volume
			Left	Right	Left	Right	
7	Driveway E and RS6/RS7	Final Base	13	37	24	9	83
		Growth Factor	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0
		Net New Trips	0	0	0	0	0
		Other	0	0	0	0	0
		<b>Future Total</b>	<b>13</b>	<b>37</b>	<b>24</b>	<b>9</b>	<b>83</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
8	Park Street and East Street	Final Base	5	18	27	224	429	7	710
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>5</b>	<b>18</b>	<b>27</b>	<b>224</b>	<b>429</b>	<b>7</b>	<b>710</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
9	East Street and Driveway F	Final Base	0	34	18	0	23	12	87
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>0</b>	<b>34</b>	<b>18</b>	<b>0</b>	<b>23</b>	<b>12</b>	<b>87</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
10	Center Street and East Street	Final Base	4	9	13	54	48	5	133
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>4</b>	<b>9</b>	<b>13</b>	<b>54</b>	<b>48</b>	<b>5</b>	<b>133</b>

ID	Intersection Name	Volume Type	Northbound		Eastbound		Westbound		Total Volume
			Left	Right	Thru	Right	Left	Thru	
11	Main Street and East Street	Final Base	9	48	1	13	54	92	217
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>9</b>	<b>48</b>	<b>1</b>	<b>13</b>	<b>54</b>	<b>92</b>	<b>217</b>

ID	Intersection Name	Volume Type	Southbound		Eastbound		Westbound		Total Volume
			Left	Right	Left	Thru	Thru	Right	
12	Driveway G and Park Street	Final Base	4	30	46	287	463	6	836
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>4</b>	<b>30</b>	<b>46</b>	<b>287</b>	<b>463</b>	<b>6</b>	<b>836</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
13	Dwy H/Dwl and Center Street	Final Base	20	0	4	29	0	48	52	20	31	6	21	31	262	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>20</b>	<b>0</b>	<b>4</b>	<b>29</b>	<b>0</b>	<b>48</b>	<b>52</b>	<b>20</b>	<b>31</b>	<b>6</b>	<b>21</b>	<b>31</b>	<b>31</b>	<b>262</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
14	West Street/Dwy J and Park Street	Final Base	12	0	2	0	0	218	136	330	22	3	490	0	1213
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>12</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>218</b>	<b>136</b>	<b>330</b>	<b>22</b>	<b>3</b>	<b>490</b>	<b>0</b>	<b>1213</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume	
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
15	West Street and Dwy K/Center Street	Final Base	0	85	52	36	97	61	0	14	74	48	17	24	508	
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>0</b>	<b>85</b>	<b>52</b>	<b>36</b>	<b>97</b>	<b>61</b>	<b>0</b>	<b>14</b>	<b>74</b>	<b>48</b>	<b>17</b>	<b>24</b>	<b>508</b>	

ID	Intersection Name	Volume Type	Northbound		Southbound		Westbound		Total Volume
			Thru	Right	Left	Thru	Left	Right	
16	West Street/Dwy L	Final Base	24	85	110	97	97	50	463
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>24</b>	<b>85</b>	<b>110</b>	<b>97</b>	<b>97</b>	<b>50</b>	<b>463</b>

ID	Intersection Name	Volume Type	Northbound			Southbound			Eastbound			Westbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
17	Main Street and West Street	Final Base	75	0	0	0	0	310	93	14	208	0	40	60	800
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>75</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>310</b>	<b>93</b>	<b>14</b>	<b>208</b>	<b>0</b>	<b>40</b>	<b>60</b>

ID	Intersection Name	Volume Type	Northbound		Southbound		Eastbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
18	North loop Road/West Street and Willow Road Tunnel	Final Base	60	93	310	0	60	0	523
		Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	0	0	0	0	0	0
		Other	0	0	0	0	0	0	0
		<b>Future Total</b>	<b>60</b>	<b>93</b>	<b>310</b>	<b>0</b>	<b>60</b>	<b>0</b>	<b>523</b>

ID	Intersection Name	Volume Type	Northbound		Southbound	Westbound	Total Volume
			Thru	Right	Thru	Right	
19	Willow Road and Driveway M	Final Base	1301	86	1056	58	2501
		Growth Factor	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0
		Net New Trips	0	0	0	0	0
		Other	0	0	0	0	0
		<b>Future Total</b>	<b>1301</b>	<b>86</b>	<b>1056</b>	<b>58</b>	<b>2501</b>

ID	Intersection Name	Volume Type	Northbound		Southbound	Westbound	Total Volume
			Thru	Right	Thru	Right	
20	Willow Road and Driveway N	Final Base	1698	23	1283	63	3067
		Growth Factor	1.00	1.00	1.00	1.00	-
		In Process	0	0	0	0	0
		Net New Trips	0	0	0	0	0
		Other	0	0	0	0	0
		<b>Future Total</b>	<b>1698</b>	<b>23</b>	<b>1283</b>	<b>63</b>	<b>3067</b>

## Signal Warrants Report For Intersection 1: East Loop Road and Driveway A

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	W
1	123	71	348
2	119	69	338
3	117	67	331
4	109	63	310
5	97	56	275
6	96	55	271
7	95	55	268
8	86	50	244
9	85	49	240
10	84	48	237
11	73	42	205
12	68	39	191
13	66	38	188
14	49	28	139
15	49	28	139
16	34	20	97
17	20	11	56
18	20	11	56
19	11	6	31
20	6	4	17
21	4	2	10
22	1	1	3
23	1	1	3
24	1	1	3

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	194	1	348	No	No	No	No	No	No	No	No	No	No
2	2	188	1	338	No	No	No	No	No	No	No	No	No	No
3	2	184	1	331	No	No	No	No	No	No	No	No	No	No
4	2	172	1	310	No	No	No	No	No	No	No	No	No	No
5	2	153	1	275	No	No	No	No	No	No	No	No	No	No
6	2	151	1	271	No	No	No	No	No	No	No	No	No	No
7	2	150	1	268	No	No	No	No	No	No	No	No	No	No
8	2	136	1	244	No	No	No	No	No	No	No	No	No	No
9	2	134	1	240	No	No	No	No	No	No	No	No	No	No
10	2	132	1	237	No	No	No	No	No	No	No	No	No	No
11	2	115	1	205	No	No	No	No	No	No	No	No	No	No
12	2	107	1	191	No	No	No	No	No	No	No	No	No	No
13	2	104	1	188	No	No	No	No	No	No	No	No	No	No
14	2	77	1	139	No	No	No	No	No	No	No	No	No	No
15	2	77	1	139	No	No	No	No	No	No	No	No	No	No
16	2	54	1	97	No	No	No	No	No	No	No	No	No	No
17	2	31	1	56	No	No	No	No	No	No	No	No	No	No
18	2	31	1	56	No	No	No	No	No	No	No	No	No	No
19	2	17	1	31	No	No	No	No	No	No	No	No	No	No
20	2	10	1	17	No	No	No	No	No	No	No	No	No	No
21	2	6	1	10	No	No	No	No	No	No	No	No	No	No
22	2	2	1	3	No	No	No	No	No	No	No	No	No	No
23	2	2	1	3	No	No	No	No	No	No	No	No	No	No
24	2	2	1	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	1:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	348
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	542
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 2: East Loop Road and Driveway B

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	W
1	138	142	436
2	134	138	423
3	131	135	414
4	123	126	388
5	109	112	344
6	108	111	340
7	106	109	336
8	97	99	305
9	95	98	301
10	94	97	296
11	81	84	257
12	76	78	240
13	75	77	235
14	55	57	174
15	55	57	174
16	39	40	122
17	22	23	70
18	22	23	70
19	12	13	39
20	7	7	22
21	4	4	13
22	1	1	4
23	1	1	4
24	1	1	4

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	280	1	436	No	No	No	No	No	No	No	No	Yes	No
2	2	272	1	423	No	No	No	No	No	No	No	No	Yes	No
3	2	266	1	414	No	No	No	No	No	No	No	No	Yes	No
4	2	249	1	388	No	No	No	No	No	No	No	No	No	No
5	2	221	1	344	No	No	No	No	No	No	No	No	No	No
6	2	219	1	340	No	No	No	No	No	No	No	No	No	No
7	2	215	1	336	No	No	No	No	No	No	No	No	No	No
8	2	196	1	305	No	No	No	No	No	No	No	No	No	No
9	2	193	1	301	No	No	No	No	No	No	No	No	No	No
10	2	191	1	296	No	No	No	No	No	No	No	No	No	No
11	2	165	1	257	No	No	No	No	No	No	No	No	No	No
12	2	154	1	240	No	No	No	No	No	No	No	No	No	No
13	2	152	1	235	No	No	No	No	No	No	No	No	No	No
14	2	112	1	174	No	No	No	No	No	No	No	No	No	No
15	2	112	1	174	No	No	No	No	No	No	No	No	No	No
16	2	79	1	122	No	No	No	No	No	No	No	No	No	No
17	2	45	1	70	No	No	No	No	No	No	No	No	No	No
18	2	45	1	70	No	No	No	No	No	No	No	No	No	No
19	2	25	1	39	No	No	No	No	No	No	No	No	No	No
20	2	14	1	22	No	No	No	No	No	No	No	No	No	No
21	2	8	1	13	No	No	No	No	No	No	No	No	No	No
22	2	2	1	4	No	No	No	No	No	No	No	No	No	No
23	2	2	1	4	No	No	No	No	No	No	No	No	No	No
24	2	2	1	4	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	3	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	1:38
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	436
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	716
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 4: East Loop Road and Driveway C

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	W
1	473	210	225
2	459	204	218
3	449	200	214
4	421	187	200
5	374	166	178
6	369	164	176
7	364	162	173
8	331	147	158
9	326	145	155
10	322	143	153
11	279	124	133
12	260	116	124
13	255	113	122
14	189	84	90
15	189	84	90
16	132	59	63
17	76	34	36
18	76	34	36
19	43	19	20
20	24	11	11
21	14	6	7
22	5	2	2
23	5	2	2
24	5	2	2

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	683	1	225	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
2	2	663	1	218	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
3	2	649	1	214	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
4	2	608	1	200	Yes	Yes	Yes	Yes	No	No	No	Yes	No	No
5	2	540	1	178	No	Yes	Yes	Yes	No	No	No	Yes	No	No
6	2	533	1	176	No	Yes	Yes	Yes	No	No	No	Yes	No	No
7	2	526	1	173	No	Yes	Yes	Yes	No	No	No	Yes	No	No
8	2	478	1	158	No	No	Yes	Yes	No	No	No	No	No	No
9	2	471	1	155	No	No	Yes	Yes	No	No	No	No	No	No
10	2	465	1	153	No	No	Yes	Yes	No	No	No	No	No	No
11	2	403	1	133	No	No	No	Yes	No	No	No	No	No	No
12	2	376	1	124	No	No	No	Yes	No	No	No	No	No	No
13	2	368	1	122	No	No	No	Yes	No	No	No	No	No	No
14	2	273	1	90	No	No	No	No	No	No	No	No	No	No
15	2	273	1	90	No	No	No	No	No	No	No	No	No	No
16	2	191	1	63	No	No	No	No	No	No	No	No	No	No
17	2	110	1	36	No	No	No	No	No	No	No	No	No	No
18	2	110	1	36	No	No	No	No	No	No	No	No	No	No
19	2	62	1	20	No	No	No	No	No	No	No	No	No	No
20	2	35	1	11	No	No	No	No	No	No	No	No	No	No
21	2	20	1	7	No	No	No	No	No	No	No	No	No	No
22	2	7	1	2	No	No	No	No	No	No	No	No	No	No
23	2	7	1	2	No	No	No	No	No	No	No	No	No	No
24	2	7	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					4	7	10	13	0	0	3	7	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:44
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	225
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	908
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 6: Park Street and Driveway E

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	447	290	33
2	434	281	32
3	425	276	31
4	398	258	29
5	353	229	26
6	349	226	26
7	344	223	25
8	313	203	23
9	308	200	23
10	304	197	22
11	264	171	19
12	246	160	18
13	241	157	18
14	179	116	13
15	179	116	13
16	125	81	9
17	72	46	5
18	72	46	5
19	40	26	3
20	22	15	2
21	13	9	1
22	4	3	0
23	4	3	0
24	4	3	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	737	1	33	No	No	No	No	No	No	No	No	No	No
2	2	715	1	32	No	No	No	No	No	No	No	No	No	No
3	2	701	1	31	No	No	No	No	No	No	No	No	No	No
4	2	656	1	29	No	No	No	No	No	No	No	No	No	No
5	2	582	1	26	No	No	No	No	No	No	No	No	No	No
6	2	575	1	26	No	No	No	No	No	No	No	No	No	No
7	2	567	1	25	No	No	No	No	No	No	No	No	No	No
8	2	516	1	23	No	No	No	No	No	No	No	No	No	No
9	2	508	1	23	No	No	No	No	No	No	No	No	No	No
10	2	501	1	22	No	No	No	No	No	No	No	No	No	No
11	2	435	1	19	No	No	No	No	No	No	No	No	No	No
12	2	406	1	18	No	No	No	No	No	No	No	No	No	No
13	2	398	1	18	No	No	No	No	No	No	No	No	No	No
14	2	295	1	13	No	No	No	No	No	No	No	No	No	No
15	2	295	1	13	No	No	No	No	No	No	No	No	No	No
16	2	206	1	9	No	No	No	No	No	No	No	No	No	No
17	2	118	1	5	No	No	No	No	No	No	No	No	No	No
18	2	118	1	5	No	No	No	No	No	No	No	No	No	No
19	2	66	1	3	No	No	No	No	No	No	No	No	No	No
20	2	37	1	2	No	No	No	No	No	No	No	No	No	No
21	2	22	1	1	No	No	No	No	No	No	No	No	No	No
22	2	7	1	0	No	No	No	No	No	No	No	No	No	No
23	2	7	1	0	No	No	No	No	No	No	No	No	No	No
24	2	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	12.4
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	33
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	770
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 7: Driveway E and RS6/RS7

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, N
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	N	W
1	9	50	24
2	9	49	23
3	9	48	23
4	8	45	21
5	7	40	19
6	7	39	19
7	7	39	18
8	6	35	17
9	6	35	17
10	6	34	16
11	5	30	14
12	5	28	13
13	5	27	13
14	4	20	10
15	4	20	10
16	3	14	7
17	1	8	4
18	1	8	4
19	1	5	2
20	0	3	1
21	0	2	1
22	0	1	0
23	0	1	0
24	0	1	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	59	1	24	No	No	No	No	No	No	No	No	No	No
2	1	58	1	23	No	No	No	No	No	No	No	No	No	No
3	1	57	1	23	No	No	No	No	No	No	No	No	No	No
4	1	53	1	21	No	No	No	No	No	No	No	No	No	No
5	1	47	1	19	No	No	No	No	No	No	No	No	No	No
6	1	46	1	19	No	No	No	No	No	No	No	No	No	No
7	1	46	1	18	No	No	No	No	No	No	No	No	No	No
8	1	41	1	17	No	No	No	No	No	No	No	No	No	No
9	1	41	1	17	No	No	No	No	No	No	No	No	No	No
10	1	40	1	16	No	No	No	No	No	No	No	No	No	No
11	1	35	1	14	No	No	No	No	No	No	No	No	No	No
12	1	33	1	13	No	No	No	No	No	No	No	No	No	No
13	1	32	1	13	No	No	No	No	No	No	No	No	No	No
14	1	24	1	10	No	No	No	No	No	No	No	No	No	No
15	1	24	1	10	No	No	No	No	No	No	No	No	No	No
16	1	17	1	7	No	No	No	No	No	No	No	No	No	No
17	1	9	1	4	No	No	No	No	No	No	No	No	No	No
18	1	9	1	4	No	No	No	No	No	No	No	No	No	No
19	1	6	1	2	No	No	No	No	No	No	No	No	No	No
20	1	3	1	1	No	No	No	No	No	No	No	No	No	No
21	1	2	1	1	No	No	No	No	No	No	No	No	No	No
22	1	1	1	0	No	No	No	No	No	No	No	No	No	No
23	1	1	1	0	No	No	No	No	No	No	No	No	No	No
24	1	1	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	24
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	83
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 8: Park Street and East Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	436	251	23
2	423	243	22
3	414	238	22
4	388	223	20
5	344	198	18
6	340	196	18
7	336	193	18
8	305	176	16
9	301	173	16
10	296	171	16
11	257	148	14
12	240	138	13
13	235	136	12
14	174	100	9
15	174	100	9
16	122	70	6
17	70	40	4
18	70	40	4
19	39	23	2
20	22	13	1
21	13	8	1
22	4	3	0
23	4	3	0
24	4	3	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	687	1	23	No	No	No	No	No	No	No	No	No	No
2	2	666	1	22	No	No	No	No	No	No	No	No	No	No
3	2	652	1	22	No	No	No	No	No	No	No	No	No	No
4	2	611	1	20	No	No	No	No	No	No	No	No	No	No
5	2	542	1	18	No	No	No	No	No	No	No	No	No	No
6	2	536	1	18	No	No	No	No	No	No	No	No	No	No
7	2	529	1	18	No	No	No	No	No	No	No	No	No	No
8	2	481	1	16	No	No	No	No	No	No	No	No	No	No
9	2	474	1	16	No	No	No	No	No	No	No	No	No	No
10	2	467	1	16	No	No	No	No	No	No	No	No	No	No
11	2	405	1	14	No	No	No	No	No	No	No	No	No	No
12	2	378	1	13	No	No	No	No	No	No	No	No	No	No
13	2	371	1	12	No	No	No	No	No	No	No	No	No	No
14	2	274	1	9	No	No	No	No	No	No	No	No	No	No
15	2	274	1	9	No	No	No	No	No	No	No	No	No	No
16	2	192	1	6	No	No	No	No	No	No	No	No	No	No
17	2	110	1	4	No	No	No	No	No	No	No	No	No	No
18	2	110	1	4	No	No	No	No	No	No	No	No	No	No
19	2	62	1	2	No	No	No	No	No	No	No	No	No	No
20	2	35	1	1	No	No	No	No	No	No	No	No	No	No
21	2	21	1	1	No	No	No	No	No	No	No	No	No	No
22	2	7	1	0	No	No	No	No	No	No	No	No	No	No
23	2	7	1	0	No	No	No	No	No	No	No	No	No	No
24	2	7	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.1
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:03
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	23
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	710
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 9: East Street and Driveway F

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	18	34	35
2	17	33	34
3	17	32	33
4	16	30	31
5	14	27	28
6	14	27	27
7	14	26	27
8	13	24	25
9	12	23	24
10	12	23	24
11	11	20	21
12	10	19	19
13	10	18	19
14	7	14	14
15	7	14	14
16	5	10	10
17	3	5	6
18	3	5	6
19	2	3	3
20	1	2	2
21	1	1	1
22	0	0	0
23	0	0	0
24	0	0	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	52	1	35	No	No	No	No	No	No	No	No	No	No
2	1	50	1	34	No	No	No	No	No	No	No	No	No	No
3	1	49	1	33	No	No	No	No	No	No	No	No	No	No
4	1	46	1	31	No	No	No	No	No	No	No	No	No	No
5	1	41	1	28	No	No	No	No	No	No	No	No	No	No
6	1	41	1	27	No	No	No	No	No	No	No	No	No	No
7	1	40	1	27	No	No	No	No	No	No	No	No	No	No
8	1	37	1	25	No	No	No	No	No	No	No	No	No	No
9	1	35	1	24	No	No	No	No	No	No	No	No	No	No
10	1	35	1	24	No	No	No	No	No	No	No	No	No	No
11	1	31	1	21	No	No	No	No	No	No	No	No	No	No
12	1	29	1	19	No	No	No	No	No	No	No	No	No	No
13	1	28	1	19	No	No	No	No	No	No	No	No	No	No
14	1	21	1	14	No	No	No	No	No	No	No	No	No	No
15	1	21	1	14	No	No	No	No	No	No	No	No	No	No
16	1	15	1	10	No	No	No	No	No	No	No	No	No	No
17	1	8	1	6	No	No	No	No	No	No	No	No	No	No
18	1	8	1	6	No	No	No	No	No	No	No	No	No	No
19	1	5	1	3	No	No	No	No	No	No	No	No	No	No
20	1	3	1	2	No	No	No	No	No	No	No	No	No	No
21	1	2	1	1	No	No	No	No	No	No	No	No	No	No
22	1	0	1	0	No	No	No	No	No	No	No	No	No	No
23	1	0	1	0	No	No	No	No	No	No	No	No	No	No
24	1	0	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:05
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	35
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	87
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 10: Center Street and East Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	W, S
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	W	S	N
1	53	13	67
2	51	13	65
3	50	12	64
4	47	12	60
5	42	10	53
6	41	10	52
7	41	10	52
8	37	9	47
9	37	9	46
10	36	9	46
11	31	8	40
12	29	7	37
13	29	7	36
14	21	5	27
15	21	5	27
16	15	4	19
17	8	2	11
18	8	2	11
19	5	1	6
20	3	1	3
21	2	0	2
22	1	0	1
23	1	0	1
24	1	0	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	66	1	67	No	No	No	No	No	No	No	No	No	No
2	1	64	1	65	No	No	No	No	No	No	No	No	No	No
3	1	62	1	64	No	No	No	No	No	No	No	No	No	No
4	1	59	1	60	No	No	No	No	No	No	No	No	No	No
5	1	52	1	53	No	No	No	No	No	No	No	No	No	No
6	1	51	1	52	No	No	No	No	No	No	No	No	No	No
7	1	51	1	52	No	No	No	No	No	No	No	No	No	No
8	1	46	1	47	No	No	No	No	No	No	No	No	No	No
9	1	46	1	46	No	No	No	No	No	No	No	No	No	No
10	1	45	1	46	No	No	No	No	No	No	No	No	No	No
11	1	39	1	40	No	No	No	No	No	No	No	No	No	No
12	1	36	1	37	No	No	No	No	No	No	No	No	No	No
13	1	36	1	36	No	No	No	No	No	No	No	No	No	No
14	1	26	1	27	No	No	No	No	No	No	No	No	No	No
15	1	26	1	27	No	No	No	No	No	No	No	No	No	No
16	1	19	1	19	No	No	No	No	No	No	No	No	No	No
17	1	10	1	11	No	No	No	No	No	No	No	No	No	No
18	1	10	1	11	No	No	No	No	No	No	No	No	No	No
19	1	6	1	6	No	No	No	No	No	No	No	No	No	No
20	1	4	1	3	No	No	No	No	No	No	No	No	No	No
21	1	2	1	2	No	No	No	No	No	No	No	No	No	No
22	1	1	1	1	No	No	No	No	No	No	No	No	No	No
23	1	1	1	1	No	No	No	No	No	No	No	No	No	No
24	1	1	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	67
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	133
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 11: Main Street and East Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	S
1	146	14	57
2	142	14	55
3	139	13	54
4	130	12	51
5	115	11	45
6	114	11	44
7	112	11	44
8	102	10	40
9	101	10	39
10	99	10	39
11	86	8	34
12	80	8	31
13	79	8	31
14	58	6	23
15	58	6	23
16	41	4	16
17	23	2	9
18	23	2	9
19	13	1	5
20	7	1	3
21	4	0	2
22	1	0	1
23	1	0	1
24	1	0	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	160	1	57	No	No	No	No	No	No	No	No	No	No
2	1	156	1	55	No	No	No	No	No	No	No	No	No	No
3	1	152	1	54	No	No	No	No	No	No	No	No	No	No
4	1	142	1	51	No	No	No	No	No	No	No	No	No	No
5	1	126	1	45	No	No	No	No	No	No	No	No	No	No
6	1	125	1	44	No	No	No	No	No	No	No	No	No	No
7	1	123	1	44	No	No	No	No	No	No	No	No	No	No
8	1	112	1	40	No	No	No	No	No	No	No	No	No	No
9	1	111	1	39	No	No	No	No	No	No	No	No	No	No
10	1	109	1	39	No	No	No	No	No	No	No	No	No	No
11	1	94	1	34	No	No	No	No	No	No	No	No	No	No
12	1	88	1	31	No	No	No	No	No	No	No	No	No	No
13	1	87	1	31	No	No	No	No	No	No	No	No	No	No
14	1	64	1	23	No	No	No	No	No	No	No	No	No	No
15	1	64	1	23	No	No	No	No	No	No	No	No	No	No
16	1	45	1	16	No	No	No	No	No	No	No	No	No	No
17	1	25	1	9	No	No	No	No	No	No	No	No	No	No
18	1	25	1	9	No	No	No	No	No	No	No	No	No	No
19	1	14	1	5	No	No	No	No	No	No	No	No	No	No
20	1	8	1	3	No	No	No	No	No	No	No	No	No	No
21	1	4	1	2	No	No	No	No	No	No	No	No	No	No
22	1	1	1	1	No	No	No	No	No	No	No	No	No	No
23	1	1	1	1	No	No	No	No	No	No	No	No	No	No
24	1	1	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:08
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	57
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	217
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 12: Driveway G and Park Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	469	333	34
2	455	323	33
3	446	316	32
4	417	296	30
5	371	263	27
6	366	260	27
7	361	256	26
8	328	233	24
9	324	230	23
10	319	226	23
11	277	196	20
12	258	183	19
13	253	180	18
14	188	133	14
15	188	133	14
16	131	93	10
17	75	53	5
18	75	53	5
19	42	30	3
20	23	17	2
21	14	10	1
22	5	3	0
23	5	3	0
24	5	3	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	802	1	34	No	No	No	No	No	No	No	No	No	No
2	2	778	1	33	No	No	No	No	No	No	No	No	No	No
3	2	762	1	32	No	No	No	No	No	No	No	No	No	No
4	2	713	1	30	No	No	No	No	No	No	No	No	No	No
5	2	634	1	27	No	No	No	No	No	No	No	No	No	No
6	2	626	1	27	No	No	No	No	No	No	No	No	No	No
7	2	617	1	26	No	No	No	No	No	No	No	No	No	No
8	2	561	1	24	No	No	No	No	No	No	No	No	No	No
9	2	554	1	23	No	No	No	No	No	No	No	No	No	No
10	2	545	1	23	No	No	No	No	No	No	No	No	No	No
11	2	473	1	20	No	No	No	No	No	No	No	No	No	No
12	2	441	1	19	No	No	No	No	No	No	No	No	No	No
13	2	433	1	18	No	No	No	No	No	No	No	No	No	No
14	2	321	1	14	No	No	No	No	No	No	No	No	No	No
15	2	321	1	14	No	No	No	No	No	No	No	No	No	No
16	2	224	1	10	No	No	No	No	No	No	No	No	No	No
17	2	128	1	5	No	No	No	No	No	No	No	No	No	No
18	2	128	1	5	No	No	No	No	No	No	No	No	No	No
19	2	72	1	3	No	No	No	No	No	No	No	No	No	No
20	2	40	1	2	No	No	No	No	No	No	No	No	No	No
21	2	24	1	1	No	No	No	No	No	No	No	No	No	No
22	2	8	1	0	No	No	No	No	No	No	No	No	No	No
23	2	8	1	0	No	No	No	No	No	No	No	No	No	No
24	2	8	1	0	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:06
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	34
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	836
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 13: Dwy H/Dwl and Center Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N, S
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	N	S
1	58	103	77	24
2	56	100	75	23
3	55	98	73	23
4	52	92	69	21
5	46	81	61	19
6	45	80	60	19
7	45	79	59	18
8	41	72	54	17
9	40	71	53	17
10	39	70	52	16
11	34	61	45	14
12	32	57	42	13
13	31	56	42	13
14	23	41	31	10
15	23	41	31	10
16	16	29	22	7
17	9	16	12	4
18	9	16	12	4
19	5	9	7	2
20	3	5	4	1
21	2	3	2	1
22	1	1	1	0
23	1	1	1	0
24	1	1	1	0

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	161	1	77	No	No	No	No	No	No	No	No	No	No
2	1	156	1	75	No	No	No	No	No	No	No	No	No	No
3	1	153	1	73	No	No	No	No	No	No	No	No	No	No
4	1	144	1	69	No	No	No	No	No	No	No	No	No	No
5	1	127	1	61	No	No	No	No	No	No	No	No	No	No
6	1	125	1	60	No	No	No	No	No	No	No	No	No	No
7	1	124	1	59	No	No	No	No	No	No	No	No	No	No
8	1	113	1	54	No	No	No	No	No	No	No	No	No	No
9	1	111	1	53	No	No	No	No	No	No	No	No	No	No
10	1	109	1	52	No	No	No	No	No	No	No	No	No	No
11	1	95	1	45	No	No	No	No	No	No	No	No	No	No
12	1	89	1	42	No	No	No	No	No	No	No	No	No	No
13	1	87	1	42	No	No	No	No	No	No	No	No	No	No
14	1	64	1	31	No	No	No	No	No	No	No	No	No	No
15	1	64	1	31	No	No	No	No	No	No	No	No	No	No
16	1	45	1	22	No	No	No	No	No	No	No	No	No	No
17	1	25	1	12	No	No	No	No	No	No	No	No	No	No
18	1	25	1	12	No	No	No	No	No	No	No	No	No	No
19	1	14	1	7	No	No	No	No	No	No	No	No	No	No
20	1	8	1	4	No	No	No	No	No	No	No	No	No	No
21	1	5	1	2	No	No	No	No	No	No	No	No	No	No
22	1	2	1	1	No	No	No	No	No	No	No	No	No	No
23	1	2	1	1	No	No	No	No	No	No	No	No	No	No
24	1	2	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	N	S
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.4	10.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:12	0:04
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	77	24
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	262	262
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 15: West Street and Dwy K/Center Street

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E, W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	N	S	E	W
1	194	137	89	88
2	188	133	86	85
3	184	130	85	84
4	173	122	79	78
5	153	108	70	70
6	151	107	69	69
7	149	105	69	68
8	136	96	62	62
9	134	95	61	61
10	132	93	61	60
11	114	81	53	52
12	107	75	49	48
13	105	74	48	48
14	78	55	36	35
15	78	55	36	35
16	54	38	25	25
17	31	22	14	14
18	31	22	14	14
19	17	12	8	8
20	10	7	4	4
21	6	4	3	3
22	2	1	1	1
23	2	1	1	1
24	2	1	1	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	331	1	89	No	No	No	Yes	No	No	No	No	No	No
2	1	321	1	86	No	No	No	Yes	No	No	No	No	No	No
3	1	314	1	85	No	No	No	Yes	No	No	No	No	No	No
4	1	295	1	79	No	No	No	No	No	No	No	No	No	No
5	1	261	1	70	No	No	No	No	No	No	No	No	No	No
6	1	258	1	69	No	No	No	No	No	No	No	No	No	No
7	1	254	1	69	No	No	No	No	No	No	No	No	No	No
8	1	232	1	62	No	No	No	No	No	No	No	No	No	No
9	1	229	1	61	No	No	No	No	No	No	No	No	No	No
10	1	225	1	61	No	No	No	No	No	No	No	No	No	No
11	1	195	1	53	No	No	No	No	No	No	No	No	No	No
12	1	182	1	49	No	No	No	No	No	No	No	No	No	No
13	1	179	1	48	No	No	No	No	No	No	No	No	No	No
14	1	133	1	36	No	No	No	No	No	No	No	No	No	No
15	1	133	1	36	No	No	No	No	No	No	No	No	No	No
16	1	92	1	25	No	No	No	No	No	No	No	No	No	No
17	1	53	1	14	No	No	No	No	No	No	No	No	No	No
18	1	53	1	14	No	No	No	No	No	No	No	No	No	No
19	1	29	1	8	No	No	No	No	No	No	No	No	No	No
20	1	17	1	4	No	No	No	No	No	No	No	No	No	No
21	1	10	1	3	No	No	No	No	No	No	No	No	No	No
22	1	3	1	1	No	No	No	No	No	No	No	No	No	No
23	1	3	1	1	No	No	No	No	No	No	No	No	No	No
24	1	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	E	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.4	7.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:12	0:11
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	89	88
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	508	508
Number of Approaches on Intersection	4	4
Total Volume Condition Met	No	No
Warrant Met for Approach	No	No
<b>Warrant Met for Intersection</b>	<b>No</b>	

## Signal Warrants Report For Intersection 16: West Street/Dwy L

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	207	109	147
2	201	106	143
3	197	104	140
4	184	97	131
5	164	86	116
6	161	85	115
7	159	84	113
8	145	76	103
9	143	75	101
10	141	74	100
11	122	64	87
12	114	60	81
13	112	59	79
14	83	44	59
15	83	44	59
16	58	31	41
17	33	17	24
18	33	17	24
19	19	10	13
20	10	5	7
21	6	3	4
22	2	1	1
23	2	1	1
24	2	1	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	316	1	147	No	No	No	Yes	No	No	No	No	No	No
2	1	307	1	143	No	No	No	Yes	No	No	No	No	No	No
3	1	301	1	140	No	No	No	Yes	No	No	No	No	No	No
4	1	281	1	131	No	No	No	Yes	No	No	No	No	No	No
5	1	250	1	116	No	No	No	No	No	No	No	No	No	No
6	1	246	1	115	No	No	No	No	No	No	No	No	No	No
7	1	243	1	113	No	No	No	No	No	No	No	No	No	No
8	1	221	1	103	No	No	No	No	No	No	No	No	No	No
9	1	218	1	101	No	No	No	No	No	No	No	No	No	No
10	1	215	1	100	No	No	No	No	No	No	No	No	No	No
11	1	186	1	87	No	No	No	No	No	No	No	No	No	No
12	1	174	1	81	No	No	No	No	No	No	No	No	No	No
13	1	171	1	79	No	No	No	No	No	No	No	No	No	No
14	1	127	1	59	No	No	No	No	No	No	No	No	No	No
15	1	127	1	59	No	No	No	No	No	No	No	No	No	No
16	1	89	1	41	No	No	No	No	No	No	No	No	No	No
17	1	50	1	24	No	No	No	No	No	No	No	No	No	No
18	1	50	1	24	No	No	No	No	No	No	No	No	No	No
19	1	29	1	13	No	No	No	No	No	No	No	No	No	No
20	1	15	1	7	No	No	No	No	No	No	No	No	No	No
21	1	9	1	4	No	No	No	No	No	No	No	No	No	No
22	1	3	1	1	No	No	No	No	No	No	No	No	No	No
23	1	3	1	1	No	No	No	No	No	No	No	No	No	No
24	1	3	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	4	0	0	0	0	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.9
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]:mm)	0:29
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	147
High Minor Volume Condition Met	Yes
Total Entering Volume on All Approaches During Same Hour	463
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>



## Signal Warrants Report For Intersection 18: North loop Road/West Street and Willow Road Tunnel

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	W
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	W
1	310	153	60
2	301	148	58
3	295	145	57
4	276	136	53
5	245	121	47
6	242	119	47
7	239	118	46
8	217	107	42
9	214	106	41
10	211	104	41
11	183	90	35
12	171	84	33
13	167	83	32
14	124	61	24
15	124	61	24
16	87	43	17
17	50	24	10
18	50	24	10
19	28	14	5
20	16	8	3
21	9	5	2
22	3	2	1
23	3	2	1
24	3	2	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	1	463	1	60	No	No	No	No	No	No	No	Yes	No	No
2	1	449	1	58	No	No	No	No	No	No	No	Yes	No	No
3	1	440	1	57	No	No	No	No	No	No	No	Yes	No	No
4	1	412	1	53	No	No	No	No	No	No	No	No	No	No
5	1	366	1	47	No	No	No	No	No	No	No	No	No	No
6	1	361	1	47	No	No	No	No	No	No	No	No	No	No
7	1	357	1	46	No	No	No	No	No	No	No	No	No	No
8	1	324	1	42	No	No	No	No	No	No	No	No	No	No
9	1	320	1	41	No	No	No	No	No	No	No	No	No	No
10	1	315	1	41	No	No	No	No	No	No	No	No	No	No
11	1	273	1	35	No	No	No	No	No	No	No	No	No	No
12	1	255	1	33	No	No	No	No	No	No	No	No	No	No
13	1	250	1	32	No	No	No	No	No	No	No	No	No	No
14	1	185	1	24	No	No	No	No	No	No	No	No	No	No
15	1	185	1	24	No	No	No	No	No	No	No	No	No	No
16	1	130	1	17	No	No	No	No	No	No	No	No	No	No
17	1	74	1	10	No	No	No	No	No	No	No	No	No	No
18	1	74	1	10	No	No	No	No	No	No	No	No	No	No
19	1	42	1	5	No	No	No	No	No	No	No	No	No	No
20	1	24	1	3	No	No	No	No	No	No	No	No	No	No
21	1	14	1	2	No	No	No	No	No	No	No	No	No	No
22	1	5	1	1	No	No	No	No	No	No	No	No	No	No
23	1	5	1	1	No	No	No	No	No	No	No	No	No	No
24	1	5	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	3	0	0

## Warrant 3 Condition A

Orientation	W
Total Stopped Delay Per Vehicle on Minor Approach (s)	8.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:08
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	60
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	523
Number of Approaches on Intersection	3
Total Volume Condition Met	No
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 19: Willow Road and Driveway M

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	1056	1387	58
2	1024	1345	56
3	1003	1318	55
4	940	1234	52
5	834	1096	46
6	824	1082	45
7	813	1068	45
8	739	971	41
9	729	957	40
10	718	943	39
11	623	818	34
12	581	763	32
13	570	749	31
14	422	555	23
15	422	555	23
16	296	388	16
17	169	222	9
18	169	222	9
19	95	125	5
20	53	69	3
21	32	42	2
22	11	14	1
23	11	14	1
24	11	14	1

## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	2443	1	58	No	No	No	No	No	No	Yes	Yes	No	No
2	2	2369	1	56	No	No	No	No	No	No	Yes	Yes	No	No
3	2	2321	1	55	No	No	No	No	No	No	Yes	Yes	No	No
4	2	2174	1	52	No	No	No	No	No	No	Yes	Yes	No	No
5	2	1930	1	46	No	No	No	No	No	No	No	Yes	No	No
6	2	1906	1	45	No	No	No	No	No	No	No	Yes	No	No
7	2	1881	1	45	No	No	No	No	No	No	No	Yes	No	No
8	2	1710	1	41	No	No	No	No	No	No	No	No	No	No
9	2	1686	1	40	No	No	No	No	No	No	No	No	No	No
10	2	1661	1	39	No	No	No	No	No	No	No	No	No	No
11	2	1441	1	34	No	No	No	No	No	No	No	No	No	No
12	2	1344	1	32	No	No	No	No	No	No	No	No	No	No
13	2	1319	1	31	No	No	No	No	No	No	No	No	No	No
14	2	977	1	23	No	No	No	No	No	No	No	No	No	No
15	2	977	1	23	No	No	No	No	No	No	No	No	No	No
16	2	684	1	16	No	No	No	No	No	No	No	No	No	No
17	2	391	1	9	No	No	No	No	No	No	No	No	No	No
18	2	391	1	9	No	No	No	No	No	No	No	No	No	No
19	2	220	1	5	No	No	No	No	No	No	No	No	No	No
20	2	122	1	3	No	No	No	No	No	No	No	No	No	No
21	2	74	1	2	No	No	No	No	No	No	No	No	No	No
22	2	25	1	1	No	No	No	No	No	No	No	No	No	No
23	2	25	1	1	No	No	No	No	No	No	No	No	No	No
24	2	25	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	4	7	0	0

## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	16
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:15
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	58
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	2501
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

## Signal Warrants Report For Intersection 20: Willow Road and Driveway N

## Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

## Intersection Warrants Parameters

Major Approaches	N, S
Minor Approaches	E
Speed > 40mph	No
Population < 10,000	No
Warrant Factor	100%

## Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	N	S	E
1	1283	1721	63
2	1245	1669	61
3	1219	1635	60
4	1142	1532	56
5	1014	1360	50
6	1001	1342	49
7	988	1325	49
8	898	1205	44
9	885	1187	43
10	872	1170	43
11	757	1015	37
12	706	947	35
13	693	929	34
14	513	688	25
15	513	688	25
16	359	482	18
17	205	275	10
18	205	275	10
19	115	155	6
20	64	86	3
21	38	52	2
22	13	17	1
23	13	17	1
24	13	17	1

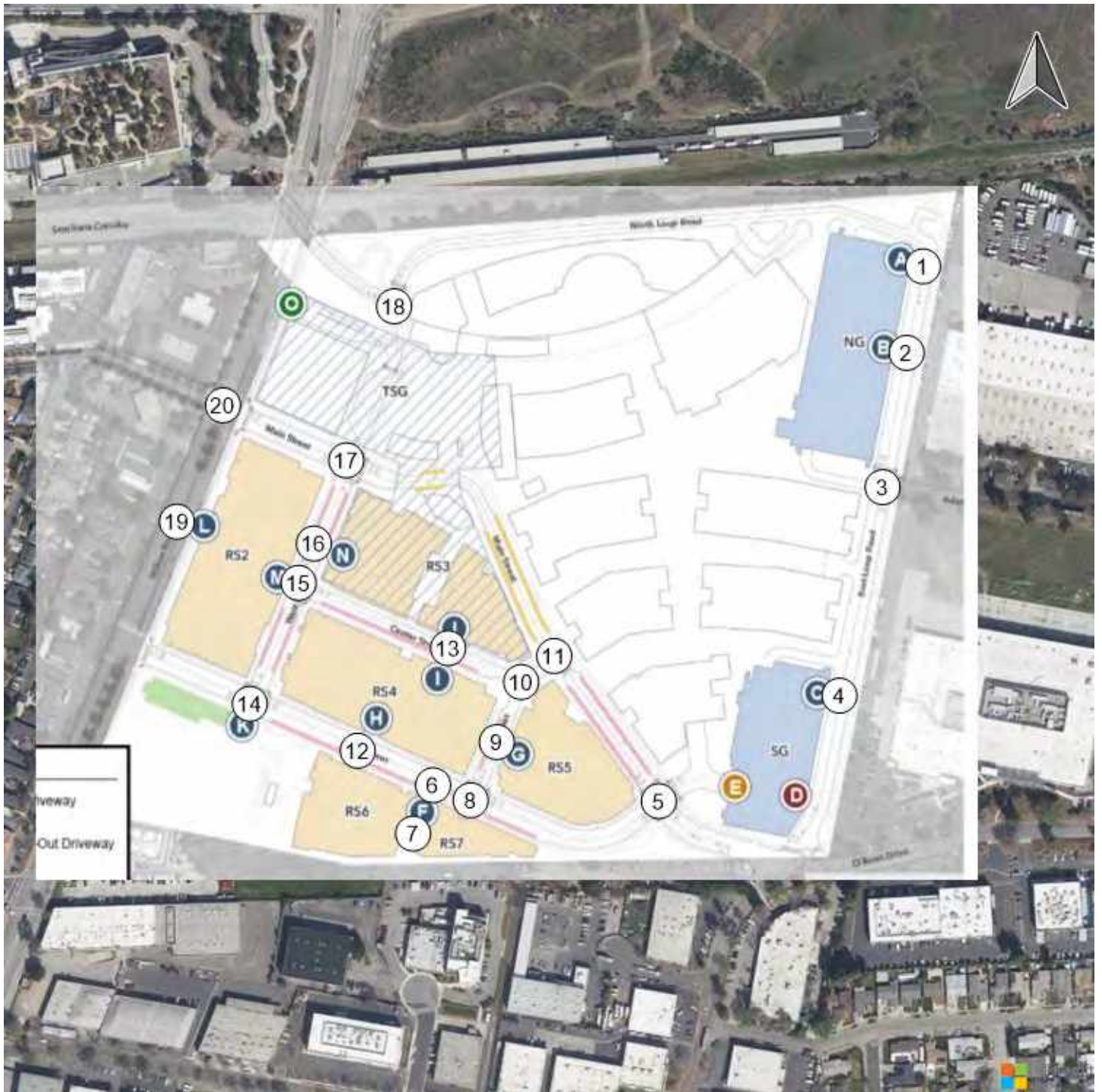
## Warrant Analysis by Hour

Hour	Major Streets		Minor Street		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3 Condition B
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		
1	2	3004	1	63	No	No	No	No	No	Yes	Yes	Yes	No	No
2	2	2914	1	61	No	No	No	No	No	Yes	Yes	Yes	No	No
3	2	2854	1	60	No	No	No	No	No	Yes	Yes	Yes	No	No
4	2	2674	1	56	No	No	No	No	No	No	Yes	Yes	No	No
5	2	2374	1	50	No	No	No	No	No	No	No	Yes	No	No
6	2	2343	1	49	No	No	No	No	No	No	No	Yes	No	No
7	2	2313	1	49	No	No	No	No	No	No	No	Yes	No	No
8	2	2103	1	44	No	No	No	No	No	No	No	Yes	No	No
9	2	2072	1	43	No	No	No	No	No	No	No	Yes	No	No
10	2	2042	1	43	No	No	No	No	No	No	No	Yes	No	No
11	2	1772	1	37	No	No	No	No	No	No	No	No	No	No
12	2	1653	1	35	No	No	No	No	No	No	No	No	No	No
13	2	1622	1	34	No	No	No	No	No	No	No	No	No	No
14	2	1201	1	25	No	No	No	No	No	No	No	No	No	No
15	2	1201	1	25	No	No	No	No	No	No	No	No	No	No
16	2	841	1	18	No	No	No	No	No	No	No	No	No	No
17	2	480	1	10	No	No	No	No	No	No	No	No	No	No
18	2	480	1	10	No	No	No	No	No	No	No	No	No	No
19	2	270	1	6	No	No	No	No	No	No	No	No	No	No
20	2	150	1	3	No	No	No	No	No	No	No	No	No	No
21	2	90	1	2	No	No	No	No	No	No	No	No	No	No
22	2	30	1	1	No	No	No	No	No	No	No	No	No	No
23	2	30	1	1	No	No	No	No	No	No	No	No	No	No
24	2	30	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	3	4	10	0	0

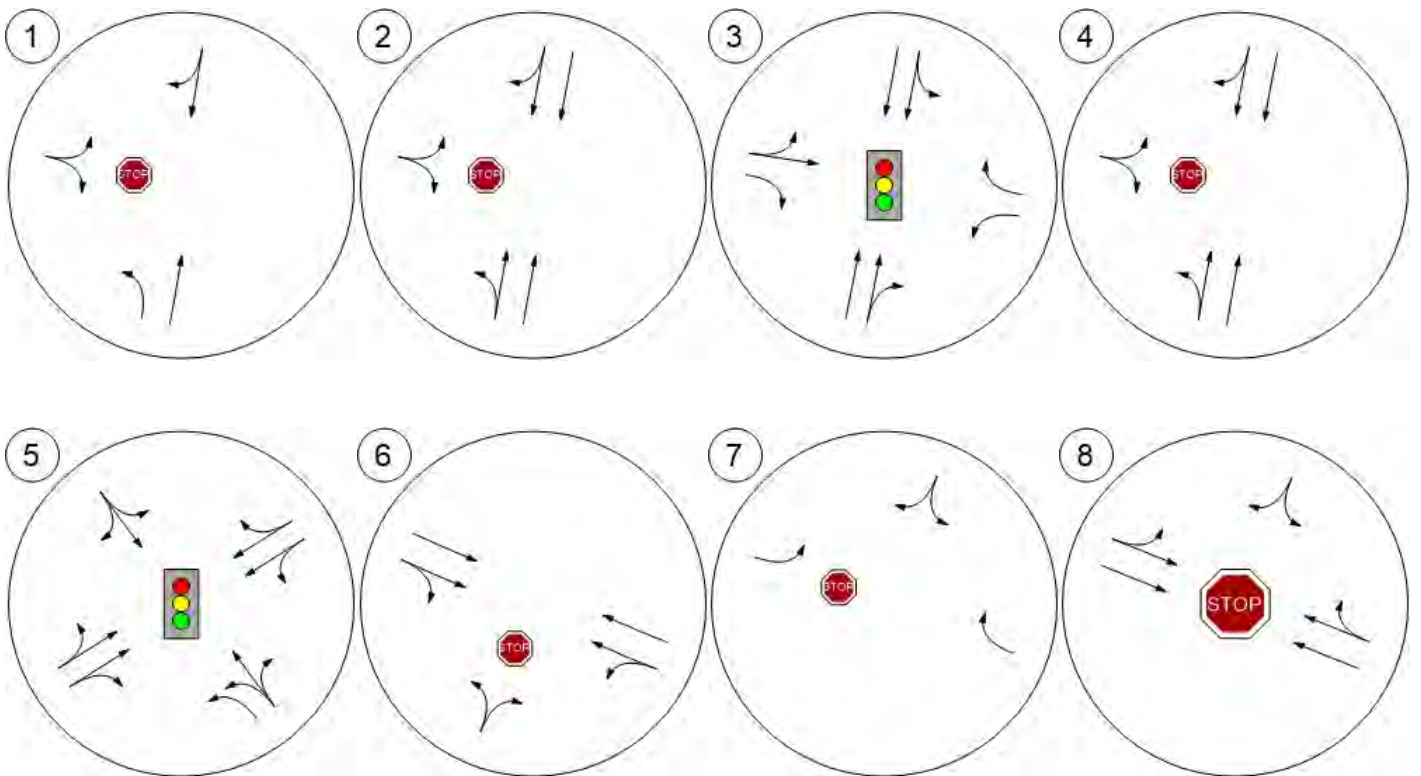
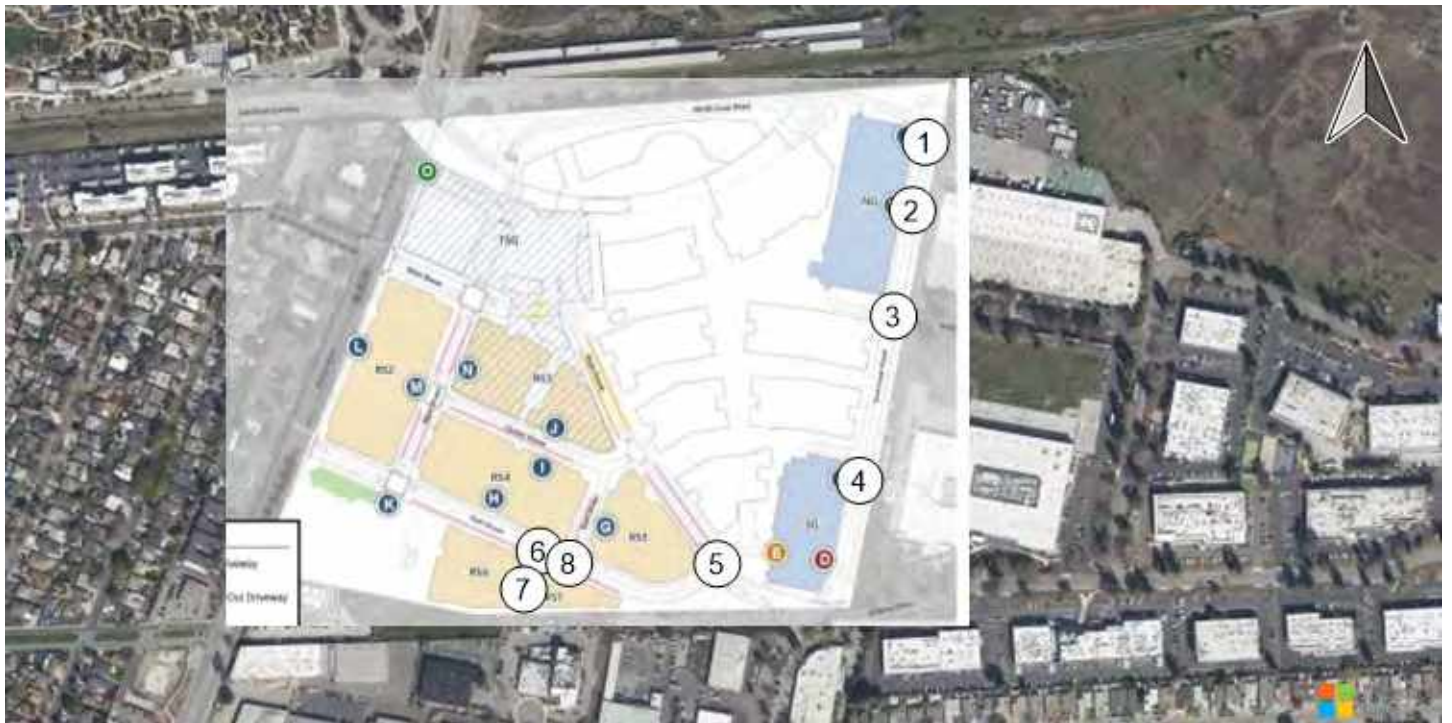
## Warrant 3 Condition A

Orientation	E
Total Stopped Delay Per Vehicle on Minor Approach (s)	20.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach (h:mm)	0:21
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	63
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	3067
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
<b>Warrant Met for Intersection</b>	<b>No</b>

### Study Intersections

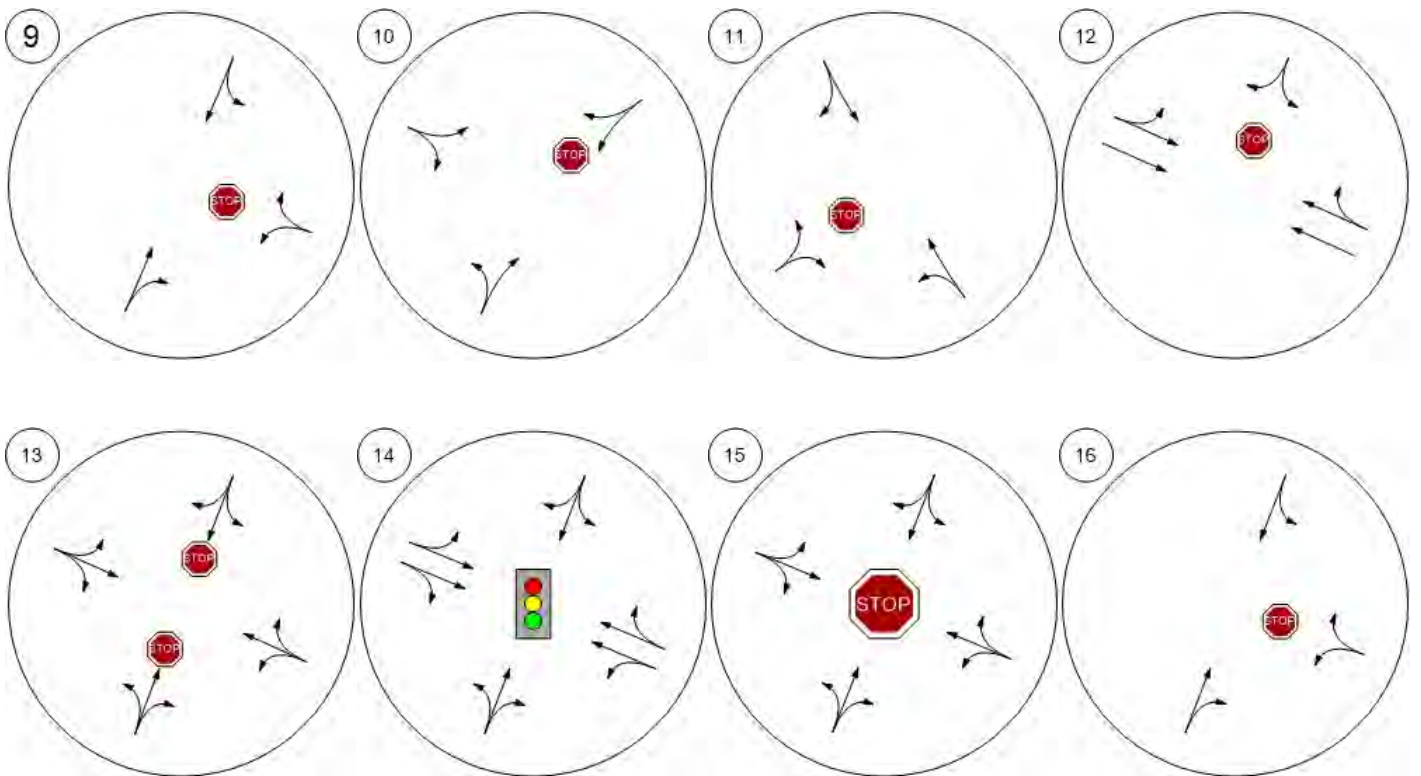


### Lane Configuration and Traffic Control

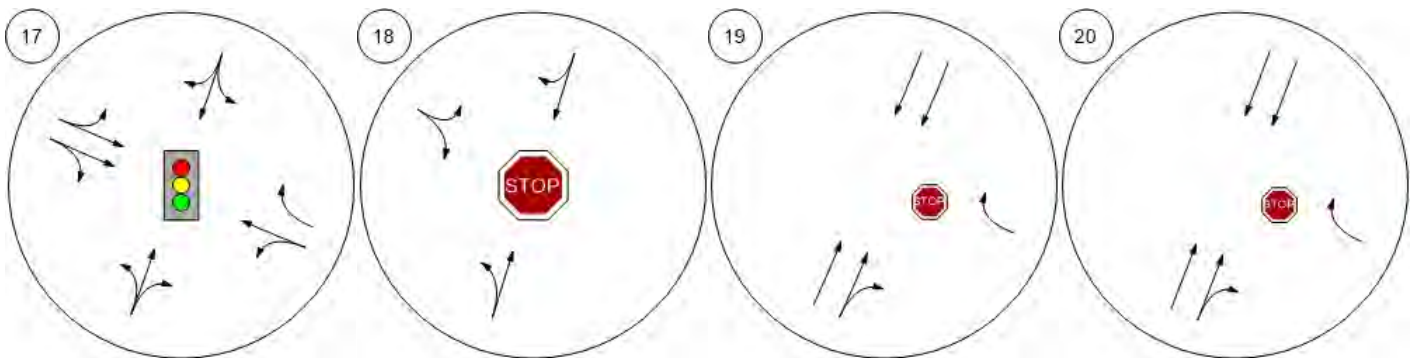




### Lane Configuration and Traffic Control

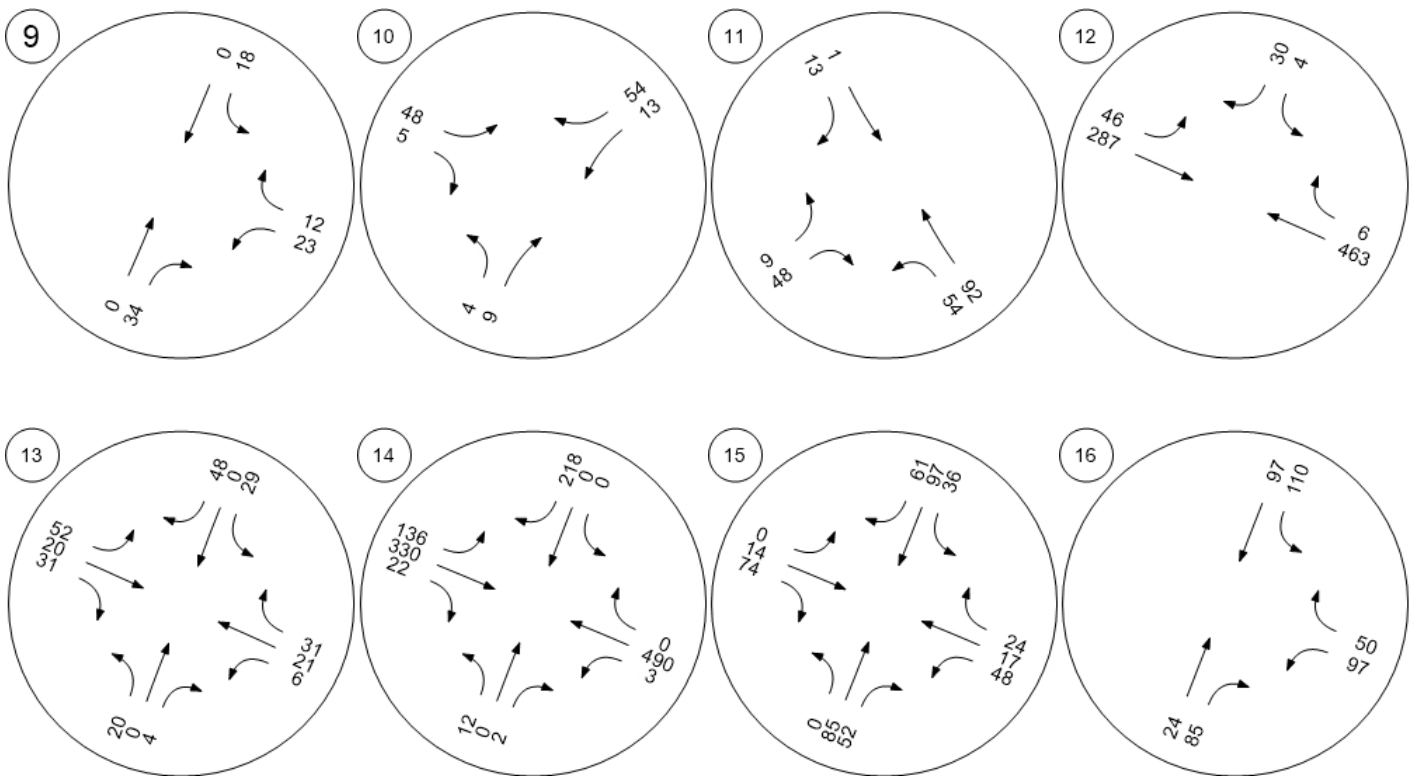


### Lane Configuration and Traffic Control

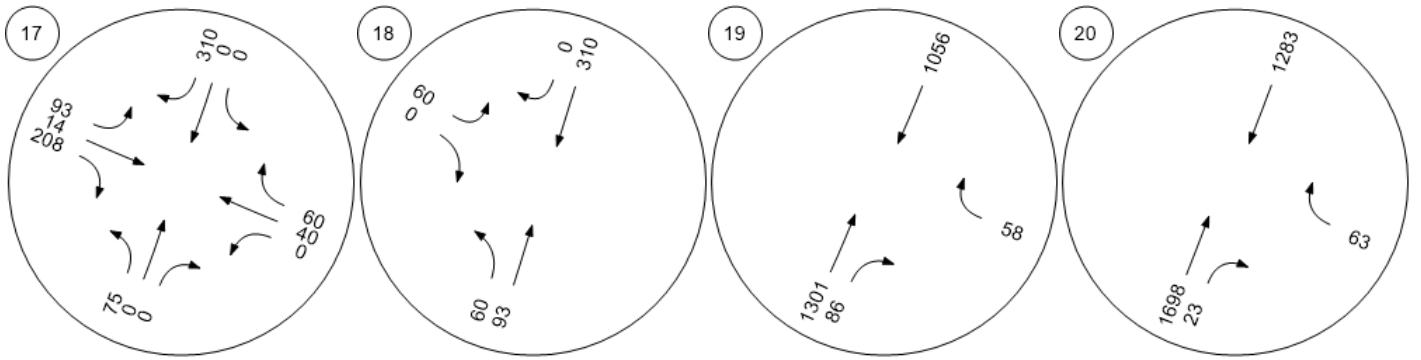




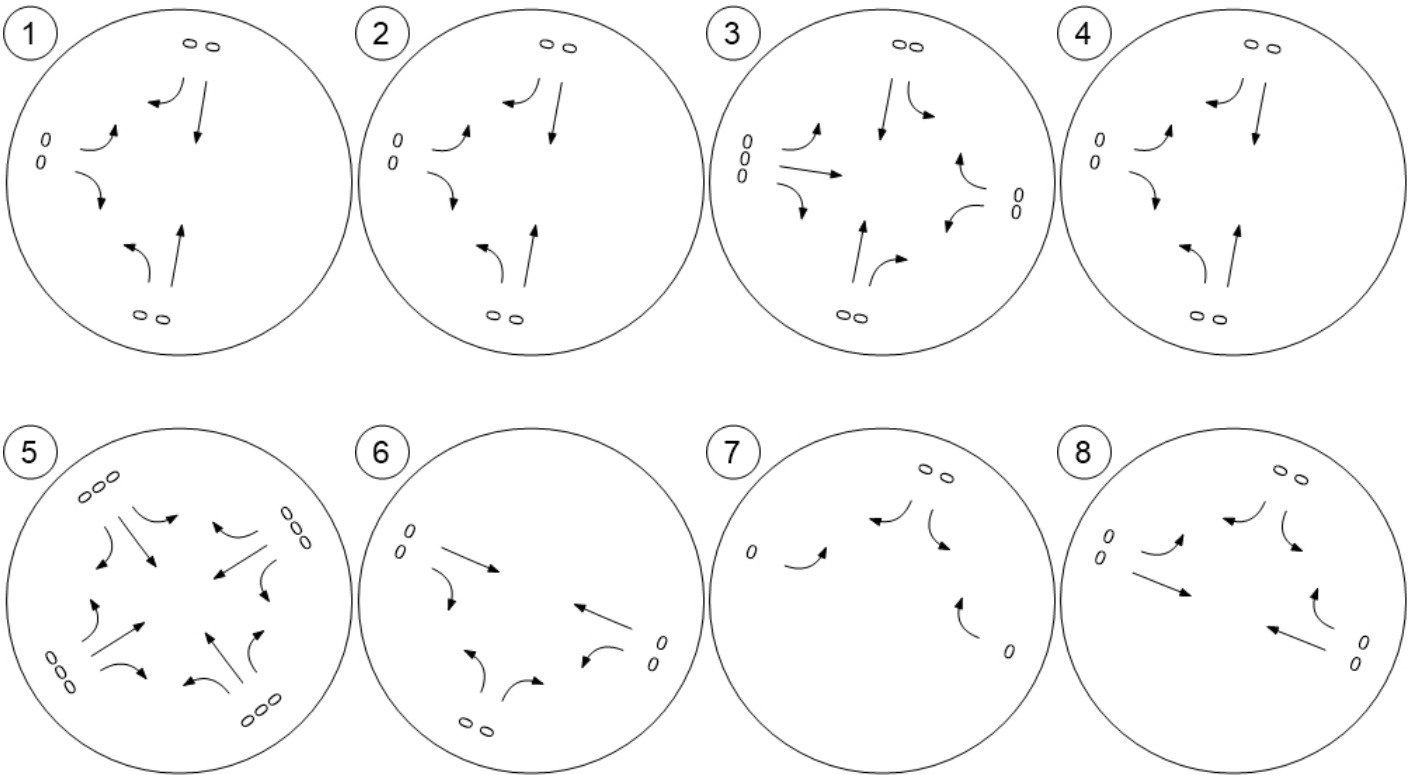
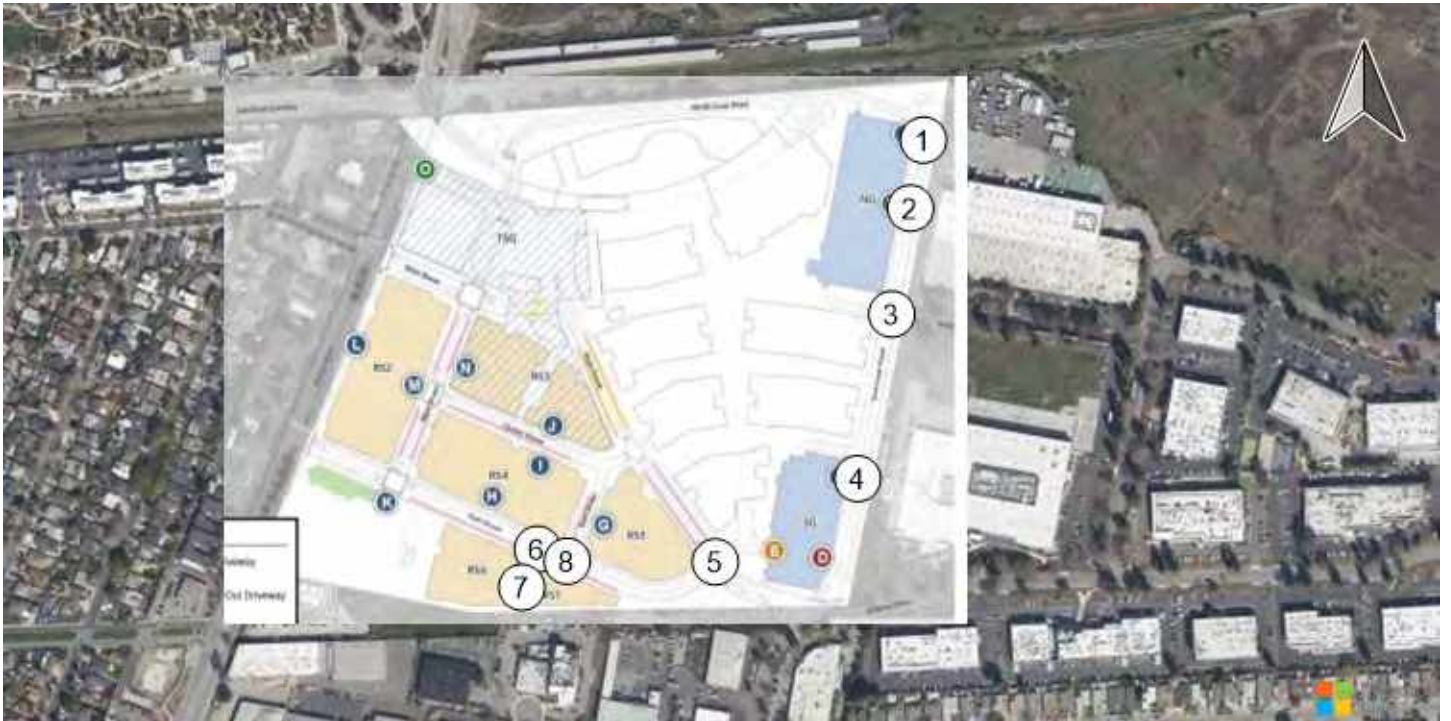
Traffic Volume - Base Volume



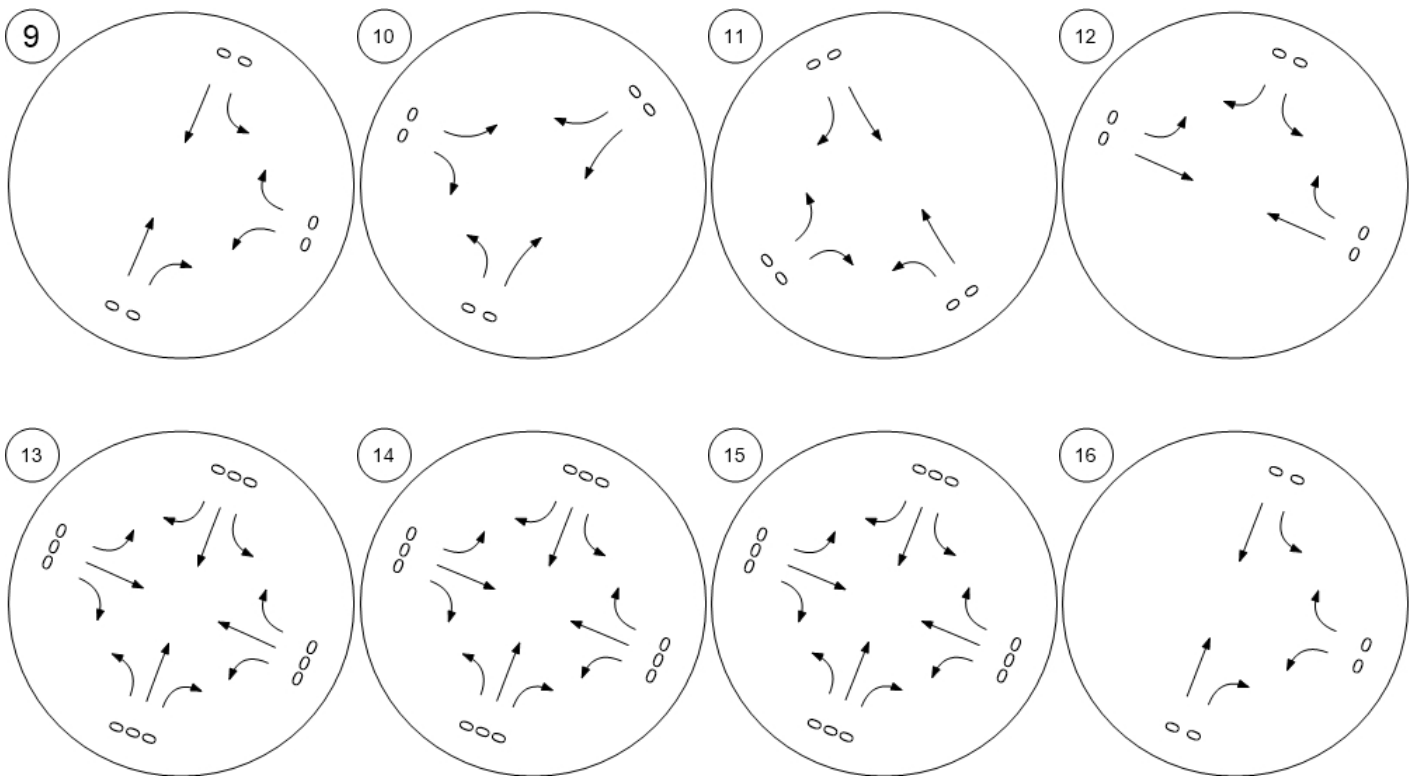
Traffic Volume - Base Volume



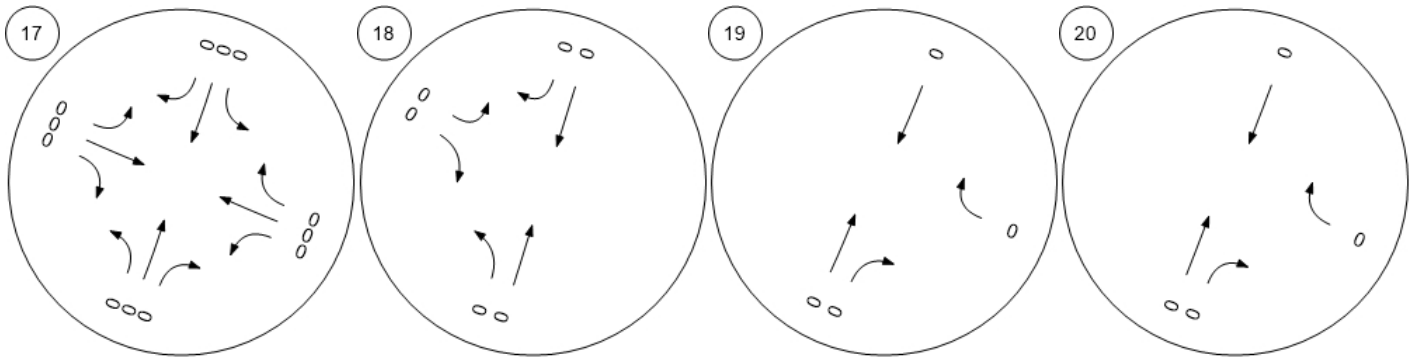
Traffic Volume - In-Process Volume



Traffic Volume - In-Process Volume

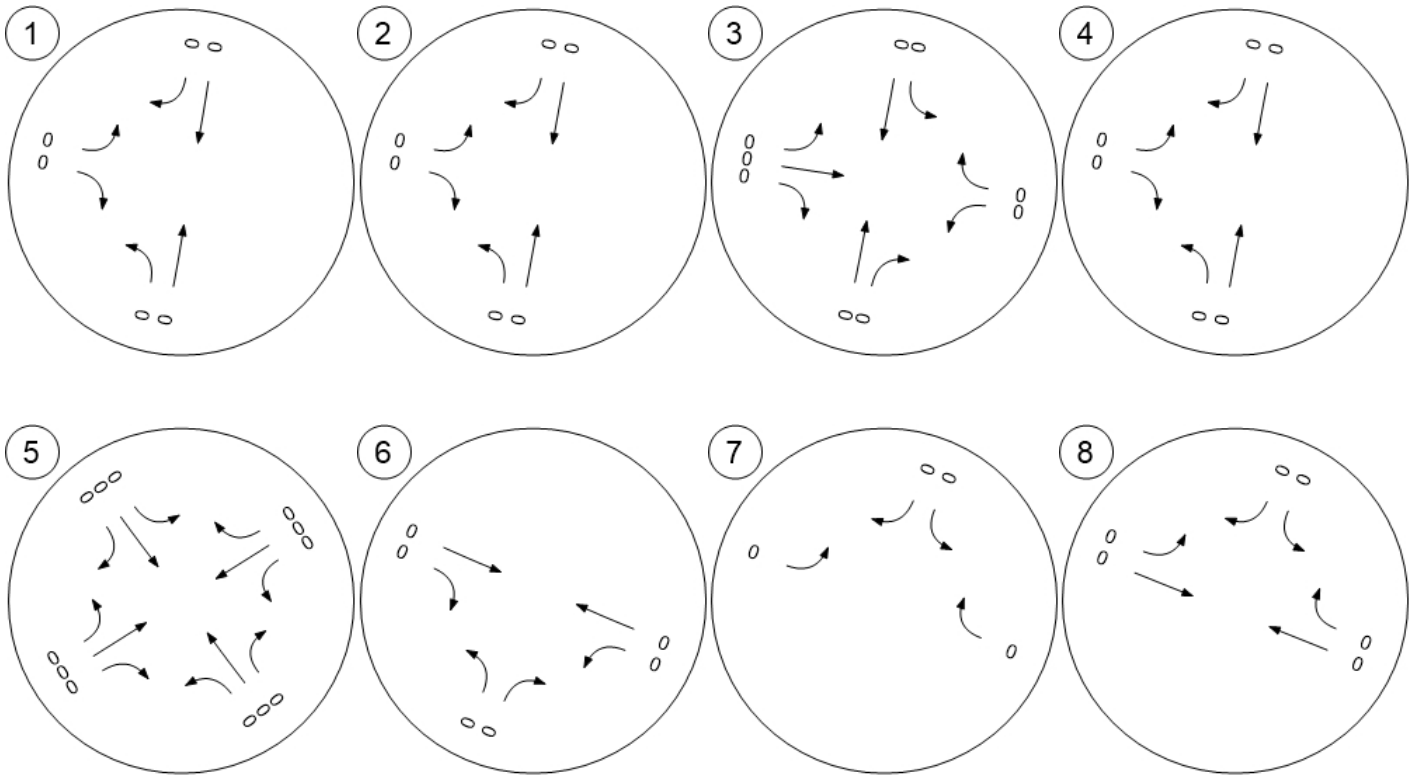
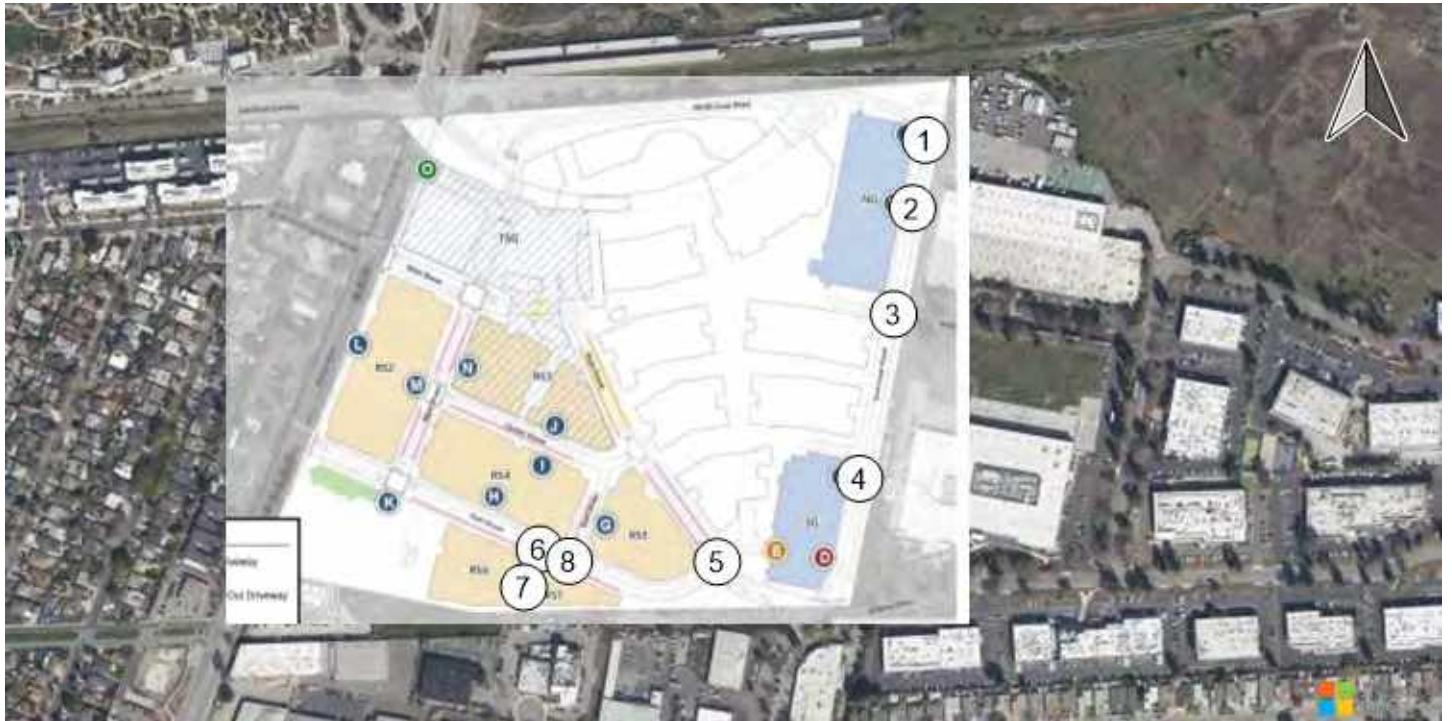


Traffic Volume - In-Process Volume

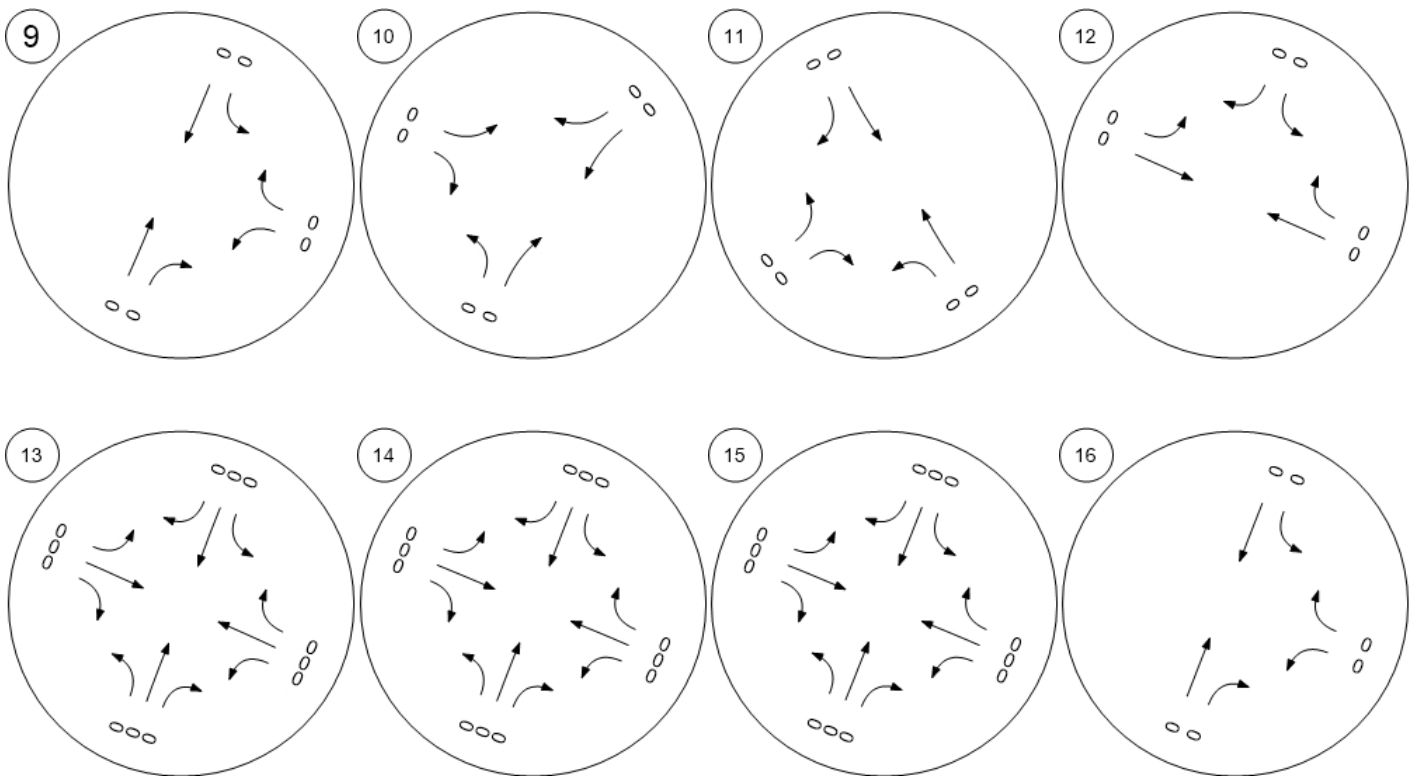




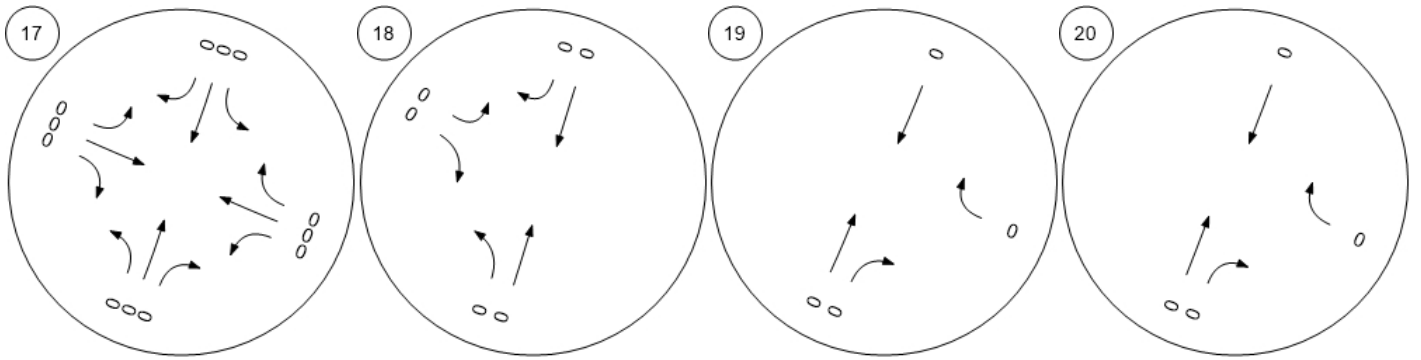
Traffic Volume - Net New Site Trips



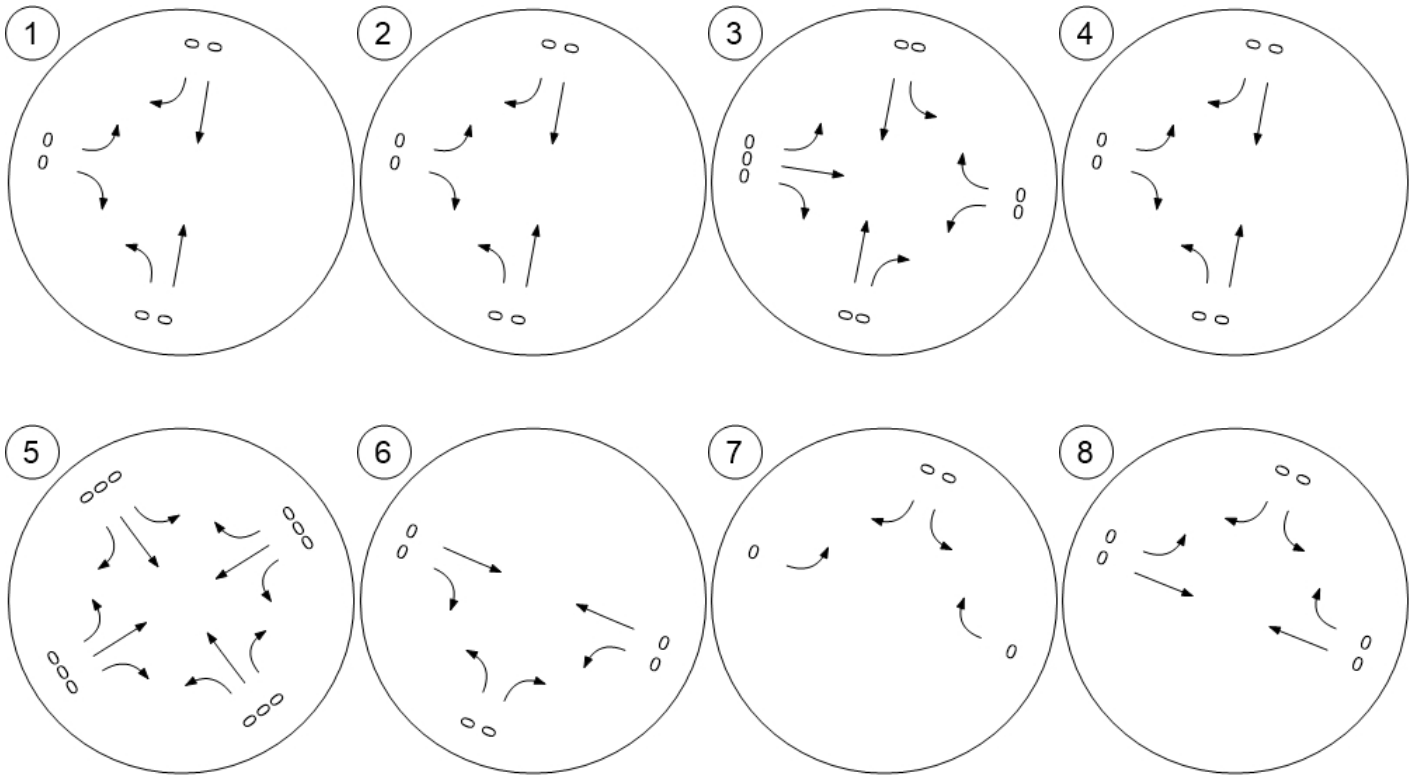
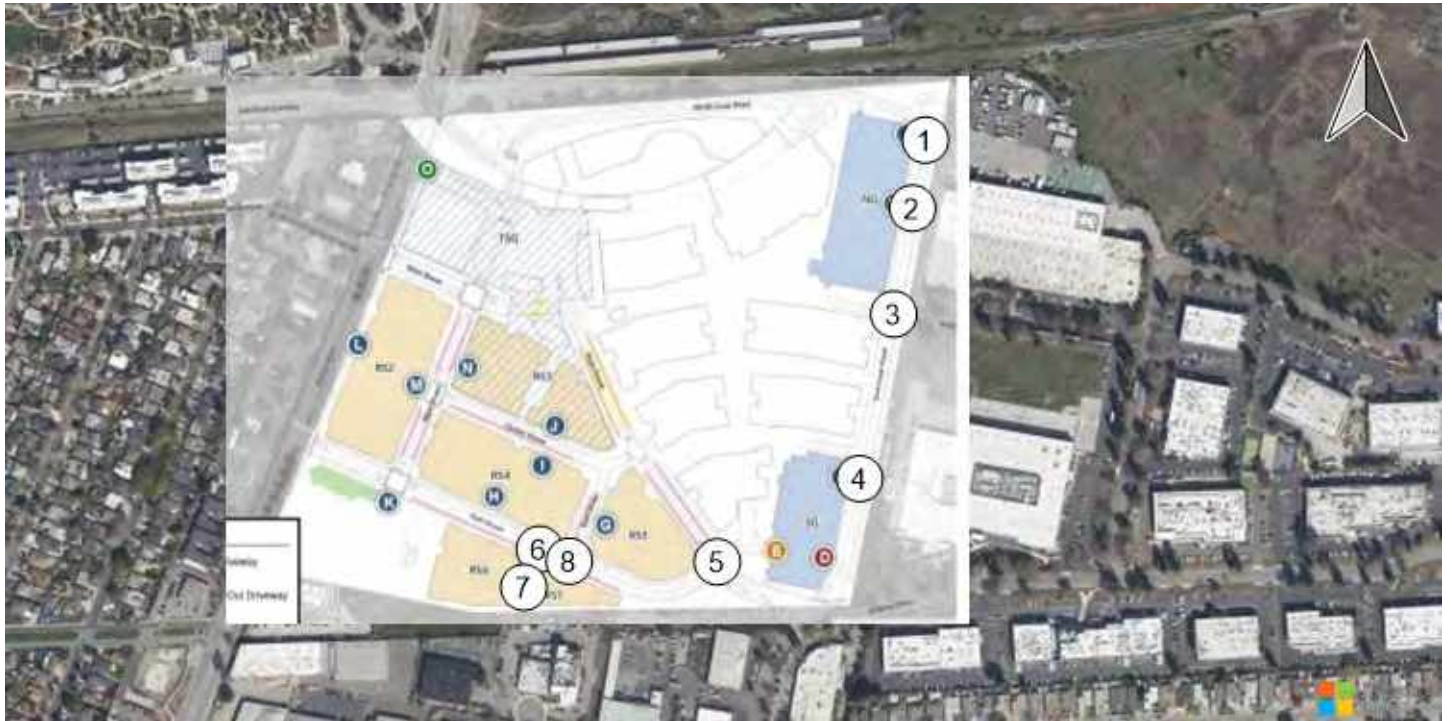
Traffic Volume - Net New Site Trips



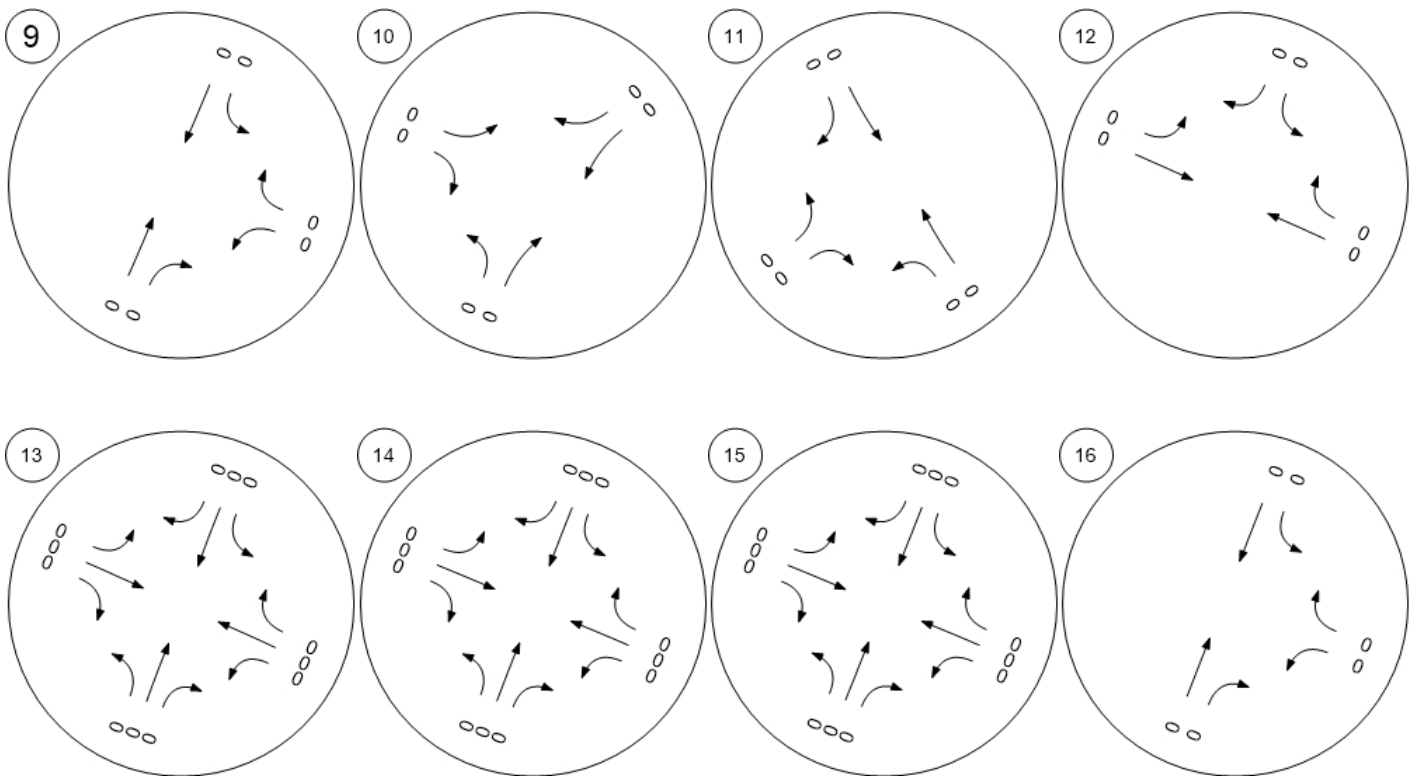
Traffic Volume - Net New Site Trips



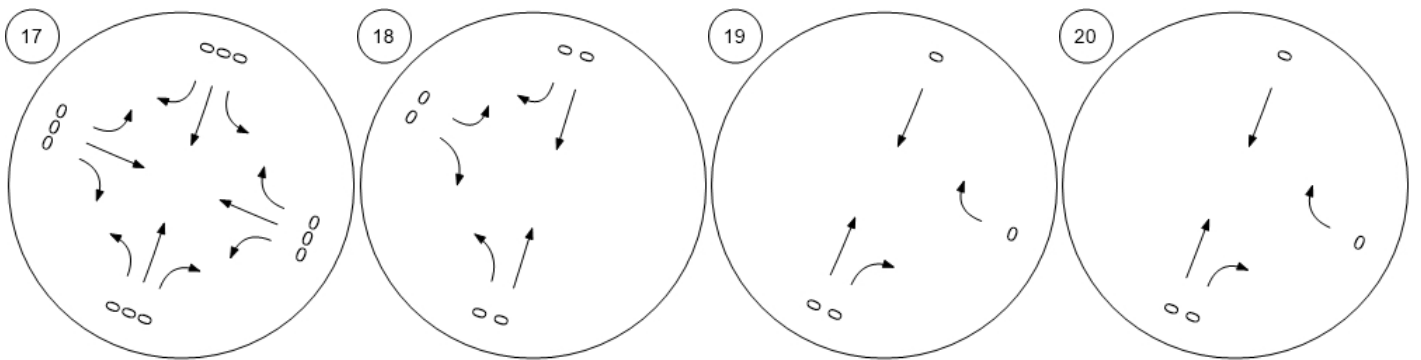
Traffic Volume - Other Volume



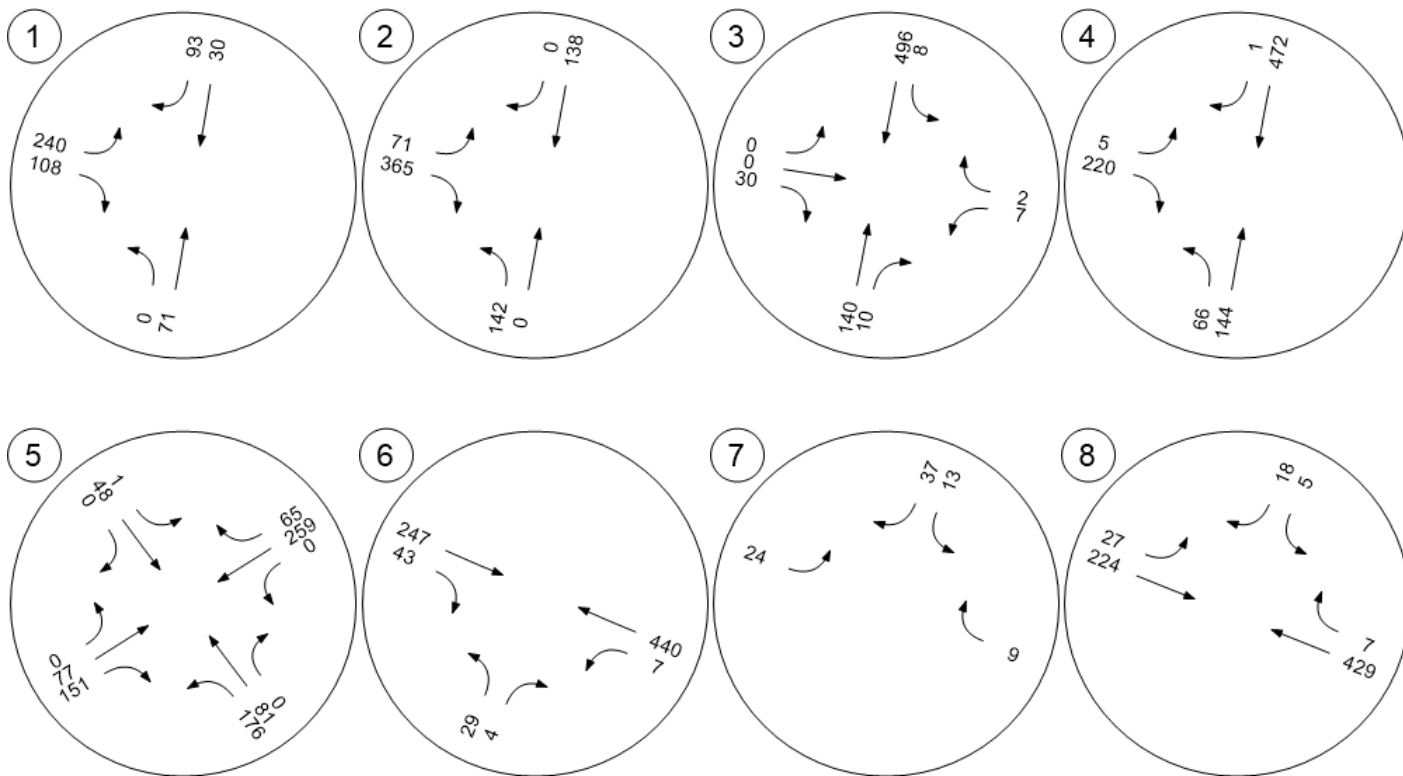
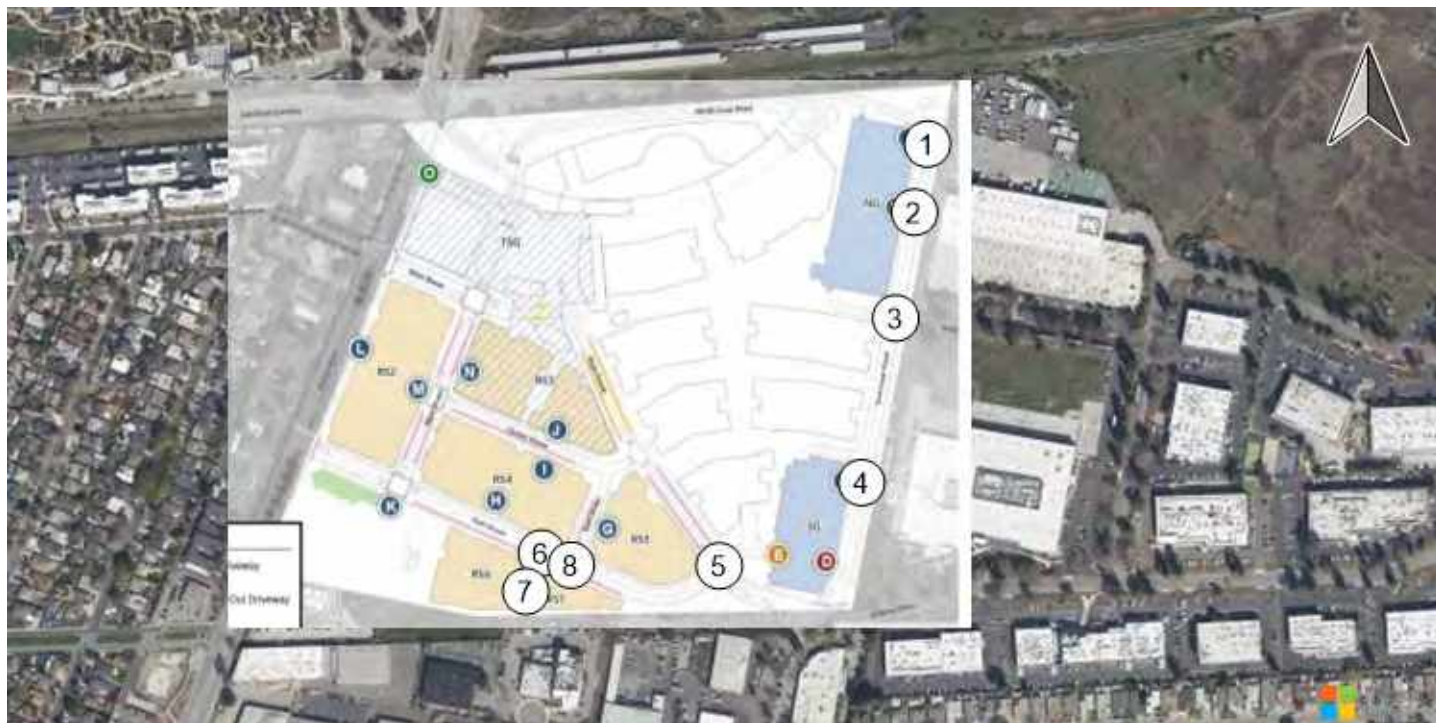
Traffic Volume - Other Volume



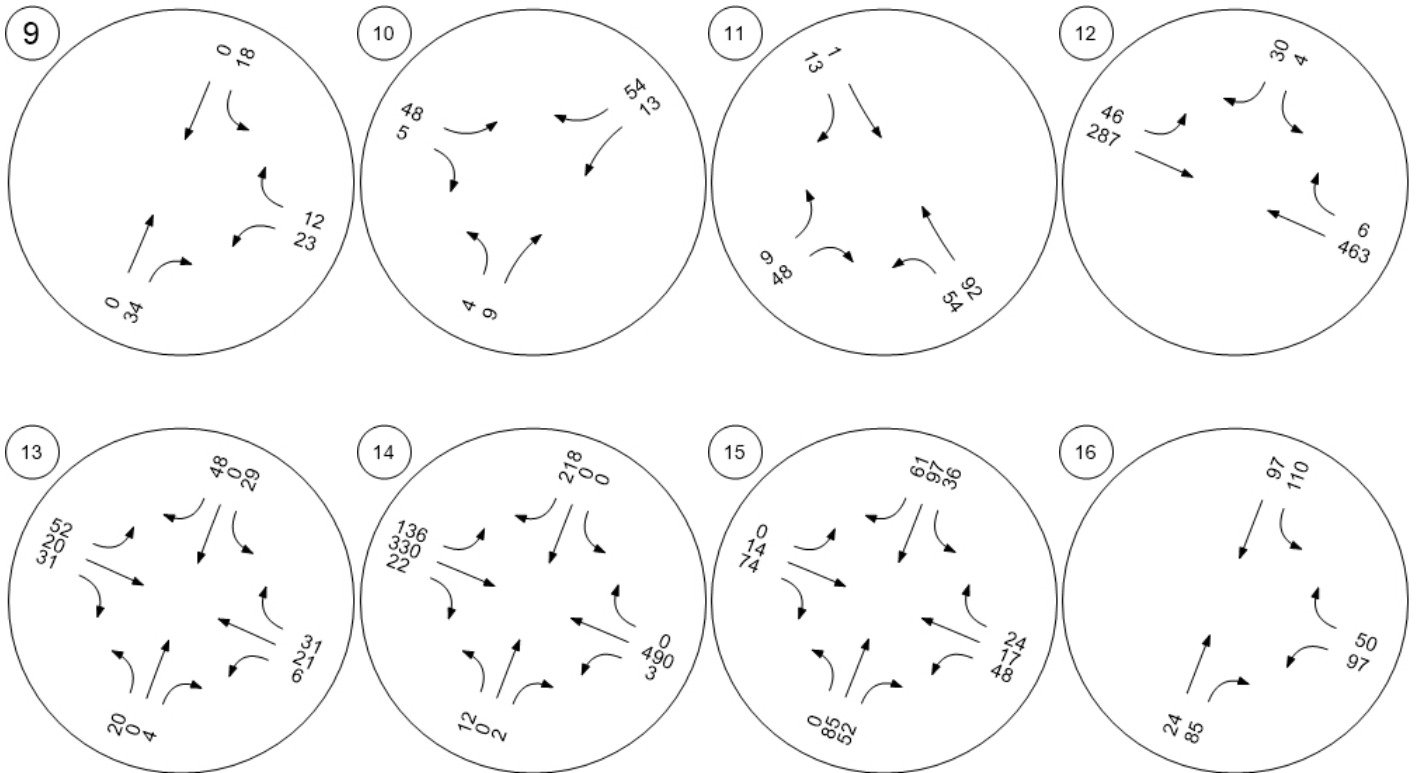
Traffic Volume - Other Volume



Traffic Volume - Future Total Volume

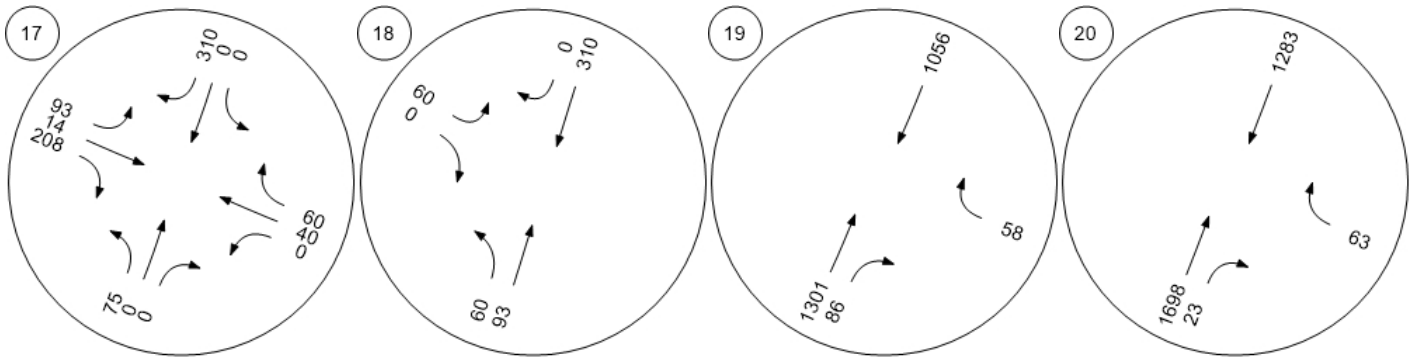


Traffic Volume - Future Total Volume

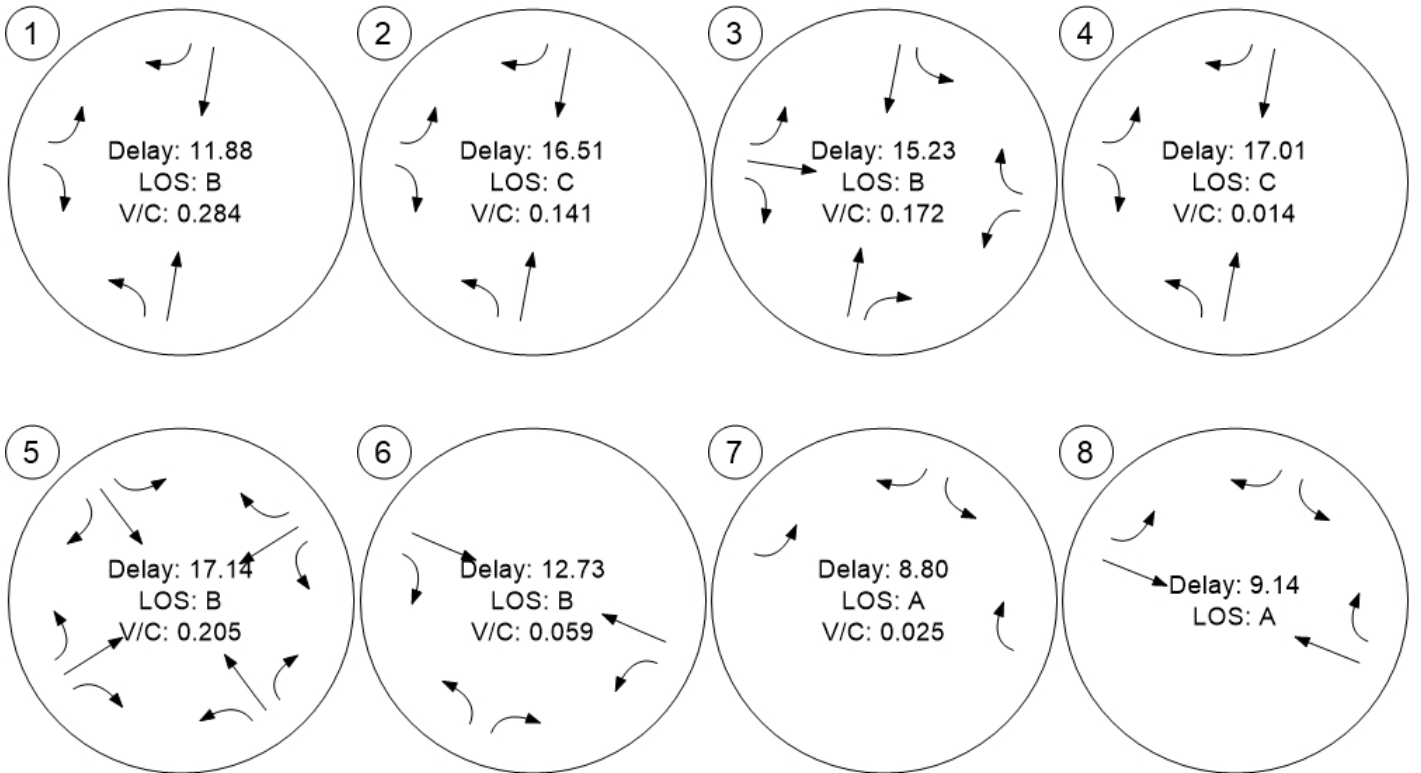
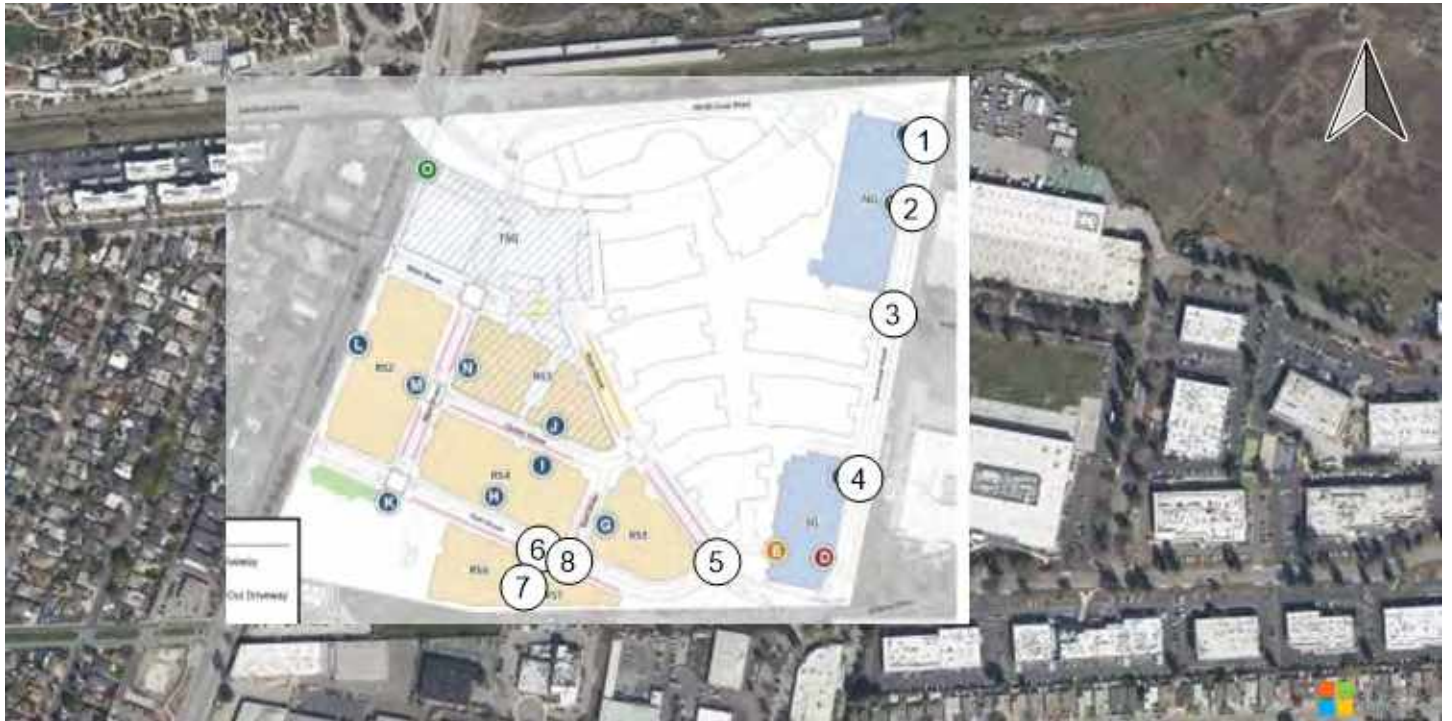




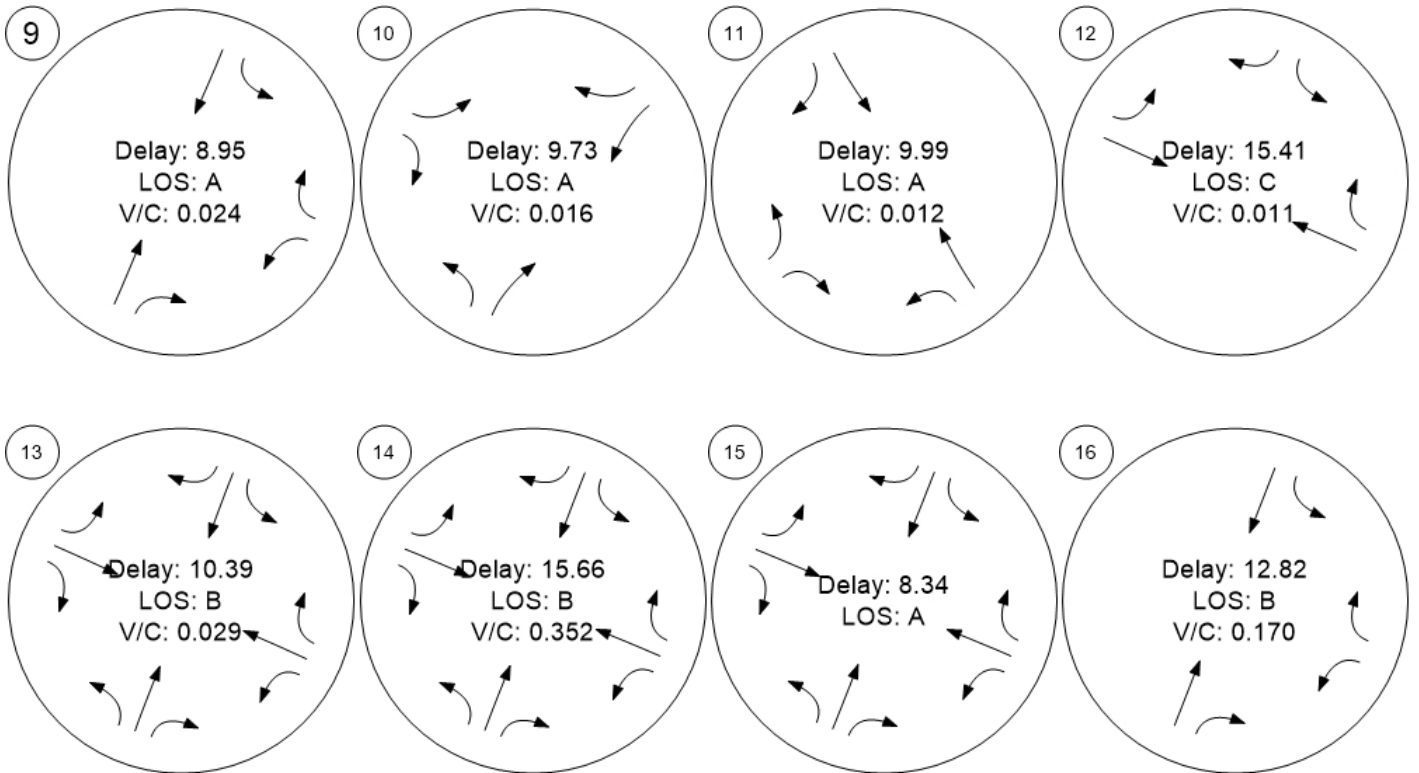
Traffic Volume - Future Total Volume



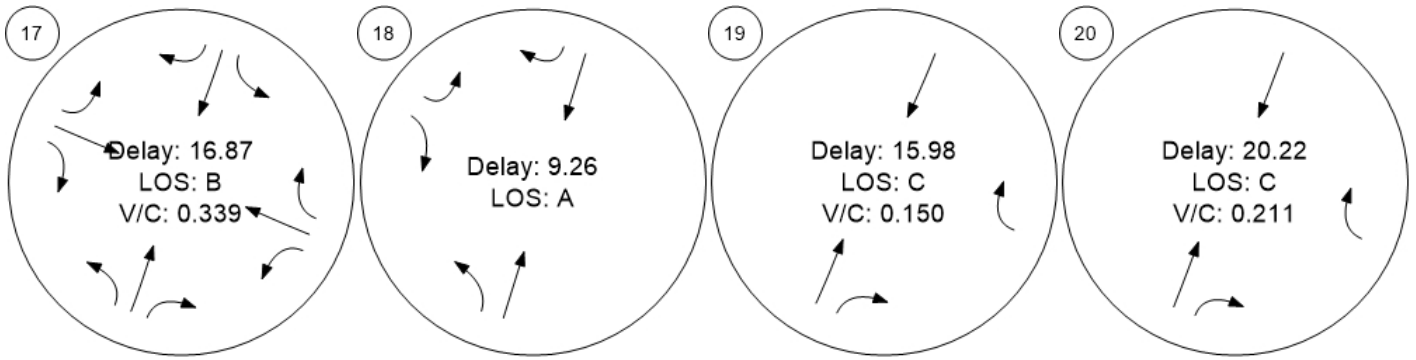
Traffic Conditions



Traffic Conditions



Traffic Conditions



Time Space Diagram - Flowing Off

Route 2:



Route 2:

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Time Space Diagram - Arterial Band

Route 2:



Route 2:



**Appendix I**  
**Facebook/Meta's Tram and Shuttle Services**

## Memorandum

Date: January 17, 2020  
 To: Eric Harrison, Signature Development  
 From: Robert Eckols  
**Subject: Facebook Menlo Park Campus Tram Operations**

*SJ18-1860*

This memorandum transmits the existing data related to the Facebook intercampus tram operations. Facebook operates five intercampus tram lines that employees use to move between the four Menlo Park campuses: Willow, Classic, Bayfront, and Chilco. **Figure 1** shows the routes and stops used by each of the five existing Menlo Park tram lines.

Currently, three of the intercampus tram lines serve the Willow Campus - Teal, Gold, and Orange lines. All three of the Willow Campus trams operate on public roadways using: Willow Road, Hamilton Avenue, and Hamilton Court. **Table 1** shows the campuses served by each intercampus line. The tram lines connect two or three of the four Menlo Park campuses. None of the tram lines serve all four campuses.

**Table 1: Facebook Intercampus Tram Routes & Coverage**

Route	Willow Campus	Classic Campus	Bayfront Campus	Chilco Campus
Red Line		✓	✓	✓
Purple Line		✓	✓	✓
Teal Line	✓		✓	✓
Gold Line	✓	✓		
Orange Line	✓		✓	

Source: Fehr & Peers, 2020

The Teal Line that serves the Willow, Bayfront, and Chilco campuses operates on westbound Bayfront Expressway between Willow Road and Chilco Street. The Orange Line that serves the



Willow and Bayfront campuses operates on westbound Bayfront Expressway between Willow Road and the Building 20 driveway. Within the Willow campus the trams circulate on the public roadways and through the surface parking lots on the South side of the campus to connect between Hamilton Court and Willow Road.

**Table 2** summarizes the hours of operations and headways of the Willow Campus trams. The Teal and Orange trams operate during normal business hours (7:30 am to 6:30 pm) on 5-minute headways. The Gold trams has extended hours from 4:55 AM to 9:55 PM on 5-minute headways. While there is demand for the trams throughout the day, peak usage of the trams occurs during the morning and evening commute peak periods when employees use the trams to access the employee shuttles and mid-day when employees use the trams to travel to lunch venues.

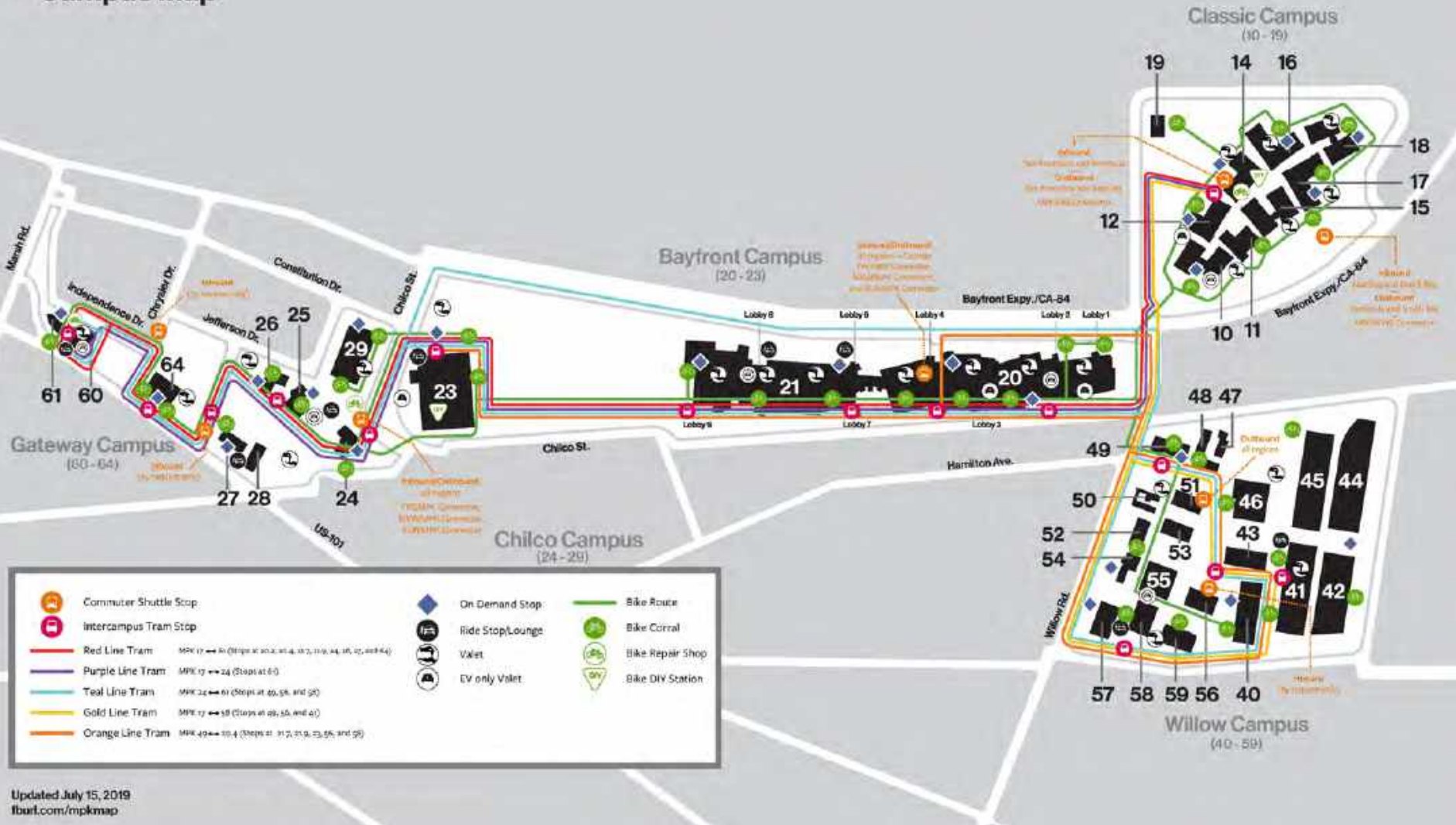
**Table 2: Facebook Willow Campus Tram - Hours of Operations & Headways**

Route	Hours of Operation	Hours per Day	Headway
Teal Line	7:30 AM - 6:30 PM	11 hours	5 minutes
Gold Line	4:55 AM - 9:55 PM	17 hours	5 minutes
Orange Line	7:30 AM - 6:30 PM	11 hours	5 minutes

Source: Fehr & Peers, 2020

# MPK

## Campus Map



Updated July 15, 2019  
fburl.com/mpkmap

Source: Facebook Transportation, 2019

### Facebook Regional Shuttle Vehicle Trips, Ridership, Capacity and Load Factors

Region / Routes	Trip	Vehicle Trips		Riders		Capacity		Load Factors	
	Length*	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Inbound	Outbound
<b>South Bay</b>		<b>110</b>	<b>117</b>	<b>2,050</b>	<b>2,209</b>	<b>4,807</b>	<b>5,412</b>	<b>0.43</b>	<b>0.41</b>
Blossom Hill/Camden	36.0	7	8	224	189	321	387	0.70	0.49
Cupertino	22.0	4	4	62	99	160	227	0.39	0.44
Great Mall/Hostetter	29.0	6	6	185	177	276	339	0.67	0.52
Japantown/Curtner	33.0	6	5	132	145	195	201	0.68	0.72
Lawrence/Santa Clara	23.0	4	6	74	84	180	275	0.41	0.31
Los Gatos/Campbell	30.0	7	7	128	126	273	277	0.47	0.45
Middlefield/Central Station	16.0	7	7	93	94	268	357	0.35	0.26
Milpitas/North San Jose/Agnew	25.0	7	7	152	177	213	327	0.71	0.54
Moonlite/Santa Clara	19.0	3	3	78	62	157	162	0.50	0.38
Morgan Hill	55.0	3	3	38	39	157	168	0.24	0.23
Mountain View/El Camino Real	14.0	10	11	146	150	511	483	0.29	0.31
Mountain View/El Camino, Sunnyvale/El Camin	18.0		1		15		45		0.33
Mountain View/Rengstorff	23.0	5	6	60	103	202	312	0.30	0.33
Mountain View/West Middlefield	15.0	3	5	23	39	95	208	0.24	0.19
San Jose/Eastridge	39.0	6	5	100	99	287	211	0.35	0.47
Saratoga	25.0	4	4	38	62	153	178	0.25	0.35
Stevens Creek/Santa Clara	24.0	3	4	42	47	157	182	0.27	0.26
Sunnyvale/El Camino Real	17.0	13	13	258	265	618	527	0.42	0.50
Sunnyvale/Mathilda	18.0	4	4	33	40	182	188	0.18	0.21
Sunnyvale/North Fair Oaks	19.0	4	4	102	114	211	184	0.48	0.62
Sunnyvale/South Fair Oaks	19.0	4	4	82	83	191	174	0.43	0.48
<b>San Francisco</b>		<b>122</b>	<b>116</b>	<b>1,992</b>	<b>2,031</b>	<b>5,685</b>	<b>5,317</b>	<b>0.35</b>	<b>0.38</b>
Colma/SF 19th Ave	35.0		1		11		44		0.25
Geary	39.0	7	6	110	102	287	257	0.38	0.40
Glen Park/Colma	46.0	8	7	131	117	399	314	0.33	0.37
Marin County/SF 19th Ave	60.0	11	9	174	161	554	442	0.31	0.36
Market/Polk	32.0	12	12	213	211	557	608	0.38	0.35
Mission	47.0	18	17	349	311	960	907	0.36	0.34
Mission/Haight	35.0		1		23		67		0.34
Mission/Van Ness	36.0		1		14		67		0.21
Noe Valley	40.0	12	12	135	176	421	421	0.32	0.42
North Beach/SoMa	39.0	13	15	277	276	653	670	0.42	0.41
Panhandle	39.0	12	12	170	239	614	517	0.28	0.46
Potrero Hill	45.0	11	9	160	153	355	289	0.45	0.53

Van Ness	39.0	18	14	273	237	885	714	0.31	0.33
<b>East Bay</b>		<b>72</b>	<b>80</b>	<b>1,589</b>	<b>1,503</b>	<b>3,164</b>	<b>3,557</b>	<b>0.50</b>	<b>0.42</b>
Alameda	33.0	3	4	65	56	179	151	0.36	0.37
Berkeley/Oakland	40.0	19	18	398	397	819	909	0.49	0.44
Blacow/Cedar	20.0	3	5	56	59	160	245	0.35	0.24
Danville/San Ramon	49.0	4	4	97	99	198	135	0.49	0.73
Dublin/Castro Valley	45.0	8	7	306	211	302	301	1.01	0.70
Fremont BART/ACE	24.0	7	8	197	207	264	407	0.75	0.51
Hayward/Union City/West Fremont	20.0	6	6	130	123	277	252	0.47	0.49
Stevenson Blvd/Thornton Ave	17.0	8	8	159	153	398	326	0.40	0.47
SUN Dublin/Castro Valley	45.0	1	1	8	10	43	34	0.19	0.29
Union City BART/Decoto	14.0	11	16	134	147	461	699	0.29	0.21
Walnut Creek/Orinda	51.0	2	3	39	41	63	98	0.62	0.42
<b>Peninsula</b>		<b>51</b>	<b>47</b>	<b>624</b>	<b>595</b>	<b>2,204</b>	<b>2,049</b>	<b>0.28</b>	<b>0.29</b>
Belmont/San Carlos	12.0	3	3	36	42	137	124	0.26	0.34
Foster City	15.0	4	4	90	83	245	236	0.37	0.35
Menlo Park/Haven	4.0	5	4	105	73	130	128	0.81	0.57
Menlo Park/Sand Hill	10.0	3	3	5	5	151	155	0.03	0.03
Millbrae/San Mateo	19.0	4	4	75	85	145	191	0.52	0.45
Palo Alto/El Camino Real	14.0	4	4	55	47	196	184	0.28	0.26
Palo Alto/Midtown	12.0	4	4	25	27	117	134	0.21	0.20
Redwood City/Blu Harbor	9.0	3	3	29	31	102	92	0.28	0.34
Redwood Shores	14.0	3	4	28	31	113	195	0.25	0.16
San Mateo/HWY 92	14.0	5	3	49	49	283	103	0.17	0.48
Whipple/Veterans	13.0	8	6	91	79	384	306	0.24	0.26
Woodside/El Camino Real	21.0	5	5	36	43	201	201	0.18	0.21
<b>Santa Cruz</b>		<b>3</b>	<b>2</b>	<b>42</b>	<b>41</b>	<b>127</b>	<b>80</b>	<b>0.33</b>	<b>0.51</b>
Santa Cruz/Scotts Valley	47.0	3	2	42	41	127	80	0.33	0.51
<b>North Bay</b>		<b>1</b>	<b>1</b>	<b>13</b>	<b>12</b>	<b>45</b>	<b>45</b>	<b>0.29</b>	<b>0.27</b>
Marin Direct	48.0	1	1	13	12	45	45	0.29	0.27
<b>Totals</b>		<b>359</b>	<b>363</b>	<b>6,310</b>	<b>6,391</b>	<b>16,032</b>	<b>16,460</b>	<b>0.39</b>	<b>0.39</b>

\* Route length is average trip length that accounts for variation in the routes depending on the time of day. Route length does not include deadhead mileage before / after run.

Source: Facebook Transportation, March 2020 prior to work from home began.

**Appendix J**  
**Model Validation Memo**



## Memorandum

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**Date:** November 10, 2021  
**To:** Ms. Kristiann Choy, City of Menlo Park  
**From:** Ollie Zhou  
**Subject:** Menlo Park Travel Demand Forecasting Model Validation

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Hexagon Transportation Consultants, Inc. has completed a model calibration and validation for the City of Menlo Park's travel demand forecast model (ConnectMenlo model) to a base year of year 2019. The ConnectMenlo model is a computerized representation of travel patterns of 14 counties within the larger Bay Area: the nine Bay Area counties, County of Santa Cruz, County of San Benito, County of Monterey, County of San Joaquin, and County of Stanislaus. The ConnectMenlo model was originally developed based on the 2013 update of the City/County Association of Governments travel demand model. It included additional network details as well as a refined traffic analysis zone (TAZ) system within the City of Menlo Park.

The purpose of re-calibrating and validating the ConnectMenlo to year 2019 conditions is to use this model to inform City's VMT policies, and conduct land use and transportation related studies. This model effort is part of the transportation study for the proposed Willow Village project.

### Network System Refinement

The previous ConnectMenlo model employed an enhanced roadway network layer developed from the TomTom North America routable network database for roadways within the City of Menlo Park. While the network layer provided detail in terms of having all roadways within the City coded in the model, major roadways are coded as two one-direction links, which created challenges for extracting turning movement volumes. With the immediate needs of the Willow Village project in mind, the roadway network is simplified to bi-direction links for the roadways and intersections under evaluation.

Hexagon conducted a review of the critical link-level attributes such as number of lanes, lane types, and turn penalties specifically within the Willow Village study areas. In particular, the US 101 interchange at Willow Road is updated to reflect the configuration current as of May 2019, when field work was conducted and approximately when most of the counts were collected (March/April 2019). It is worth noting that in May 2019, the interchange was still under construction and the US 101 northbound off-ramp had only 1 lane of capacity coming off the freeway. This was reflected in the updated base network. This ramp has since opened up to have 2 lanes of capacity coming off the freeway, which will be reflected in a future network.

The transit network in the previous ConnectMenlo model was not coded along the roadway links, meaning their travel speeds were not affected by roadway congestions. The transit network is revised to travel on roadway links.





## Traffic Analysis Zone System Refinement

The 2013 C/CAG model originally had 24 traffic analysis zones (TAZs) covering the City of Menlo Park. The previous ConnectMenlo model provided enhanced detail and split the 24 TAZs into 81 TAZs. Hexagon reviewed the TAZ area coverages and found several coverage lapses surrounding the City of Menlo Park. The TAZ coverages were revised accordingly (see Figure 1).

In preparation for the proposed Willow Village project, additional TAZ details were provided within the project area. To maintain the overall 81-TAZ system, several TAZs throughout the rest of the City were aggregated to free up the necessary TAZs to cover the Willow Village area.

## Development of 2019 Land Use Inputs

Primary inputs to the travel demand model are land use and demographic data. The ConnectMenlo model requires land use and demographic inputs at the appropriate traffic analysis zone level. The main land use inputs variables are:

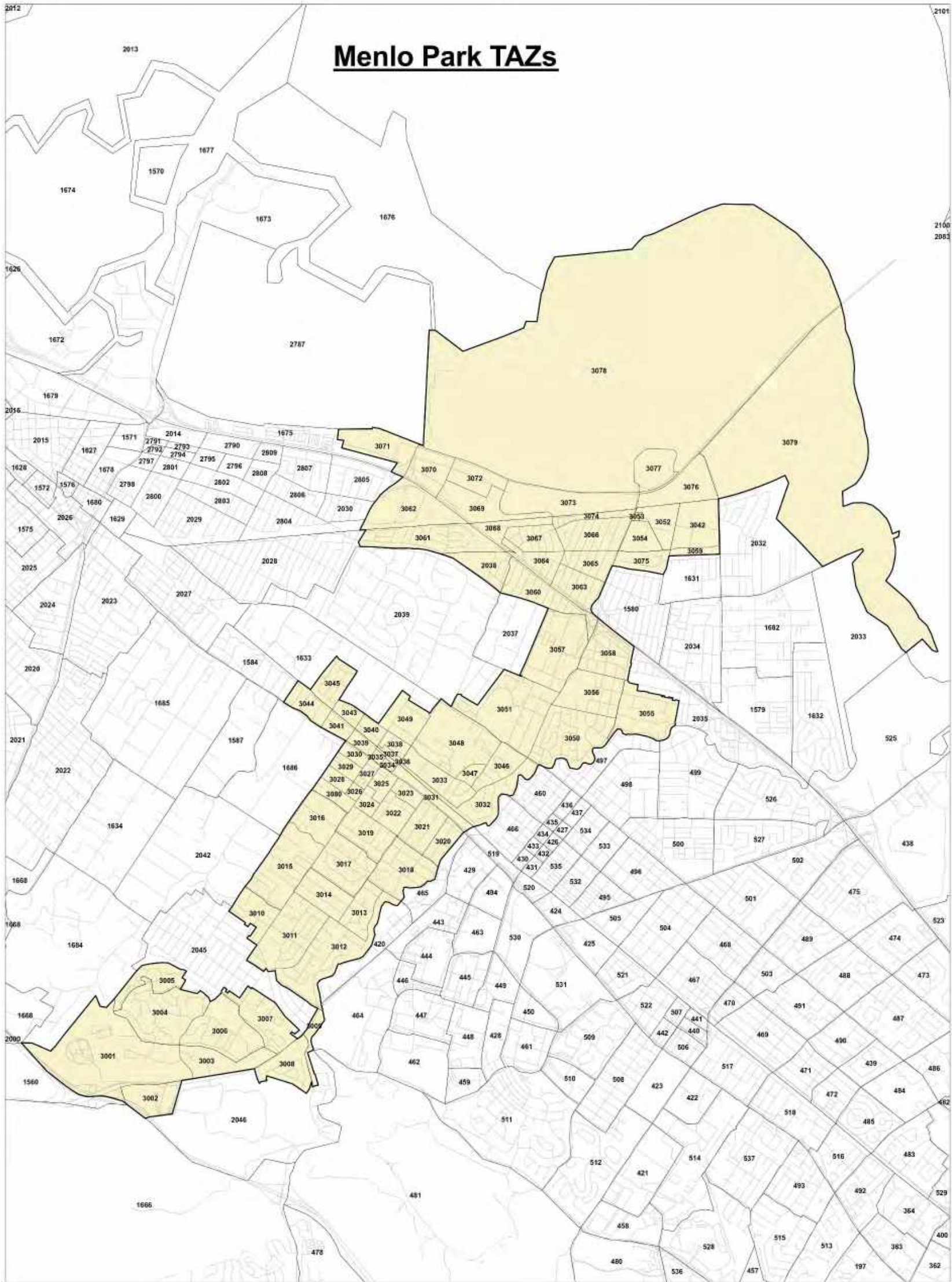
- Number of single and multi-family households
- Household population
- Employed residents
- Jobs by type (retail, service, other, manufacturing, wholesale and agriculture)
- School enrollment

The previous ConnectMenlo model had land uses for a base year of 2013 and a future year of 2040. For TAZs outside of the City of Menlo Park, the year 2019 land uses were developed via a straight-line interpolation of the previous base year and future year land uses. For TAZs within the City of Menlo Park, land uses were grown based on a list of approved and developed projects since year 2013, supplied by City staff.

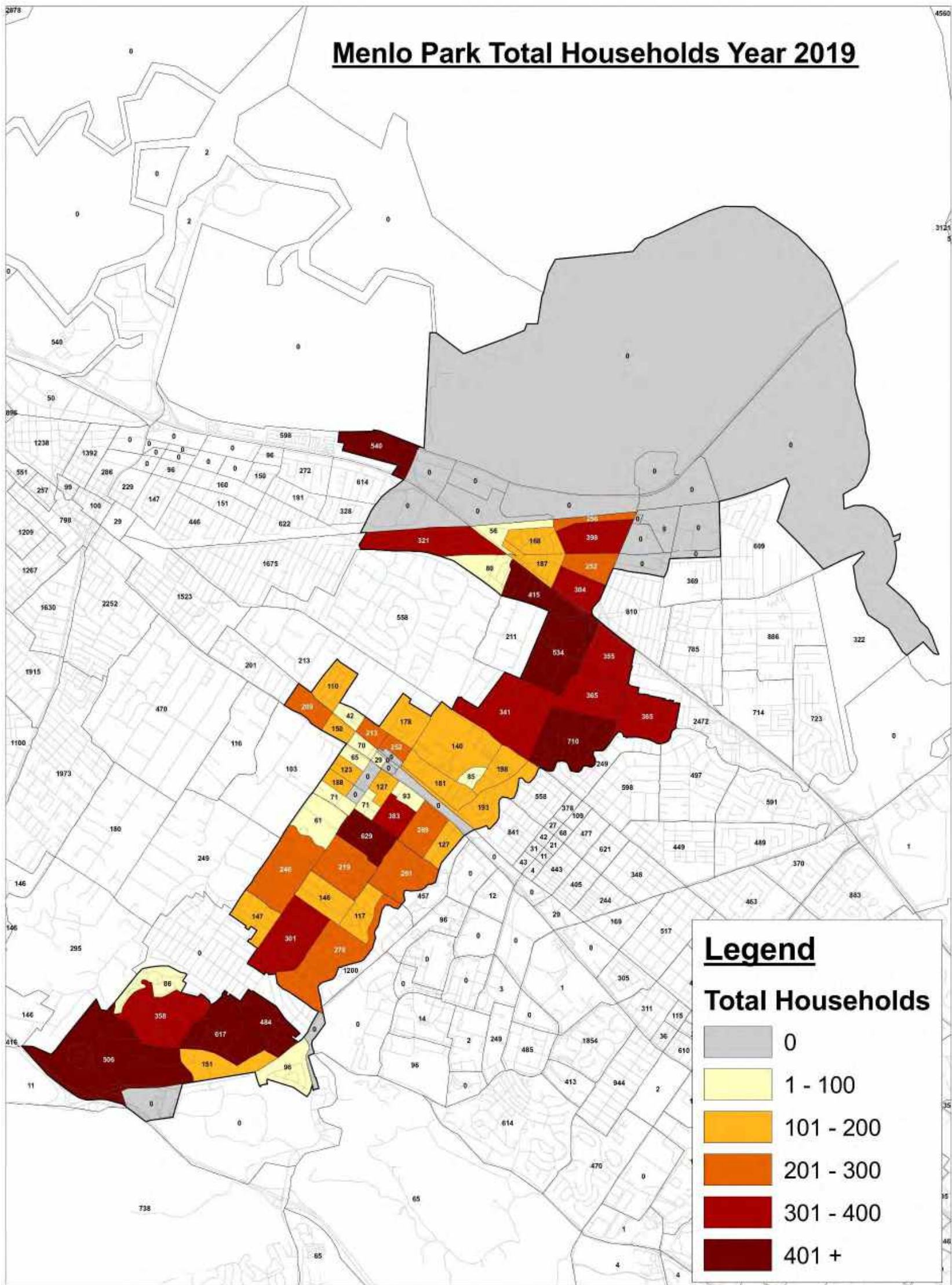
## Facebook Buildings

Facebook's Classics campus and Bayfront campus were previously not coded with land uses in the model. Facebook since year 2013 has also occupied numerous other buildings in the Bayfront area. These include buildings MPK 24 to MPK 29, MPK 60, MPK 61 and MPK 64 in the area west of Chilco Street, and buildings MPK 40 to MPK 59 in the Menlo Science and Technology Park. Hexagon adjusted employment data in these zones to reflect the higher employee density characteristic of Facebook buildings. Figures 2 and 3 show the year 2019 residential and employment data by zone for City of Menlo Park zones. Table 1 below summarizes the key land use data for the nine Bay Area counties and for the City of Menlo Park.

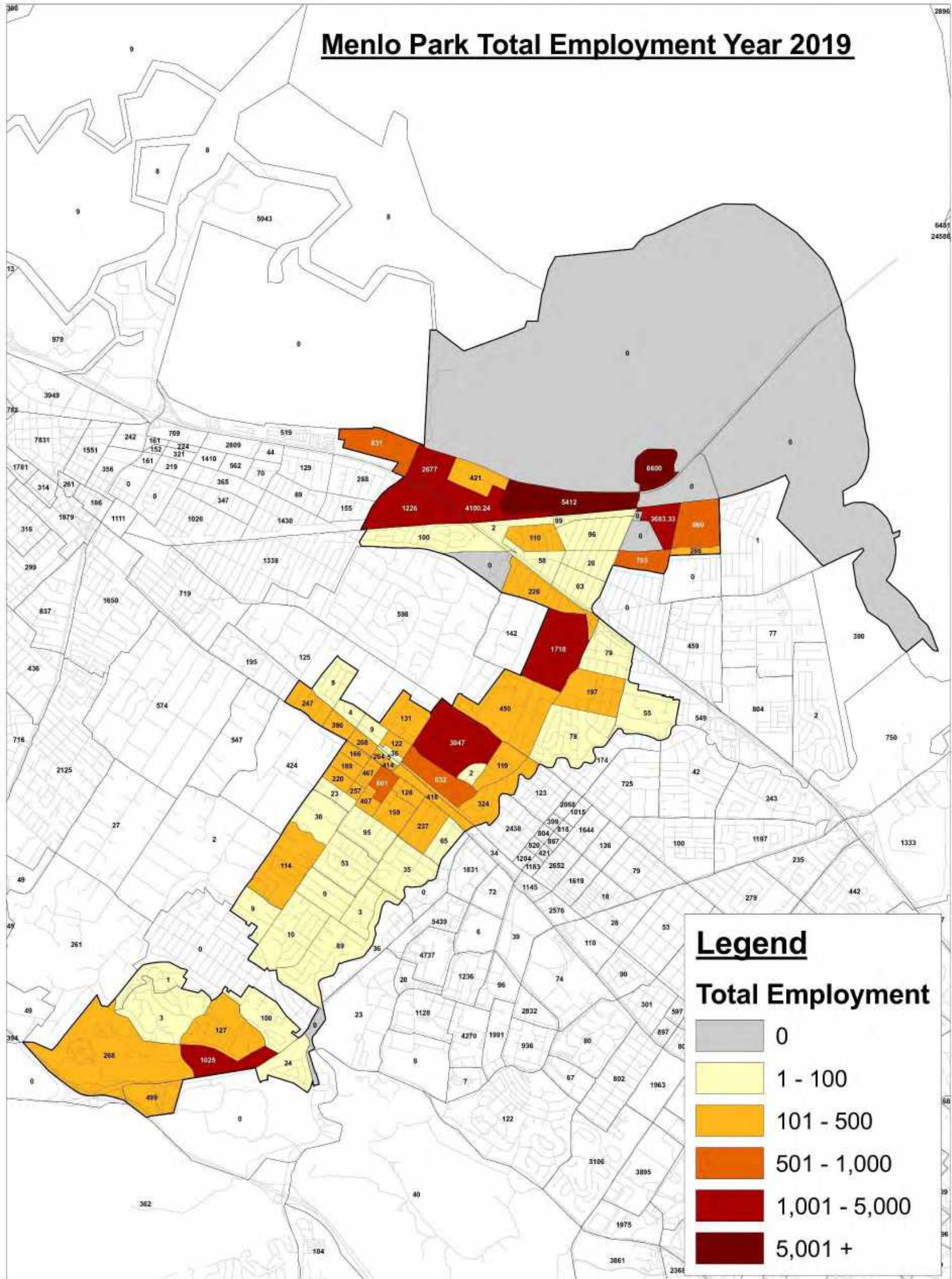
**Figure 1**  
**Menlo Park TAZ System**



**Figure 2**  
**Year 2019 Land Use Inputs – Households**



**Figure 3**  
**Year 2019 Land Use Inputs – Total Employment**



**Table 1**  
**2019 ConnectMenlo Land Use Summary**

County	Year 2019 Model Land Use Data			
	Total Households	Total Population	Employed Residents	Total Jobs
San Francisco	375,982	880,235	467,641	633,914
San Mateo	274,743	767,106	360,057	391,547
Santa Clara	667,403	1,957,085	894,436	1,034,479
Alameda	592,728	1,633,472	742,799	780,003
Contra Costa	400,746	1,123,666	487,731	385,759
Solano	149,764	429,836	191,463	147,984
Napa	51,084	140,907	63,841	77,204
Sonoma	196,195	512,325	233,027	214,146
Marin	105,829	254,222	118,113	116,851
City of Menlo Park	13,937	35,840	15,110	42,013

## Trip Generation and Distribution Calibration

### Trip Generation Calibration

A trip generation and distribution calibration was conducted for the home-based work trip purpose since the previous model didn't include Facebook land uses. Hexagon obtained person-level work-related trip generation data at the county-level from 2019 American Community Survey (ACS) 5-year estimates. The proportions of county-level productions (work trips based on home locations) and attractions (work trips based on employment locations) were used to calibrate the model estimated county-level production and attractions. After calibration, the model-estimated production and attraction proportions well-matched the latest ACS data (see Table 2).

**Table 2**  
**Trip Generation Comparison Between Model and Survey Data**

County	Modelled Proportions		2019 ACS 5-Year Estimates	
	Productions	Attractions	Productions	Attractions
San Francisco	11.2%	16.6%	11.3%	16.6%
San Mateo	9.0%	9.1%	9.1%	9.1%
Santa Clara	21.6%	24.5%	21.6%	24.3%
Alameda	17.2%	16.2%	17.2%	16.2%
Contra Costa	12.0%	8.5%	12.0%	8.4%
Solano	4.6%	3.3%	4.6%	3.3%
Napa	1.5%	1.7%	1.5%	1.7%
Sonoma	5.5%	5.0%	5.4%	5.0%
Marin	2.6%	2.5%	2.6%	2.5%
Rest of Modelled Area	14.6%	12.7%	14.6%	12.9%

### Trip Distribution Calibration

Latest county-to-county flow information were obtained from AASHTO’s Census Transportation Planning Product (CTPP) 2012-2016 data. The year 2019 flow estimates were derived using the iterative proportional fitting method, with the model-estimated county-level productions and attractions as the targets, seeded with the CTPP data. As shown on Table 3 below, the model-estimated county-level flows well-matched the fitted flow data from surveys.

**Table 3**  
**Trip Distribution Calibration**

Comparison of Model Flows to Survey Flows									
Production	Attraction								
	San Francisco	San Mateo	Santa Clara	Alameda	Contra Costa	Solano	Napa	Sonoma	Marin
San Francisco	0.99	1.00	1.03	1.11	1.07				0.99
San Mateo	1.00	1.01	0.96	1.01					
Santa Clara	0.96	0.96	1.01	0.94					
Alameda	1.00	0.99	1.00	1.00	1.00				0.92
Contra Costa	1.03	0.96	0.99	1.01	1.00	0.98			0.94
Solano	1.00			1.03	1.04	1.00	0.98		0.96
Napa						1.04	1.00		
Sonoma	1.02						0.97	0.99	0.98
Marin	0.99			1.05				0.90	1.01

Notes:  
Ratios are provided only for county-to-county person-level flows with more than 5,000 trips

Based on aggregated data supplied by Facebook for employee’s residing cities, Hexagon specifically calibrated the k-factors associated with the Facebook zones. As shown on Table 4, the resulting county-level distributions for the Facebook zones well-represent Facebook employees’ residential patterns.

**Table 4**  
**Facebook Employee Home-Location Distribution**

County	Facebook Employee Home-Location Distribution	
	Model Estimate	Survey Data
San Francisco	14.3%	15.7%
San Mateo	27.3%	26.8%
Santa Clara	35.9%	37.4%
Alameda	18.6%	15.2%
Contra Costa	2.3%	1.6%
Rest	1.7%	3.4%

## Mode Choice Calibration

### Facebook Mode Splits

Facebook provided 2015 survey results of employee travel mode by County. Because the Facebook Classic campus, the Bayfront campus, and the Facebook buildings (MPK 40 to MPK 59) in the Menlo Science and Technology Park are interconnected via pedestrian/bicycle facilities and enjoy essentially the same TDM benefits, it is assumed that the surveyed employee mode splits would apply to all three areas. As shown on Table 5, factors were developed so that the resulting mode splits for these three areas of Facebook campuses would reflect the surveyed data.

**Table 5**  
**Facebook Home-Based Work Mode Split**

County	Facebook HBW Driving Mode Split	
	Modeled	Survey
San Francisco	17.2%	17.4%
San Mateo	75.9%	75.6%
Santa Clara	62.4%	62.4%
Alameda	48.9%	49.4%
Contra Costa	40.5%	40.8%
Marin	79.0%	81.3%

Source: CHS Consulting Group

### Menlo Park and San Mateo County Transit Mode Splits

According to 2019 ACS 5-year estimates, San Mateo County's work trip transit mode split was approximately 10% of all work trips. The model estimated transit mode split for San Mateo County work trips was approximately 9%, which well reflects existing conditions.

Using a combination of 2019 ACS 5-year estimates and CTPP data, it was estimated the City of Menlo Park's work trip transit mode split was approximately 9%. The model estimated transit mode split for the City of Menlo Park work trips was approximately 5% prior to adjusting for Facebook's mode split, and approximately 14% afterwards (assuming all shuttle trips are transit trips). Given that ACS surveys do not explicitly specify inclusion of shuttles under public transportation, the slight discrepancies could be due to the way shuttle is interpreted on the survey. Overall, the model results generally reflects existing conditions,

### Caltrain Coding

According to the *Caltrain 2019 Annual Passenger Count Key Findings*, the Menlo Park Caltrain station had on average 1,639 boarding during a typical weekday. After making refinements in the model to the specific access coding at the Menlo Park Caltrain station and surrounding Caltrain stations, the modelled daily boarding at the Menlo Park Caltrain station was 1,722, which is close to the actual observed boarding. At a system level, the model estimated the Caltrain system boarding within 8% of observed boarding.

## Highway Model Validation

Highway assignment validation is the process in which the traffic volumes estimated by the model are compared with observed traffic count data. Because of the excessive congestion issues experienced along major arterials, expressways and freeways within and around the City of Menlo Park during the AM and PM peak periods, this model is set up for 4-hour AM and PM peak period assignments. The 4-hour peak period assignments would allow the model to capture the shoulders of the commute peak hours. The City of Menlo Park conducted extensive daily roadway counts in March 2019. These volumes along with Caltrans PeMS data were used to derive conversion factors between the peak hour and the 4-hour peak period (see Table 6 for the factors).

**Table 6  
AM and PM Peak 1-hour to 4-hour Volume Conversion Factors**

Roadway	1-hour to 4-hour Factors	
	AM Peak	PM Peak
Freeway	3.65	3.71
Expressway	3.64	3.66
Arterial	3.14	3.57
Ramps	3.33	3.43
Local	2.82	3.42
Notes: Freeway factors derived from Caltrans PeMS data		

Peak hour volumes are important for forecasting turning movement volumes for intersection level-of-service analysis. The factors shown in Table 6 above would allow the 4-hour peak period model forecasts to be converted to peak 1-hour volumes. Therefore, the 2019 model validation presented in this memo is a system-level validation of the factored 1-hour AM and PM peak period volumes based on statistic validation targets set forth in the *2010 California Regional Transportation Plan Guidelines*, as well as validation by facility type (freeways, expressways, arterials and collectors) following the targets recommended in FHWA’s *Travel Model Validation and Reasonableness Checking Manual, Second Edition*.

The specific model validation targets are listed below:

### **System Level Validation Targets**

- Percent of links with volume-to-count ratios within Caltrans deviation allowance: over 75%
- Correlation coefficient: over 0.88
- Percent Root Mean Squared Error: 40% or less

### **Facility Type Validation Targets**

- All Facility Types: less than 5 percent absolute error compared to observed counts
- Freeways: less than 7 percent absolute error compared to observed counts
- Expressways: less than 10 percent absolute error compared to observed counts
- Arterials: less than 15 percent absolute error compared to observed counts
- Collectors: less than 25 percent absolute error compared to observed counts



### **Intersection Level Validation Targets**

In addition, the model was validated at the intersection turning movement level, based on validation criteria used by the Contra Costa Transportation Authority. The goal was to achieve the following tolerances for intersections turning movements:

- 50 percent of all study intersection movements greater than 1,000 vehicles should be within 20% of the count
- 30 percent of all study intersection movements greater than 500 but less than 1,000 vehicles should be within 20% of the count

The discussions below detail the adjustments made during the validation process.

### **Traffic Assignment Methodology**

The original C/CAG model employed the equilibrium traffic assignment methodology. The equilibrium methodology is an iterative assignment process in which the previous assignment iteration's information (such as travel time, vehicular speed, volume-to-capacity ratios) is used to inform the next iteration's assignment. The network is said to reach an equilibrium if the difference in roadway volumes between successive iterations meet specific targets. However, this method was found to result in considerable "noise" or "random error" when small network changes are made. In recent model work completed by Hexagon, this equilibrium traffic assignment methodology was supplemented with the Bi-conjugate Frank-Wolfe algorithm (ENHANCE = 2, SMOOTH = 10). This assignment method has shown more stable assignments and is therefore used in this model.

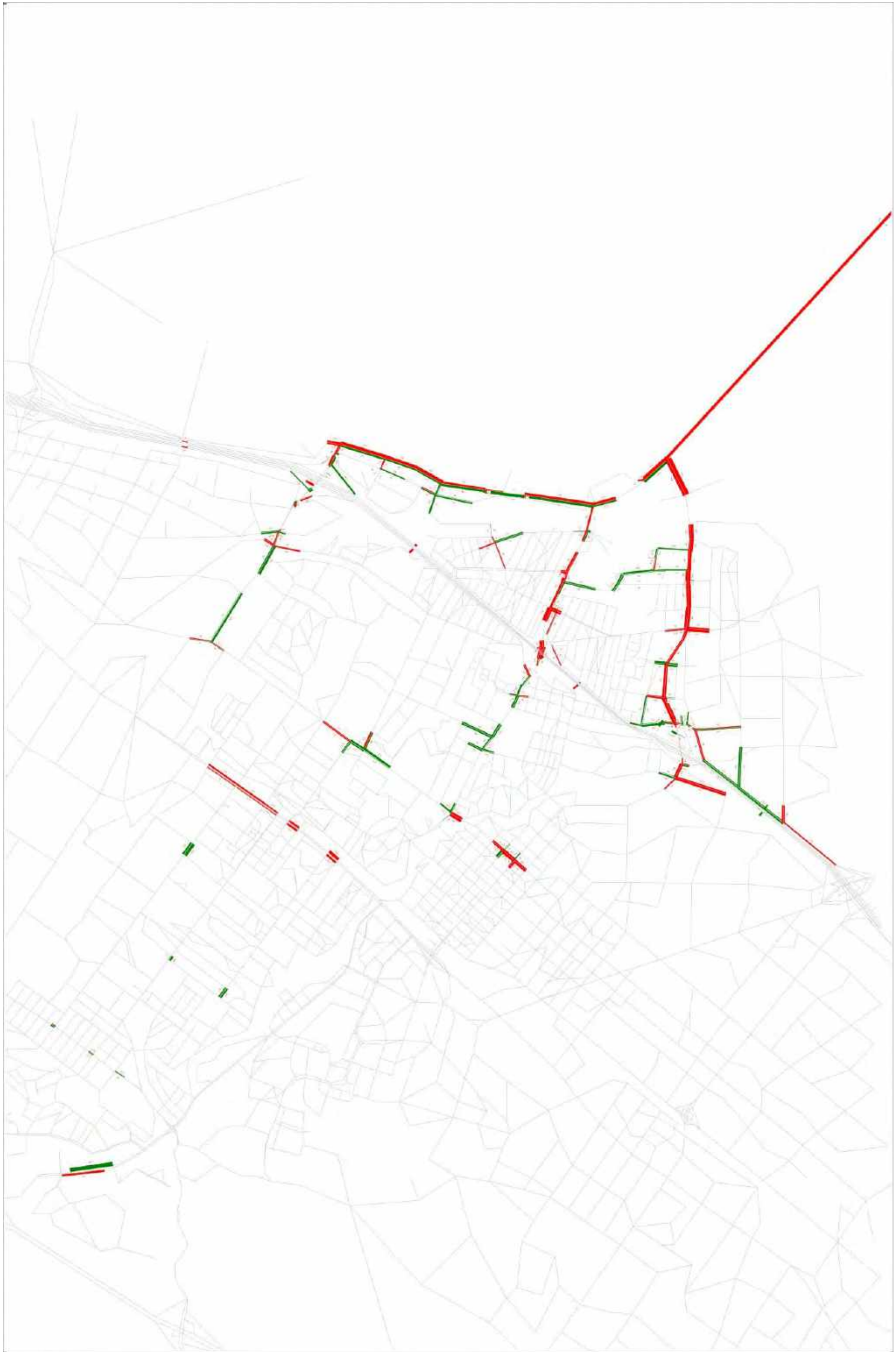
### **AM and PM Peak Hour Validation Results**

Hexagon collected counts conducted by the City of Menlo Park in April/May 2019, as well as Caltrans freeway volumes from the PeMS database for the same time period (see Figure 4). System wide highway validation results for the AM and PM peak-hour peak traffic assignments are summarized in Tables 7 and 8, respectively. The peak-hour model volumes are compared to the counts, stratified by facility type. The tables show that the only suggested target that was not met was the maximum deviation target. Differences in peak-hour modelled and count volumes for the AM and PM peak hours are shown on Figures 5 and 6. Locations that do not meet the maximum deviation target are also shown separately on Figures 7 and 8. As shown, a large portion of the segments exceeding the maximum deviation are local streets that are known to experience cut-through traffic during the peak hour congestion. This is typical of a 4-hour model assignment where local streets are generally low on model assigned volumes. Efforts were made to correct for these via modifying capacity and travel time functions.

**Figure 4**  
**Traffic Count Locations and Volumes**



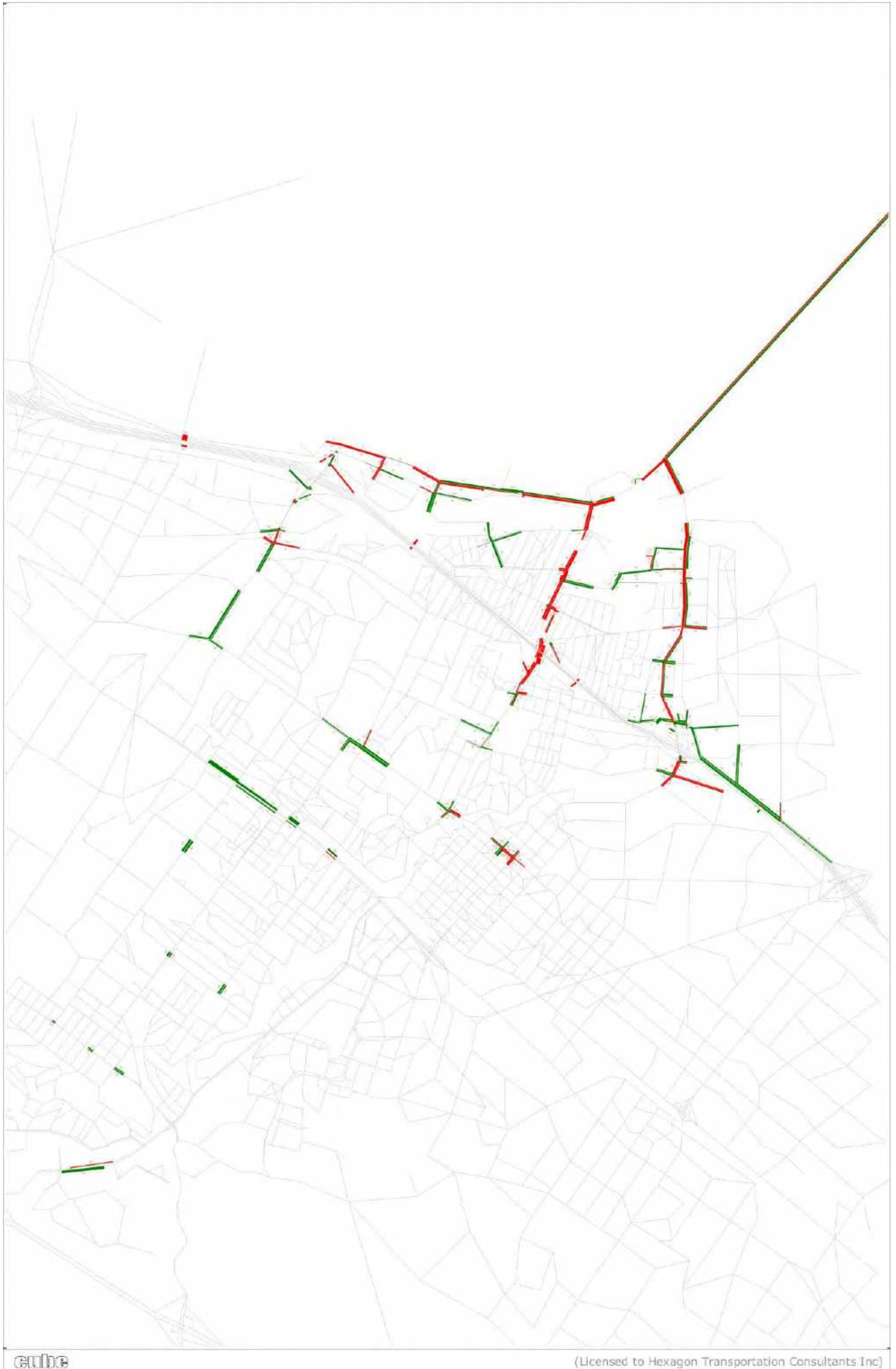
**Figure 5**  
**Model Validation – AM Peak Hour**



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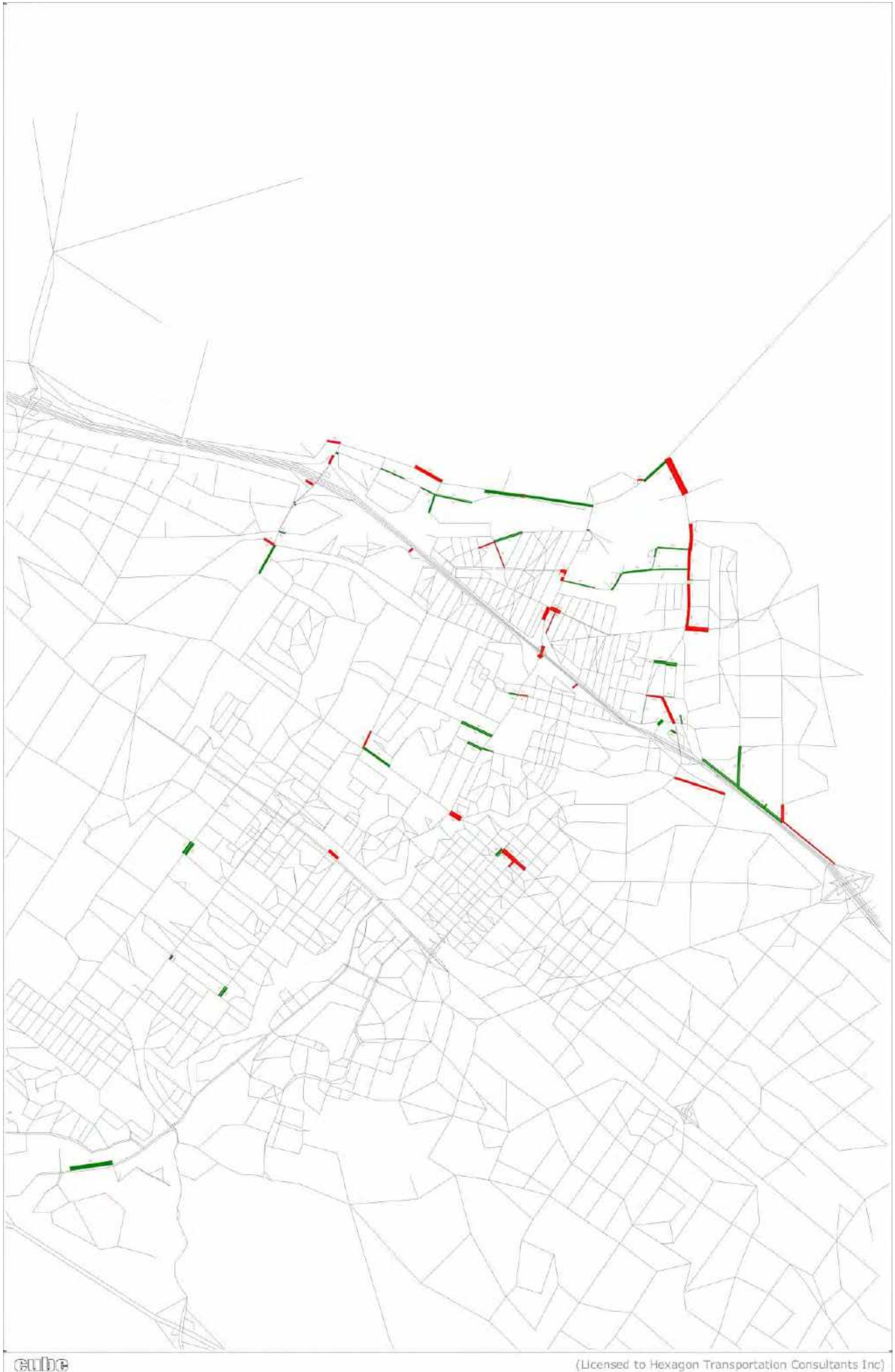
**Figure 6**  
**Model Validation – PM Peak Hour**



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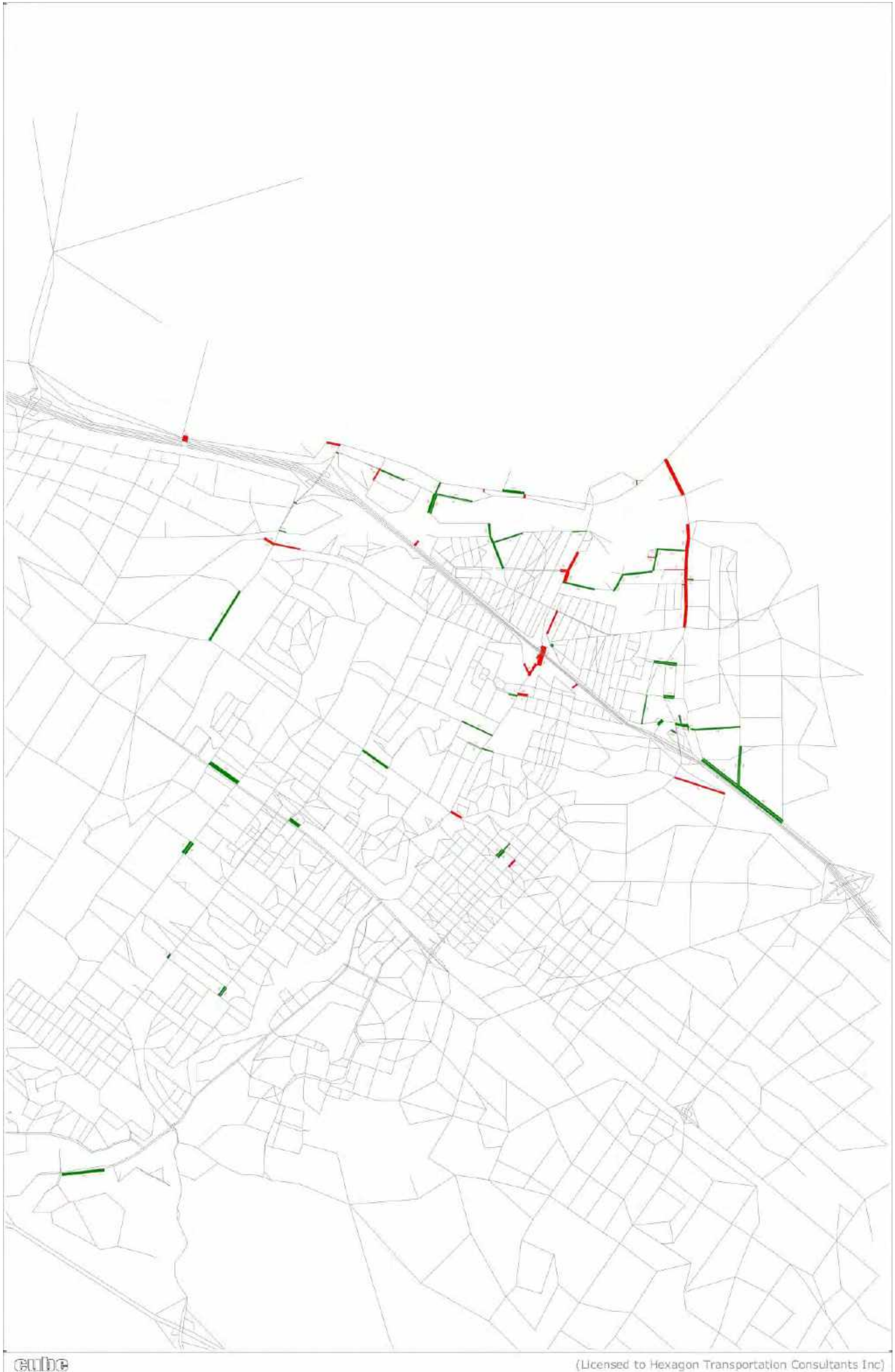
**Figure 7**  
**Locations Exceeding Maximum Deviations – AM Peak Hour**



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**Figure 8**  
**Locations Exceeding Maximum Deviations – PM Peak Hour**



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**Table 7  
Facility Type Validation**

Roadway Facility	# of Locations	AM Peak Hour					PM Peak Hour				
		Traffic Count	Model Volume	Difference	Target	Target Met?	Traffic Count	Model Volume	Difference	Target	Target Met?
Freeway and Ramps	25	82,030	81,083	-1%	+/- 7%	Yes	74,263	77,532	4%	+/- 7%	Yes
Expressway	23	43,763	44,431	2%	+/- 10%	Yes	42,118	42,736	1%	+/- 10%	Yes
Arterials	156	151,425	161,800	7%	+/- 15%	Yes	149,057	145,366	-2%	+/- 15%	Yes
Collectors	148	36,819	33,813	-8%	+/- 25%	Yes	36,865	30,257	-18%	+/- 25%	Yes
All Facilities		314,037	321,127	2%	+/- 5%	Yes	302,303	295,891	-2%	+/- 5%	Yes

**Table 8  
System Level Validation**

	% Root Mean Squared Error	Target	Target Met?	Correlation Coefficient	Target	Target Met?	Max Deviation	Target	Target Met?
AM	32%	40%	Yes	98%	88%	Yes	65%	75%	No
PM	32%	40%	Yes	98%	88%	Yes	68%	75%	No

Table 9 presents the intersection level validation results for the AM and PM peak hours. The table shows that the percent of model estimated turning movements at intersections exceed the targets for both volume levels and for both peak hours (also see Appendix).

**Table 9  
Intersection Level Validation**

Turning Movement Volumes	AM Peak Hour			PM Peak Hour		
	Model	Target	Target Met?	Model	Target	Target Met?
Volumes >1,000 within 20% of count	60.5%	50%	Yes	77.8%	50%	Yes
Volumes between 500 and 1,000 within 20% of count	35.6%	30%	Yes	32.7%	30%	Yes

**Screenlines**

Focusing in on the Bayfront area, Hexagon conducted two screenline analysis given the limited access points in the area:

1. Traffic Volumes entering and leaving the general Bayfront area bounded by Marsh Avenue to the west, US 101 to the south, the San Mateo County line to the east, and the Bay to the north.
2. Traffic volumes on Marsh Avenue, Willow Road and University Avenue immediately south of the US 101.

As shown on Tables 10 to 12 below, the total model assigned volumes along the screenlines were all within 15% of the total screenline count volumes. In comparison, the FHWA’s *Travel Model Validation and Reasonableness Checking Manual, Second Edition* suggested maximum percentage error for screenlines in this volume range would be around 20%.

**Table 10**  
**Screenline #1 – Bayfront Area – Inbound**

Street	Bayfront Area - N of US 101, IN							
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Count	Model	Count	Model	Diff	% Diff	Diff	% Diff
Haven W. of Marsh	500	734	722	1039	234	47%	317	44%
Marsh N. of US 101	2072	1746	2262	2030	-326	-16%	-232	-10%
Willow N. of US 101	1756	2029	1686	2111	273	16%	425	25%
University N. of US 101	909	910	1595	1275	1	0%	-320	-20%
US 101 NB Off-Ramp to Donohoe	857	849	1326	1299	-8	-1%	-27	-2%
Bayshore W. of Pulgas	207	341	827	758	134	65%	-69	-8%
<b>Total</b>	<b>6301</b>	<b>6609</b>	<b>8418</b>	<b>8512</b>	<b>308</b>	<b>5%</b>	<b>94</b>	<b>1%</b>

**Table 11**  
**Screenline #1 – Bayfront Area – Outbound**

Street	Bayfront Area - N of US 101, OUT							
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Count	Model	Count	Model	Diff	% Diff	Diff	% Diff
Haven W. of Marsh	540	892	303	298	352	65%	-5	-2%
Marsh N. of US 101	2224	2515	2021	2052	291	13%	31	2%
Willow N. of US 101	1935	2475	1689	1833	540	28%	144	9%
University N. of US 101	1816	2013	1223	1292	197	11%	69	6%
US 101 NB On-Ramp fr. Donohoe	1473	890	960	364	-583	-40%	-596	-62%
Bayshore W. of Pulgas	922	923	467	312	1	0%	-155	-33%
<b>Total</b>	<b>8910</b>	<b>9708</b>	<b>6663</b>	<b>6151</b>	<b>798</b>	<b>9%</b>	<b>-512</b>	<b>-8%</b>

**Table 12**  
**Screenline #2 – Menlo Park towards US 101 – NB**

Street	Menlo Park towards US 101, NB							
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Count	Model	Count	Model	Diff	% Diff	Diff	% Diff
Marsh Rd	1333	1425	1970	1670	92	7%	-300	-15%
Willow Rd	1461	1420	850	1663	-41	-3%	813	96%
University Ave	1250	1465	1453	1550	215	17%	97	7%
<b>Total</b>	<b>4044</b>	<b>4310</b>	<b>4273</b>	<b>4883</b>	<b>266</b>	<b>7%</b>	<b>610</b>	<b>14%</b>



**Table 13**  
**Screenline #2 – Menlo Park towards US 101 – SB**

Street	Menlo Park towards US 101, SB							
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Count	Model	Count	Model	Diff	% Diff	Diff	% Diff
Marsh Rd	1909	1688	1063	1277	-221	-12%	214	20%
Willow Rd	1444	1601	1118	1143	157	11%	25	2%
University Ave	1538	1871	1077	1369	333	22%	292	27%
<b>Total</b>	<b>4891</b>	<b>5160</b>	<b>3258</b>	<b>3789</b>	<b>269</b>	<b>5%</b>	<b>531</b>	<b>16%</b>

## Year 2040 General Plan Scenario

### Network System Refinement

The Year 2040 roadway network included the following improvements compared to year 2019 existing conditions:

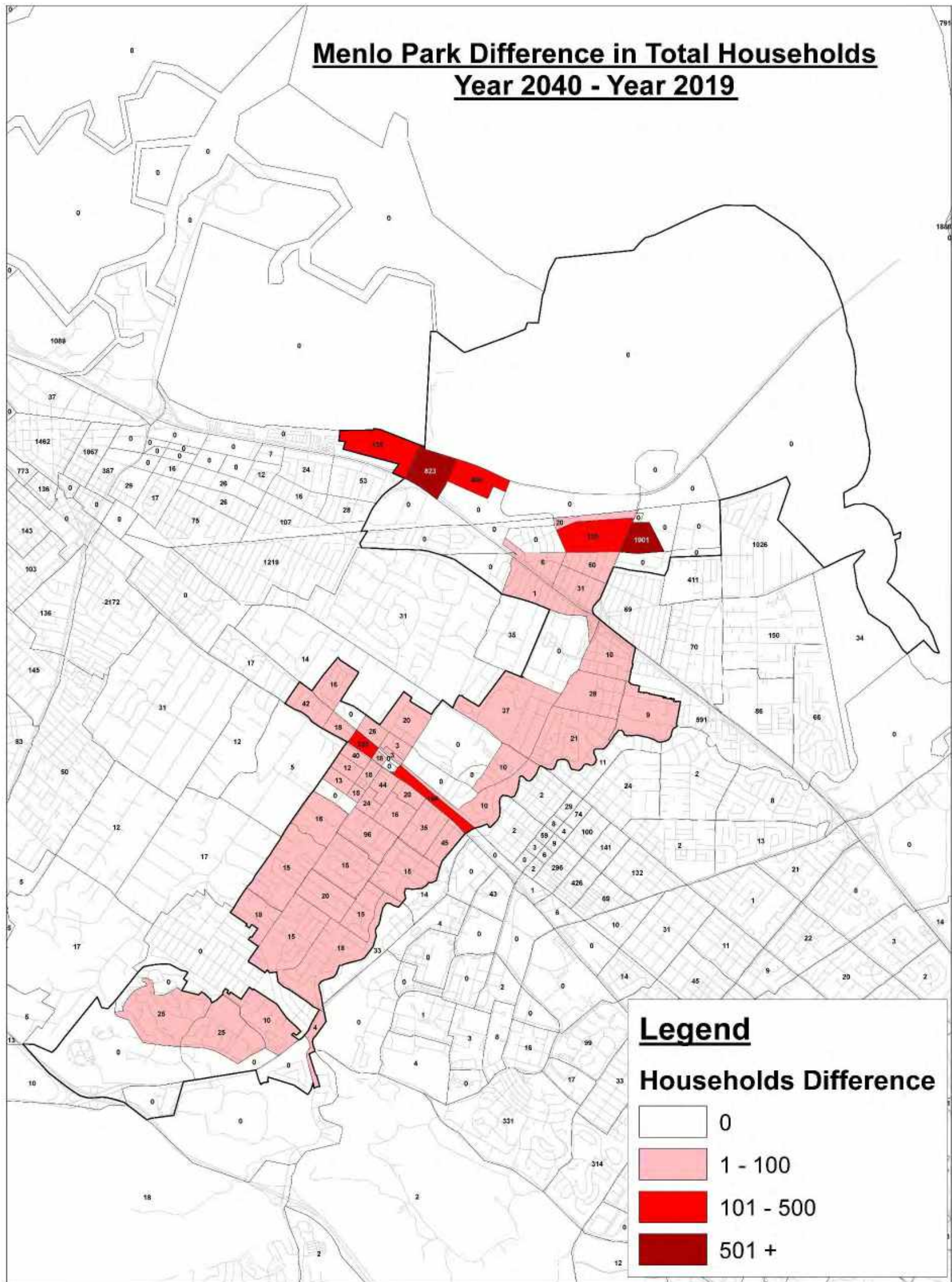
- Full build-out of the US 101/Willow Road interchange (assumed partial completion under existing conditions)
- US 101 managed lane project from Whipple Avenue to I-380
- US 101 2-lane managed lane in each direction from Cochrane Road to Embarcadero Road, per latest bi-county model
- BART extension into Santa Clara, per latest bi-county model
- Increased frequency for existing BART lines from 15-minute to 12-minute headways, per latest bi-county model
- Opening of Caltrain San Francisco Downtown station, per latest bi-county model

### Development of 2040 Land Use Inputs

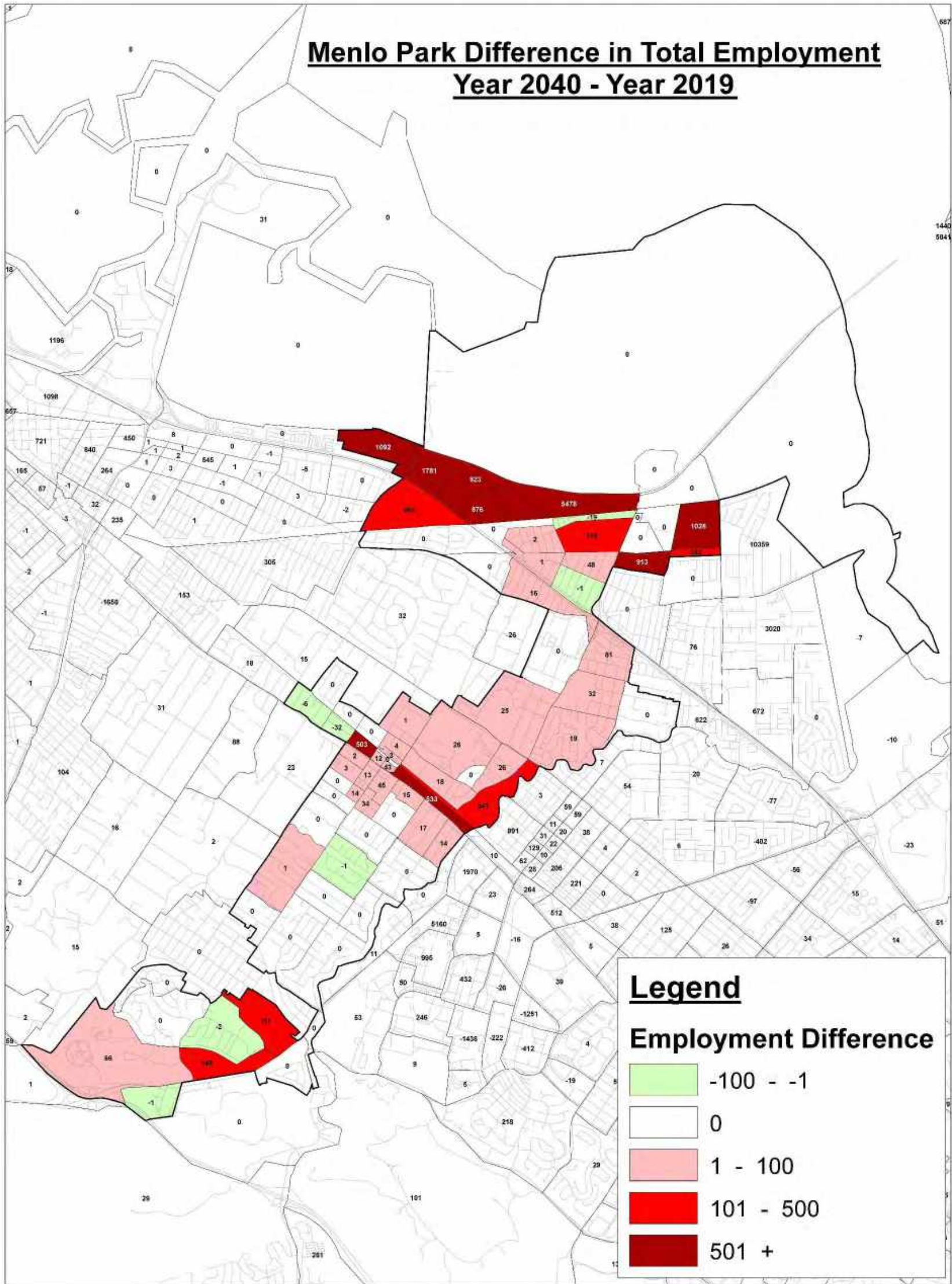
The previous ConnectMenlo model had land uses for a future year of 2040. This was the primary data source for land uses within the City of Menlo Park. Adjustments were made to buildings that will be occupied by Facebook to reflect the higher employee density characteristic of Facebook buildings.

For TAZs outside of the City of Menlo Park, the year 2040 land uses mainly referenced the future year land uses coded in the previous ConnectMenlo model. For TAZs within the City of East Palo Alto, Hexagon obtained a list of approved and pending projects and ensured that the land uses reflected these developments. Figures 9 and 10 show the year 2040 general plan conditions residential and employment land use growth by zone for City of Menlo Park zones. Table 14 below summarizes the key land use data for the nine Bay Area counties and for the City of Menlo Park. Table 15 below compares the City of Menlo Park’s land uses between year 2019 and year 2040.

**Figure 9**  
**Year 2040 Land Use Growth – Households**



**Figure 10**  
**Year 2040 Land Use Growth – Total Employment**



**Table 14**  
**Year 2040 Land Use Summary**

County	Year 2040 Model Land Use Data			
	Total Households	Total Population	Employed Residents	Total Jobs
San Francisco	447,340	1,076,365	559,923	759,509
San Mateo	320,548	910,879	443,628	477,039
Santa Clara	818,369	2,406,587	1,158,389	1,229,995
Alameda	705,337	1,965,356	891,473	947,642
Contra Costa	464,151	1,328,458	579,757	467,333
Solano	168,706	494,363	224,059	179,946
Napa	56,312	158,792	69,450	89,554
Sonoma	220,740	591,546	284,856	257,466
Marin	112,046	274,489	136,554	129,150
Bay Area Total	3,313,549	9,206,835	4,348,089	4,537,634
City of Menlo Park	18,703	48,109	20,519	56,892

**Table 15**  
**Menlo Park Land Use Growth**

County	Menlo Park - Model Land Use Comparison			
	Total Households	Total Population	Employed Residents	Total Jobs
Year 2019	13,937	35,840	15,110	42,013
Year 2040	18,703	48,109	20,519	56,892
<b>Growth</b>	<b>4,766</b>	<b>12,269</b>	<b>5,409</b>	<b>14,879</b>

**Model Estimated Person-Level Trip Generation and Mode Split**

Hexagon evaluated the person-level trip generation and mode split as estimated by the model for both year 2019 and year 2040. Table 16 and 17 below present the data for person trips generated by City of Menlo Park land uses, and by San Mateo County land uses, respectively.

**Table 16**  
**Daily Person Trip Generation and Mode Split – City of Menlo Park**

Mode Split	Daily Person Trips	
	Existing (Yr 2019)	Future Scenario (Yr 2040)
DA	57.7%	56.5%
S2	11.7%	11.7%
S3	16.3%	15.8%
Bk	1.6%	1.7%
Wk	6.5%	7.0%
Transit	6.2%	7.3%

**Table 17**  
**Daily Person Trip Generation and Mode Split – County of San Mateo**

	Daily Person Trips	
	Existing (Yr 2019)	Future Scenario (Yr 2040)
<b>Total</b>	<b>3,316,797</b>	<b>3,927,108</b>
<i>Mode Split</i>		
Drive Alone	56.6%	55.3%
Shared Ride - 2	13.4%	13.2%
Shared Ride - 3+	17.2%	16.6%
Bike	1.4%	1.6%
Walk	7.6%	8.0%
Transit	3.9%	5.2%

## Conclusion

The peak model assignment is set up to produce sensible future forecasts and inform locations of potential future roadway improvements to address peak-period congestions. Although the model validation results do not meet one of the suggested targets, the model balances accounting for a certain degree of cut-through traffic behavior, and accommodating additional traffic on major roadways (i.e. Willow Road, University Avenue, Bayfront Expressway) under future conditions. Therefore, the overall model validation is considered acceptable.

## APPENDIX







11 <b>70459</b> Intersection Name: <b>MPK 20 &amp; Bayfront</b> <b>AM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	70	70	0	0	0	0	0	909	265	1174	98	2486	0	2584	3828
2019 Model 4Hr	0	0	167	167	0	0	0	0	0	1973	0	1973	1646	8937	0	10583	12723
Mdl Factored 1Hr	0	0	59	59	0	0	0	0	0	543	0	543	453	2458	0	2911	3513
Abs Diff	0	0	11	11	0	0	0	0	0	366	265	631	355	28	0	327	315
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	1%	-	-	-
>500	-	-	-	-	-	-	-	-	-	40%	-	-	-	-	-	-	-

11 <b>70459</b> Intersection Name: <b>MPK 20 &amp; Bayfront</b> <b>PM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	73	73	0	0	0	0	0	2101	29	2130	60	1085	0	1145	3348
2019 Model 4Hr	0	0	1258	1258	0	0	0	0	0	7906	0	7906	239	2423	0	2662	11826
Mdl Factored 1Hr	0	0	447	447	0	0	0	0	0	2175	0	2175	66	666	0	732	3354
Abs Diff	0	0	374	374	0	0	0	0	0	74	29	45	6	419	0	413	6
>1000	-	-	-	-	-	-	-	-	-	4%	-	-	-	39%	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

12 <b>60646</b> Intersection Name: <b>Chrysler &amp; Constitution</b> <b>AM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	153	19	172	79	718	0	797	11	3	9	23	36	0	100	136	1128
2019 Model 4Hr	0	536	4	540	351	2094	0	2445	0	0	0	0	17	0	18	35	3020
Mdl Factored 1Hr	0	190	1	191	125	743	0	868	0	0	0	0	6	0	6	12	1071
Abs Diff	0	37	18	19	46	25	0	71	11	3	9	23	30	0	94	124	57
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	3%	-	-	-	-	-	-	-	-	-	-	-

12 <b>60646</b> Intersection Name: <b>Chrysler &amp; Constitution</b> <b>PM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	490	14	504	194	134	0	328	28	5	3	36	13	0	114	127	995
2019 Model 4Hr	0	2236	10	2246	50	1170	0	1220	0	0	0	0	14	0	364	378	3844
Mdl Factored 1Hr	0	794	4	798	18	415	0	433	0	0	0	0	5	0	129	134	1365
Abs Diff	0	304	10	294	176	281	0	105	28	5	3	36	8	0	15	7	370
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

13 <b>68563</b> Intersection Name: <b>Chilco &amp; Constitution</b> <b>AM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	72	207	46	325	175	193	423	791	69	20	73	162	34	28	43	105	1383
2019 Model 4Hr	85	751	43	879	0	152	1570	1722	43	18	15	76	10	17	0	27	2704
Mdl Factored 1Hr	30	267	15	312	0	54	557	611	15	6	5	26	4	6	0	10	959
Abs Diff	42	60	31	13	175	139	134	180	54	14	68	136	30	22	43	95	424
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

13 <b>68563</b> Intersection Name: <b>Chilco &amp; Constitution</b> <b>PM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	13	237	51	301	22	327	36	385	221	37	240	498	33	18	109	160	1344
2019 Model 4Hr	40	322	25	387	0	451	74	525	1769	48	53	1870	14	33	0	47	2829
Mdl Factored 1Hr	14	114	9	137	0	160	26	186	628	17	19	664	5	12	0	17	1004
Abs Diff	1	123	42	164	22	167	10	199	407	20	221	166	28	6	109	143	340
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

14 <b>68590</b> Intersection Name: <b>Chilco &amp; Hamilton</b> <b>AM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	13	88	10	111	50	79	15	144	37	41	16	94	22	51	131	204	553
2019 Model 4Hr	164	402	0	566	3	116	106	225	307	6	229	542	0	6	144	150	1483
Mdl Factored 1Hr	58	143	0	201	1	41	38	80	109	2	81	192	0	2	51	53	526
Abs Diff	45	55	10	90	49	38	23	64	72	39	65	98	22	49	80	151	27
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

14 <b>68590</b> Intersection Name: <b>Chilco &amp; Hamilton</b> <b>PM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	19	63	18	100	71	407	36	514	21	124	21	166	7	16	47	70	850
2019 Model 4Hr	38	141	0	179	1	230	271	502	205	4	145	354	0	4	74	78	1113
Mdl Factored 1Hr	13	50	0	63	0	82	96	178	73	1	51	125	0	1	26	27	393
Abs Diff	6	13	18	37	71	325	60	336	52	123	30	41	7	15	21	43	457
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

15 <b>68395</b> Intersection Name: <b>Ravenswox &amp; Middlefield</b> <b>AM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	87	0	422	509	0	0	0	0	0	416	104	520	456	400	0	856	1885
2019 Model 4Hr	674	0	576	1250	0	0	0	0	0	1444	560	2004	777	961	0	1738	4992
Mdl Factored 1Hr	239	0	205	444	0	0	0	0	0	460	178	638	247	306	0	553	1635
Abs Diff	152	0	217	65	0	0	0	0	0	44	74	118	209	94	0	303	250
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

15 <b>68395</b> Intersection Name: <b>Ravenswox &amp; Middlefield</b> <b>PM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	137	0	460	597	0	0	0	0	0	369	104	473	380	526	0	906	1976
2019 Model 4Hr	487	0	827	1314	0	0	0	0	0	1056	510	1566	762	1447	0	2209	5089
Mdl Factored 1Hr	173	0	294	467	0	0	0	0	0	336	162	498	243	461	0	704	1669
Abs Diff	36	0	166	130	0	0	0	0	0	33	58	25	137	65	0	202	307
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	12%	-	-	-







34 **62832**  
 Intersection Name: **Adams & O'Brien**  
**AM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	0	0	29	0	72	101	86	80	0	166	0	276	28	304	571
2019 Model 4Hr	0	0	0	0	53	0	54	107	202	74	0	276	0	108	237	345	728
Mdl Factored 1Hr	0	0	0	0	19	0	19	38	72	26	0	98	0	38	84	122	258
Abs Diff	0	0	0	0	10	0	53	63	14	54	0	68	0	238	56	182	313
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

34 **62832**  
 Intersection Name: **Adams & O'Brien**  
**PM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	0	0	73	0	63	136	226	214	0	440	0	70	15	85	661
2019 Model 4Hr	0	0	0	0	286	0	288	574	122	319	0	441	0	65	125	190	1205
Mdl Factored 1Hr	0	0	0	0	102	0	102	204	43	113	0	156	0	23	44	67	427
Abs Diff	0	0	0	0	29	0	39	68	183	101	0	284	0	47	29	18	234
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

35 **68294**  
 Intersection Name: **University & Bayfront**  
**AM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	205	0	416	621	0	0	0	0	0	829	67	896	1148	2695	0	3843	5360
2019 Model 4Hr	975	0	3154	4129	0	0	0	0	0	1713	63	1776	5149	13943	0	19092	24997
Mdl Factored 1Hr	310	0	1004	1314	0	0	0	0	0	471	17	488	1416	3835	0	5251	7053
Abs Diff	105	0	588	693	0	0	0	0	0	358	50	408	268	1140	0	1408	1693
>1000	-	-	-	-	-	-	-	-	-	-	-	-	23%	42%	-	-	-
>500	-	-	-	-	-	-	-	-	-	43%	-	-	-	-	-	-	-

35 **68294**  
 Intersection Name: **University & Bayfront**  
**PM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	68	0	1803	1871	0	0	0	0	0	3307	20	3327	359	970	0	1329	6527
2019 Model 4Hr	30	0	5924	5954	0	0	0	0	0	11930	1783	13713	1834	3876	0	5710	25377
Mdl Factored 1Hr	10	0	1885	1895	0	0	0	0	0	3281	490	3771	504	1066	0	1570	7236
Abs Diff	58	0	82	24	0	0	0	0	0	26	470	444	145	96	0	241	709
>1000	-	-	5%	-	-	-	-	-	-	1%	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	10%	-	-	-

36 **68398**  
 Intersection Name: **University & Purdue**  
**AM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	614	56	670	99	1430	0	1529	0	0	0	0	26	0	52	78	2277
2019 Model 4Hr	0	4024	6	4030	42	5184	0	5226	0	0	0	0	7	0	105	112	9368
Mdl Factored 1Hr	0	1281	2	1283	13	1650	0	1663	0	0	0	0	2	0	37	39	2985
Abs Diff	0	667	54	613	86	220	0	134	0	0	0	0	24	0	15	39	708
>1000	-	-	-	-	-	15%	-	-	-	-	-	-	-	-	-	-	-
>500	-	109%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

36 **68398**  
 Intersection Name: **University & Purdue**  
**PM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	1695	10	1705	20	437	0	457	0	0	0	0	29	0	124	153	2315
2019 Model 4Hr	0	5291	0	5291	154	3474	0	3628	0	0	0	0	22	0	662	684	9603
Mdl Factored 1Hr	0	1684	0	1684	49	1106	0	1155	0	0	0	0	8	0	235	243	3082
Abs Diff	0	11	10	21	29	669	0	698	0	0	0	0	21	0	111	90	767
>1000	-	1%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

37 **68453**  
 Intersection Name: **University & Adams**  
**AM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	90	667	0	757	1	1559	163	1723	6	0	4	10	0	0	0	0	2490
2019 Model 4Hr	0	4008	0	4008	0	5058	133	5191	21	0	0	21	0	0	0	0	9220
Mdl Factored 1Hr	0	1276	0	1276	0	1610	42	1652	7	0	0	7	0	0	0	0	2935
Abs Diff	90	609	0	519	1	51	121	71	1	0	4	3	0	0	0	0	445
>1000	-	-	-	-	-	3%	-	-	-	-	-	-	-	-	-	-	-
>500	-	91%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

37 **68453**  
 Intersection Name: **University & Adams**  
**PM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	7	1802	0	1809	0	374	13	387	201	0	44	245	0	0	0	0	2441
2019 Model 4Hr	0	5177	0	5177	0	3429	70	3499	113	0	0	113	0	0	0	0	8789
Mdl Factored 1Hr	0	1648	0	1648	0	1091	22	1113	40	0	0	40	0	0	0	0	2801
Abs Diff	7	154	0	161	0	717	9	726	161	0	44	205	0	0	0	0	360
>1000	-	9%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

38 **68627**  
 Intersection Name: **University & O'Brien**  
**AM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	110	733	0	843	0	1184	275	1459	32	0	20	52	0	0	0	0	2354
2019 Model 4Hr	324	3984	0	4308	0	4926	132	5058	17	0	68	85	0	0	0	0	9451
Mdl Factored 1Hr	103	1268	0	1371	0	1568	42	1610	6	0	24	30	0	0	0	0	3011
Abs Diff	7	535	0	528	0	384	233	151	26	0	4	22	0	0	0	0	657
>1000	-	-	-	-	-	32%	-	-	-	-	-	-	-	-	-	-	-
>500	-	73%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

38 **68627**  
 Intersection Name: **University & O'Brien**  
**PM**

Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	6	1522	0	1528	1	464	9	474	185	0	141	326	0	0	0	0	2328
2019 Model 4Hr	162	5123	0	5285	0	3361	69	3430	52	0	713	765	0	0	0	0	9480
Mdl Factored 1Hr	52	1631	0	1683	0	1070	22	1092	18	0	253	271	0	0	0	0	3046
Abs Diff	46	109	0	155	1	606	13	618	167	0	112	55	0	0	0	0	718
>1000	-	7%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-









Volume Adjustment Spreadsheet - AM Peak Hour (Difference Method)

53 <b>11820</b> Intersection Name: <b>Euclid &amp; E Bayshore</b> <b>AM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	0	0	360	0	5	365	7	600	0	607	0	113	41	154	1126
2019 Model 4Hr	0	0	0	0	743	0	2	745	0	1126	0	1126	0	328	0	328	2199
Mdl Factored 1Hr	0	0	0	0	264	0	1	265	0	400	0	400	0	116	0	116	781
Abs Diff	0	0	0	0	96	0	4	100	7	200	0	207	0	3	41	38	345
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	33%	-	-	-	-	-	-	-

53 <b>11820</b> Intersection Name: <b>Euclid &amp; E Bayshore</b> <b>PM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	0	0	74	0	20	94	13	226	0	239	0	547	142	689	1022
2019 Model 4Hr	0	0	0	0	331	0	0	331	1	477	0	478	0	1660	3	1663	2472
Mdl Factored 1Hr	0	0	0	0	118	0	0	118	0	169	0	169	0	589	1	590	877
Abs Diff	0	0	0	0	44	0	20	24	13	57	0	70	0	42	141	99	145
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	8%	-	-	-

54 <b>4866</b> Intersection Name: <b>Clark &amp; E Bayshore</b> <b>AM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	0	0	312	0	32	344	57	204	0	261	0	111	64	175	780
2019 Model 4Hr	0	0	0	0	233	0	0	233	0	250	0	250	0	1	0	1	484
Mdl Factored 1Hr	0	0	0	0	83	0	0	83	0	80	0	80	0	0	0	0	163
Abs Diff	0	0	0	0	229	0	32	261	57	124	0	181	0	111	64	175	617
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

54 <b>4866</b> Intersection Name: <b>Clark &amp; E Bayshore</b> <b>PM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	0	0	81	0	26	107	81	302	0	383	0	198	152	350	840
2019 Model 4Hr	0	0	0	0	0	0	0	0	0	24	0	24	0	189	95	284	308
Mdl Factored 1Hr	0	0	0	0	0	0	0	0	0	8	0	8	0	60	30	90	98
Abs Diff	0	0	0	0	81	0	26	107	81	294	0	375	0	138	122	260	742
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

55 <b>10048</b> Intersection Name: <b>Pulgas &amp; E Bayshore</b> <b>AM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	0	0	524	0	62	586	45	398	0	443	0	71	136	207	1236
2019 Model 4Hr	0	0	0	0	2414	0	0	2414	0	484	0	484	0	1	1071	1072	3970
Mdl Factored 1Hr	0	0	0	0	857	0	0	857	0	154	0	154	0	0	341	341	1352
Abs Diff	0	0	0	0	333	0	62	271	45	244	0	289	0	71	205	134	116
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	64%	-	-	-	-	-	-	-	-	-	-	-	-

55 <b>10048</b> Intersection Name: <b>Pulgas &amp; E Bayshore</b> <b>PM</b>																	
Scenario:	Northbound				Southbound				Eastbound				Westbound				Total
	NBL	NBT	NBR	Sum	SBL	SBT	SBR	Sum	EBL	EBT	EBR	Sum	WBL	WBT	WBR	Sum	
Existing 1Hr Cnt	0	0	0	0	202	0	80	282	127	265	0	392	0	268	559	827	1501
2019 Model 4Hr	0	0	0	0	1091	0	0	1091	0	24	0	24	0	287	2424	2711	3826
Mdl Factored 1Hr	0	0	0	0	387	0	0	387	0	8	0	8	0	91	771	862	1257
Abs Diff	0	0	0	0	185	0	80	105	127	257	0	384	0	177	212	35	244
>1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
>500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	38%	-	-