Complete Streets Commission

REGULAR MEETING AGENDA

Date: 10/13/2021
Time: 7:00 p.m.
Regular Meeting Location: Zoom.us/join – ID# 959 6579 2741

NOVEL CORONAVIRUS, COVID-19, EMERGENCY ADVISORY NOTICE
On March 19, 2020, the Governor ordered a statewide stay-at-home order calling on all individuals living in the State of California to stay at home or at their place of residence to slow the spread of the COVID-19 virus. Additionally, the Governor has temporarily suspended certain requirements of the Brown Act. For the duration of the shelter in place order, the following public meeting protocols will apply.

Teleconference meeting: All members of the Complete Streets Commission, city staff, applicants, and members of the public will be participating by teleconference. To promote social distancing while allowing essential governmental functions to continue, the Governor has temporarily waived portions of the open meetings act and rules pertaining to teleconference meetings. This meeting is conducted in compliance with the Governor Executive Order N-25-20 issued March 12, 2020, and supplemental Executive Order N-29-20 issued March 17, 2020.

- How to participate in the meeting
  - Access the meeting real-time online at:
    Zoom.us/join – Meeting ID 959 6579 2741
  - Access the meeting real-time via telephone at:
    (669) 900-6833
    Meeting ID 959 6579 2741
    Press *9 to raise hand to speak

Subject to Change: Given the current public health emergency and the rapidly evolving federal, state, county and local orders, the format of this meeting may be altered or the meeting may be canceled. You may check on the status of the meeting by visiting the City's website www.menlopark.org. The instructions for logging on to the Zoom webinar and/or the access code is subject to change. If you have difficulty accessing the Zoom webinar, please check the latest online edition of the posted agenda for updated information (menlopark.org/agenda).

Regular Meeting (Zoom.us/join – ID# 959 6579 2741)

A. Call To Order

B. Roll Call

C. Reports and Announcements

Under "Reports and Announcements," staff and Commission members may communicate general information of interest regarding matters within the jurisdiction of the Commission. No Commission discussion or action can occur on any of the presented items.

D. Public Comment

Under "Public Comment," the public may address the Commission on any subject not listed on the agenda. Each speaker may address the Commission once under public comment for a limit of three minutes. Please clearly state your name and address or political jurisdiction in which you live. The Commission cannot act on items not listed on the agenda and, therefore, the Commission cannot respond to non-agenda issues brought up under public comment other than to provide general information.

E. Regular Business

E1. Approve the Complete Streets Commission regular meeting minutes of September 8, 2021 (Attachment)

E2. Recommend the Complete Streets Commission adopt Resolution No. 2021-3 to establish loading zone on Constitution Drive fronting 180 Constitution Drive (Staff Report #21-009-CSC)

E3. Recommend the Complete Streets Commission adopt Resolution No. 2021-4 to establish loading zones on Constitution Drive and Independence Drive (Staff Report #21-010-CSC)

E4. Recommend the City Council adopt a resolution to approve through and left-turn restrictions from southbound Garwood Way at Oak Grove Avenue (Staff Report #21-011-CSC)

E5. Evaluate commission subcommittees to support City Council priorities

F. Informational Items

F1. Update on major project status

G. Committee/Subcommittee Reports

G1. Update from Climate Action Plan Subcommittee (Jensen/Levin)

G2. Update from Downtown Access and Parking Subcommittee (Altman/Behroozi/Cole)

G3. Update from Multimodal Metrics Subcommittee (Altman/Behroozi/Levin)

G4. Update from Multimodal Subcommittee (Cebrian/Levin)

G5. Update from Safe Routes to School Program Subcommittee (Behroozi/Cebrian/King/Lee)

G6. Update from Transportation Master Plan Implementation Subcommittee (Altman/Behroozi/Cebrian/Levin)

G7. Update from Zero Emission Subcommittee (Cromie/Jensen)

H. Adjournment

At every Regular Meeting of the Commission, in addition to the Public Comment period where the public shall have the right to address the Commission on any matters of public interest not listed on the agenda, members of the public have

the right to directly address the Commission on any item listed on the agenda at a time designated by the Chair, either before or during the Commission's consideration of the item.

At every Special Meeting of the Commission, members of the public have the right to directly address the Commission on any item listed on the agenda at a time designated by the Chair, either before or during consideration of the item.

For appeal hearings, appellant and applicant shall each have 10 minutes for presentations.

If you challenge any of the items listed on this agenda in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the City of Menlo Park at, or prior to, the public hearing.

Any writing that is distributed to a majority of the City Council by any person in connection with an agenda item is a public record (subject to any exemption under the Public Records Act) and is available by request by emailing the city clerk at jaherren@menlopark.org. Persons with disabilities, who require auxiliary aids or services in attending or participating in City Council meetings, may call the City Clerk's Office at 650-330-6620.

Agendas are posted in accordance with Government Code §54954.2(a) or §54956. Members of the public can view electronic agendas and staff reports by accessing the City website at menlopark.org/agenda and can receive email notification of agenda and staff report postings by subscribing to the "Notify Me" service at menlopark.org/notifyme. Agendas and staff reports may also be obtained by contacting City Clerk at 650-330-6620. (Posted: 10/7/2021)

Complete Streets Commission

REGULAR MEETING MINUTES – DRAFT
Date: 9/8/2021
Time: 7:00 p.m.
Special Meeting Location: Zoom.us/join – ID# 959 6579 2741

A. Call to Order

Chair Levin called the meeting to order at 7:05 p.m.

B. Roll Call

Present:	Altman, Behroozi, Cebrian, Cole, Cromie (arrived at 7:12 p.m.), Jensen, King, Lee, Levin
Absent:	None
Staff:	Associate Civil Engineer Phillip Linarte, Engineering Technician Patrick Palmer, Senior Transportation Engineer Kevin Chen, Senior Transportation Engineer Kristiann Choy
Others:	Facebook Transportation Projects Manager Vanessa Peers, Fehr & Peers Transportation Consultant Steve Davis

C. Reports and Announcements

Staff Chen reported on City Council actions related to transportation since the August 11, 2021 Commission meeting.

The Commission received clarification on the newly established 15 miles per hour school zones.

D. Public Comment

None.

E. Regular Business

E1. Approve minutes from the August 11, 2021 Complete Streets Commission meeting (Attachment)

ACTION: Motion and second (Lee/ Jensen), to approve minutes from the August 11, 2021 Complete Streets Commission meeting, revising item E2. ACTION fifth bullet point verbiage from “Pause permanent bulbout installation…” to “Eliminate installation of permanent bulbout…”, and combine the last two bullet points, passed 8-0 (Cromie abstained).

E2. Adopt Resolution No. 2021-2 to remove one on-street parking space at 951 College Avenue to construct a retaining curb extension (Staff Report #21-007-CSC)

Staff Linarte made the presentation (Attachment).

The Commission discussed design details, project responsibility assignments, and project scope.

ACTION: Motion and second (Behroozi/ Cole), to adopt Resolution No. 2021-2 to remove one on-street parking space at 951 College Avenue, passed 9-0.

E3. Recommend the City Council adopt a resolution to remove the left turn restriction on Constitution Drive (Staff Report #21-008-CSC)

Staff Choy and Facebook team Peers/ Davis made the presentation (Attachment).

The Commission discussed project scope, roadway congestion and conflicts, driveway alignment, Bayfront area pedestrian and bicycle plan, and street design.

ACTION: Motion and second (Cebrian/ King), to recommend to the City Council to adopt a resolution to remove the left turn restriction on Constitution Drive, recommend the installation of "KEEP CLEAR" pavement marking, and mid-block pedestrian crossing or other pedestrian infrastructure that supports safe connection to the Menlo Portal development directly across Constitution Drive, passed 7-0 (Cole abstained, Jensen recused).

E4. Evaluate commission subcommittees to support City Council priorities

Staff Chen introduced the item.

The Commission discussed charges and responsibilities for the following subcommittees and deferred the remaining subcommittees to the next meeting:

- Climate Action Plan Subcommittee
- Downtown Access and Parking Subcommittee
- Multimodal Metrics Subcommittee
- Safe Routes to School Program Subcommittee
- Zero Emission Subcommittee

ACTION: By acclamation, Commissioner Jensen was assigned to the Zero Emission Subcommittee.

F. Informational Items

F1. Update on major project status

Staff Chen provided an update on additions to Transportation Division staffing.

G. Committee/Subcommittee Reports

G1. Update from Climate Action Plan Subcommittee

None.

G2. Update from Downtown Access and Parking Subcommittee

None.

G3. Update from Multimodal Metrics Subcommittee

None.

G4. Update from Multimodal Subcommittee

None.

G5. Update from Safe Routes to School Program Subcommittee

None.

G6. Update from Transportation Master Plan Implementation Subcommittee

None.

G7. Update from Zero Emission Subcommittee

None.

H. Adjournment

Chair Levin adjourned the meeting at 9:57 p.m.

Kevin Chen, Senior Transportation Engineer

NOVEL CORONAVIRUS, COVID-19, EMERGENCY ADVISORY NOTICE On March 19, 2020, the Governor ordered a statewide stay-at-home order calling on all individuals living in the State of California to stay at home or at their place of residence to slow the spread of the COVID-19 virus. Additionally, the Governor has temporarily suspended certain requirements of the Brown Act. For the duration of the shelter in place order, the following public meeting protocols will apply.

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951 COLLEGE AVE
RESIDENTIAL ON-STREET PARKING REMOVAL

COMPLETE STREETS COMMISSION, SEPTEMBER 8, 2021

AGENDA

- Background
- Evaluation
- Action
- Next Steps

BACKGROUND

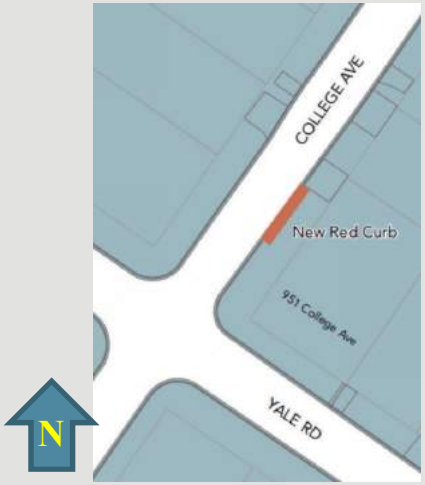
- Resident Request
  - Drainage issue causing significant ponding at 951 College Ave

DRAINAGE EVALUATION

- Field observations
  - Issue created by tree roots
  - Uprooting and drainage issue
  - City Arborist discussion
    - Retaining curb at tree

COMMISSION ACTION

- Adopt a resolution to remove one on-street parking space in front of 951 College Ave



NEXT STEPS

- Parking removal & red curb installation
  - A 15 days appeal period succeeding approval of parking removal

THANK YOU

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REMOVAL OF LEFT-TURN RESTRICTION ON CONSTITUTION DRIVE

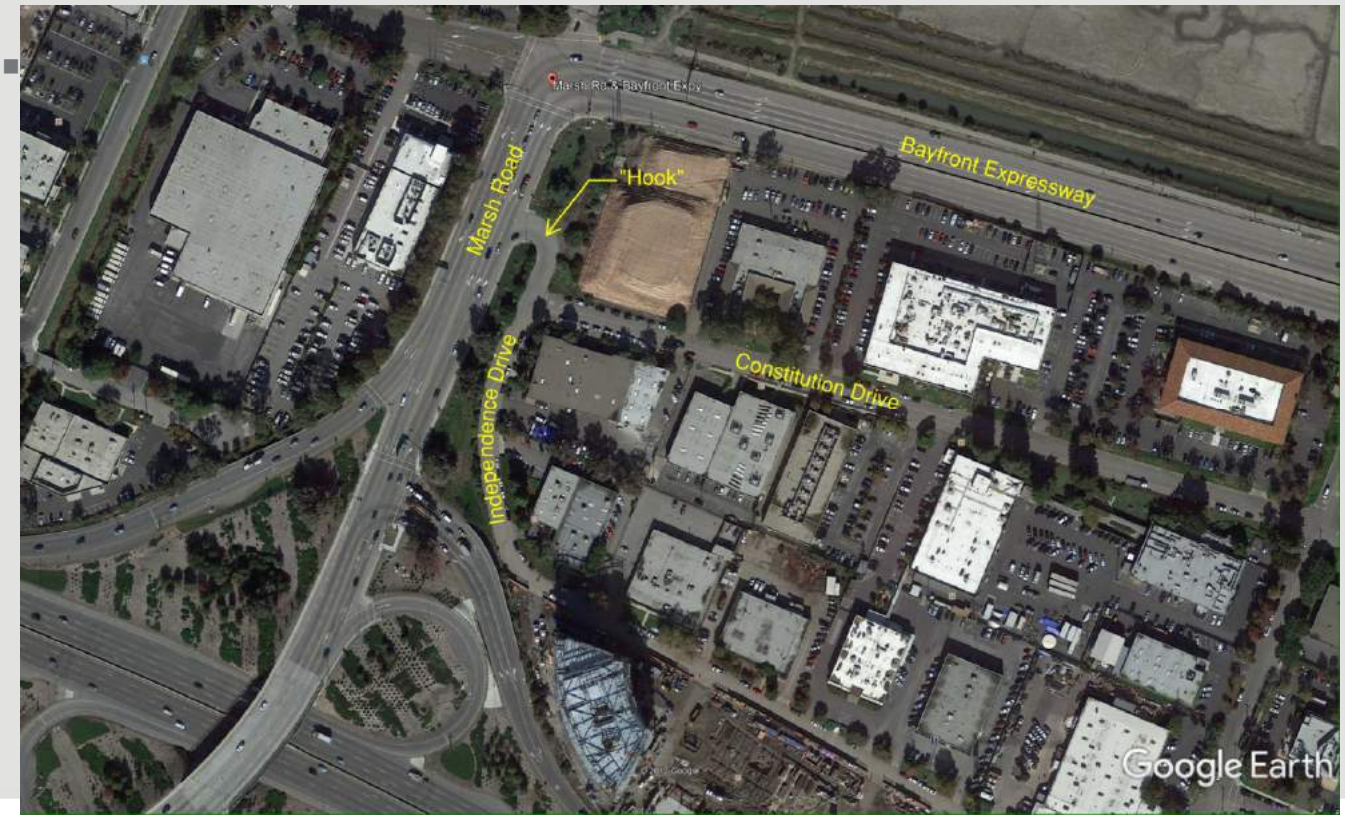
Complete Streets Commission

September 8, 2021

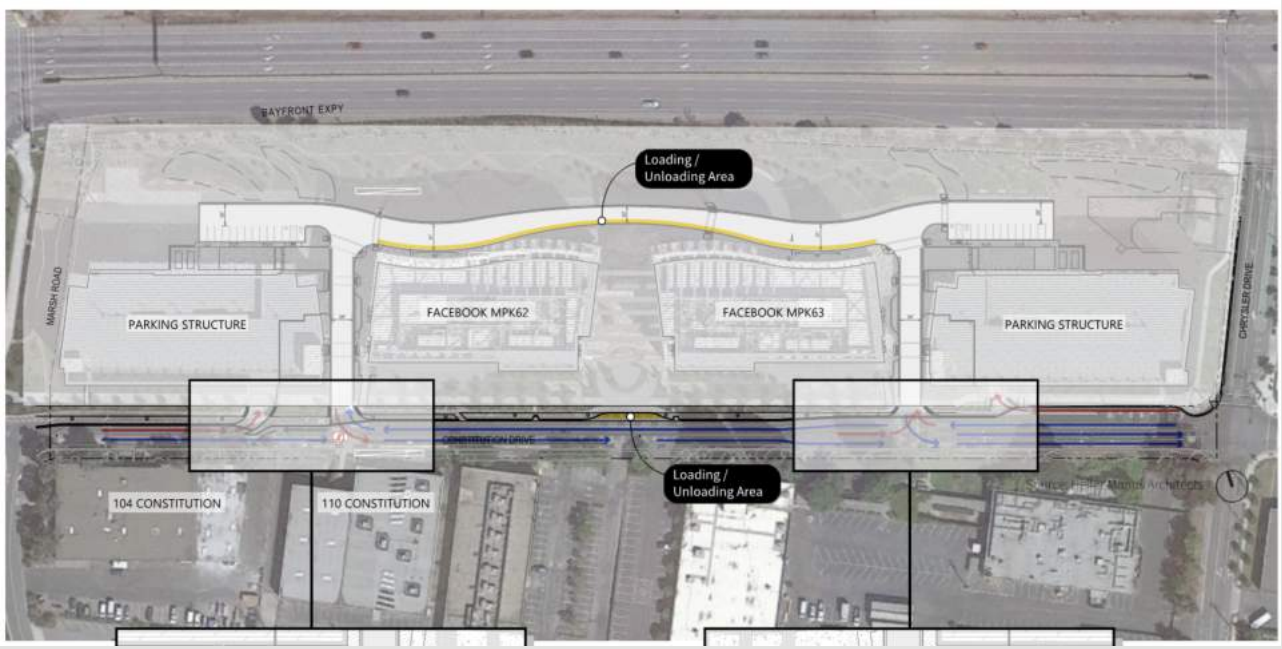
AGENDA

- Background
- Applicant Presentation
- Recommendation and Next Steps

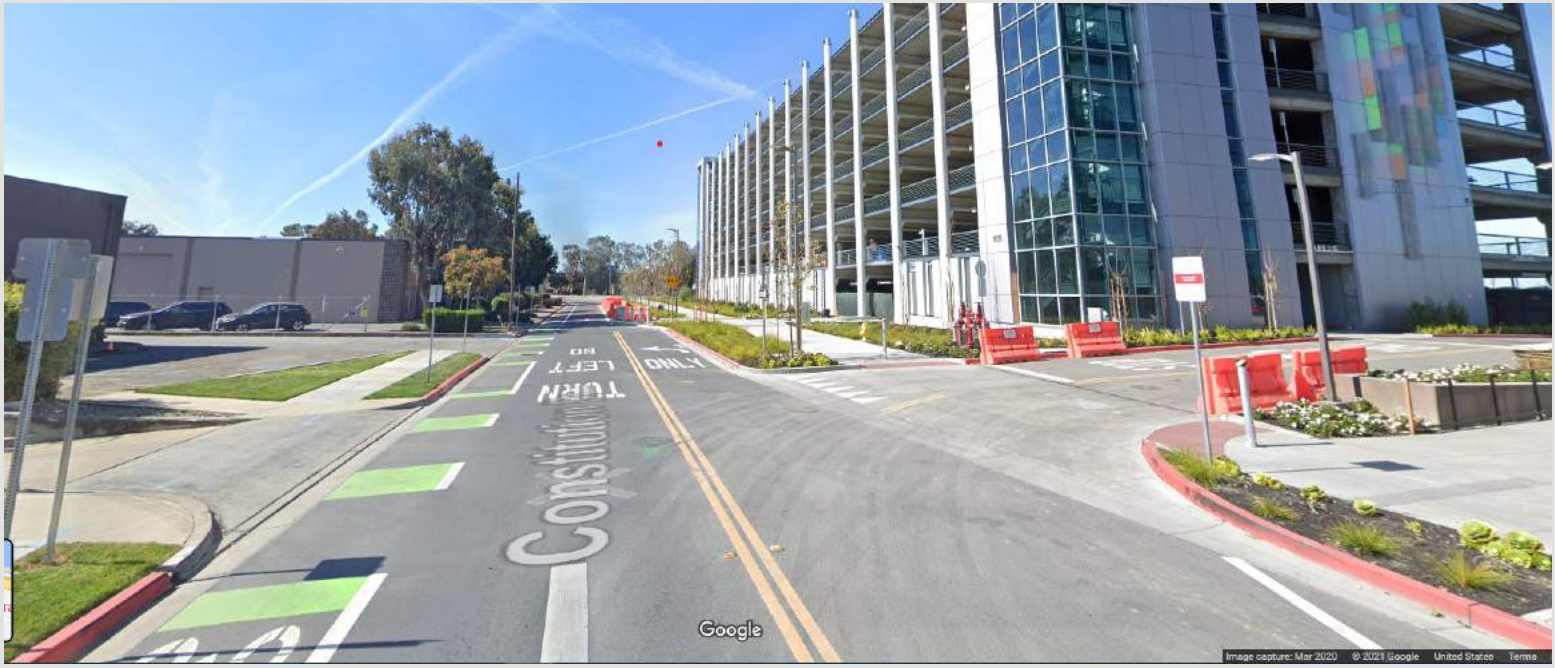
BACKGROUND


Marsh Road
"Hook"
Bayfront Expressway
Independence Drive
Constitution Drive
Google Earth

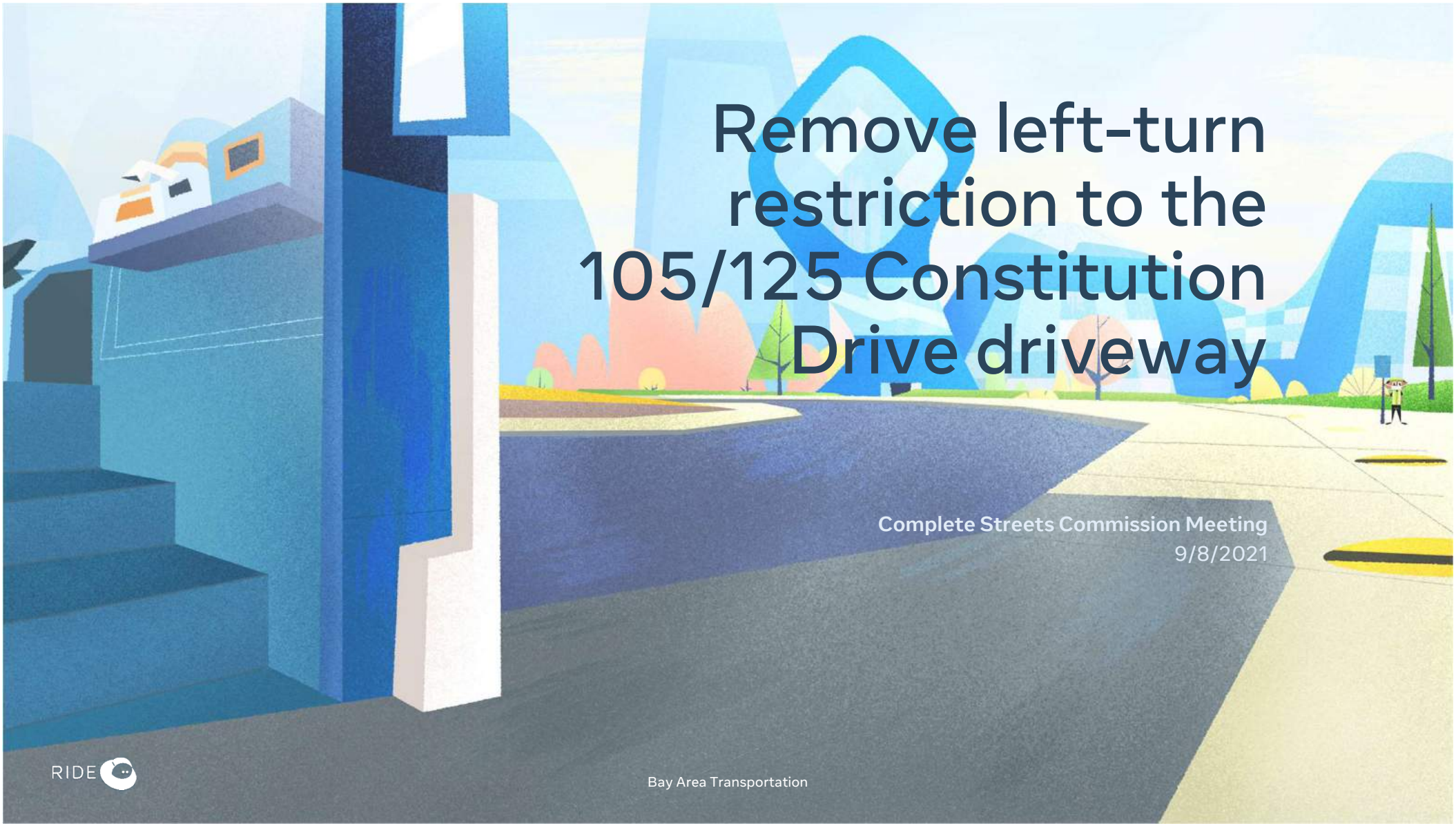
CONSTITUTION DRIVE



PROJECT LOCATION



APPLICANT PRESENTATION



Remove left-turn restriction to the 105/125 Constitution Drive driveway

Complete Streets Commission Meeting
9/8/2021

RIDE

Bay Area Transportation

Agenda

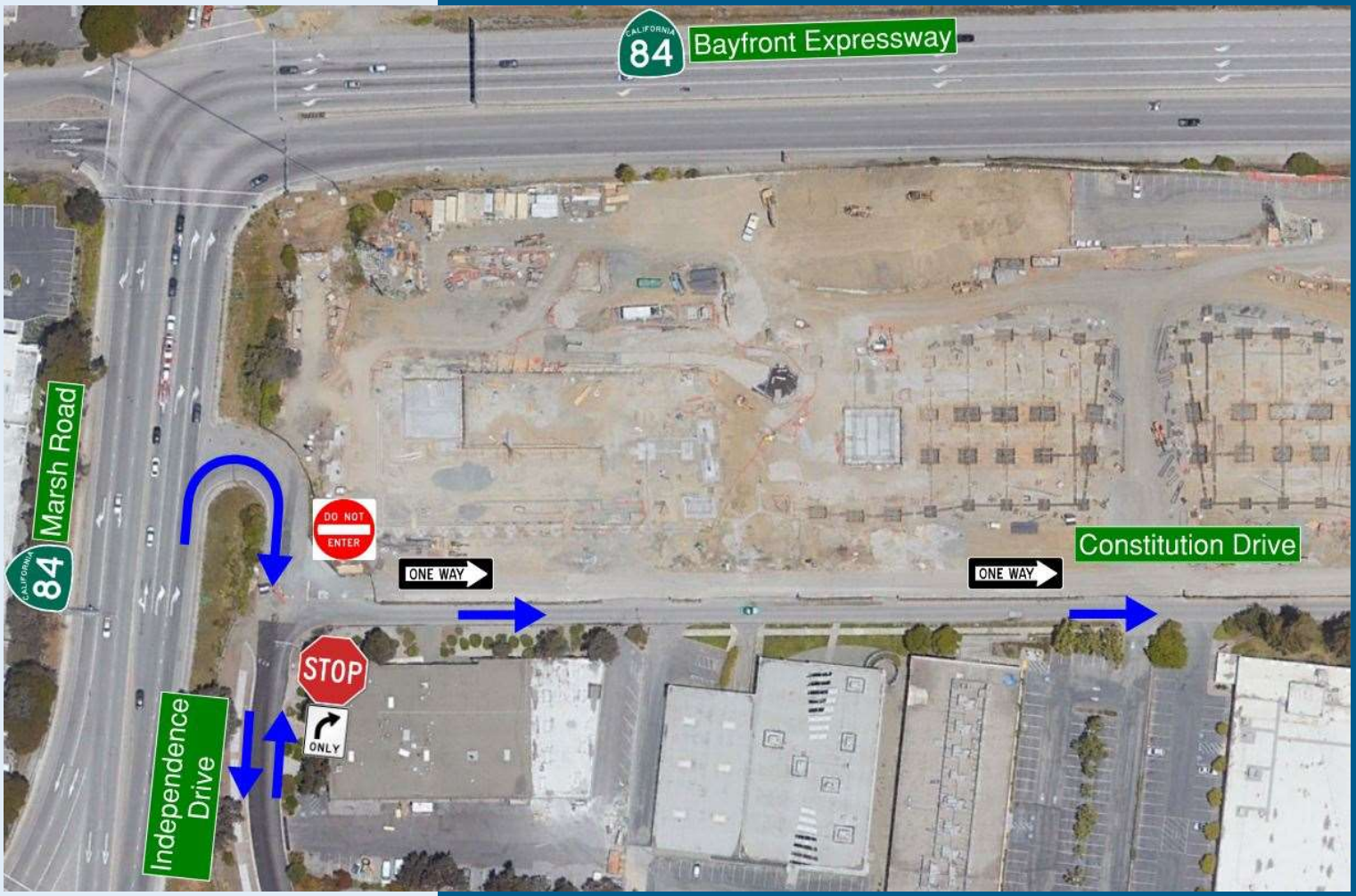
1. Background
2. Project

01 Background

Before 2018


CALIFORNIA
84
Bayfront Expressway
Marsh Road
CALIFORNIA
84
DO NOT
ENTER
STOP
ONLY
STOP
ONLY
Independence
Drive
Constitution Drive

2018-2019


84
Bayfront Expressway
Marsh Road
84
DO NOT ENTER
ONE WAY
ONE WAY
Constitution Drive
STOP
ONLY
Independence Drive

Present


CALIFORNIA
84
Bayfront Expressway
Marsh Road
CALIFORNIA
84
DO NOT ENTER
ONE WAY
DO NOT ENTER
ONLY
Constitution Drive
STOP
ONLY
Independence Drive

02 Project

Need for project

Facebook provides transportation services (shuttles, trams, on demand vehicles) to reduce vehicle trips

80% of AM shuttles and 20% of PM shuttles as well as 10% of on demand vehicles (in both the AM and PM peak hour) come from Marsh

Circulation at Menlo Gateway operates in a clockwise direction (i.e. all vehicles enter at the west driveway on Constitution) to ensure employees can safely exit on the right side of the road, in front of the building entrances

Removal of the left turn restriction would:

- avoid circuitous routing of shuttles (and other vehicles) from Marsh
- reduce VMT of shuttles (and other vehicles) from Marsh
- provide flexibility for tram routing
- reduce unnecessary vehicles and congestion on surrounding roads and at nearby intersections

Need for Project

Existing AM inbound shuttle route

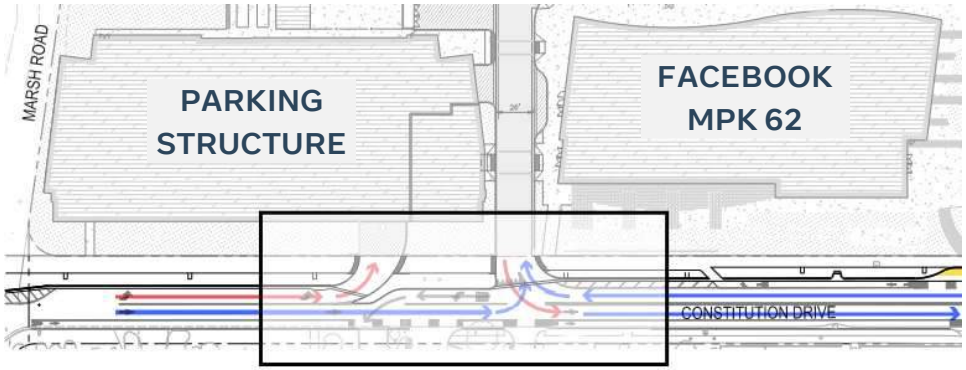
Potential future AM inbound shuttle route

Need for Project

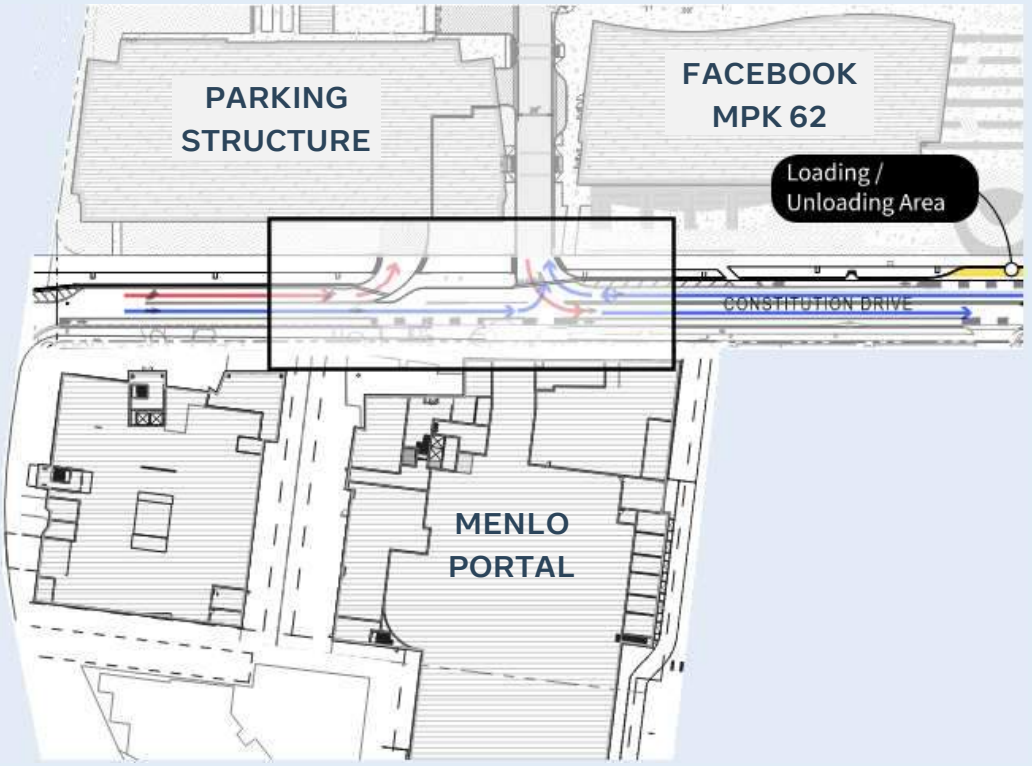
Existing tram route

Potential future tram route

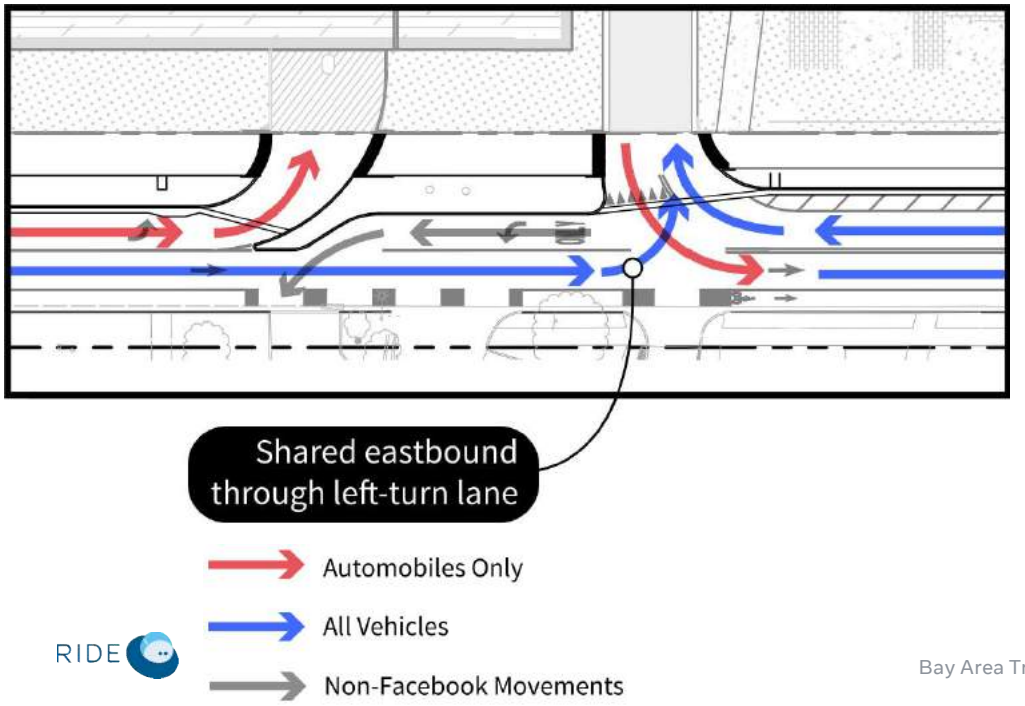
Proposed Near-Term



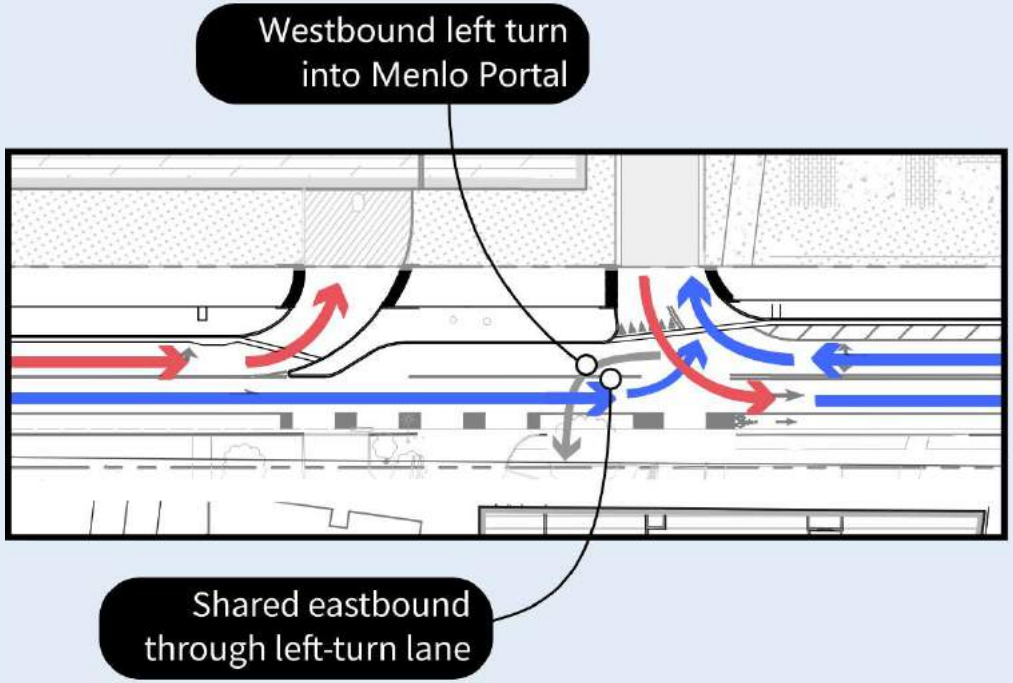
Proposed + Menlo Portal



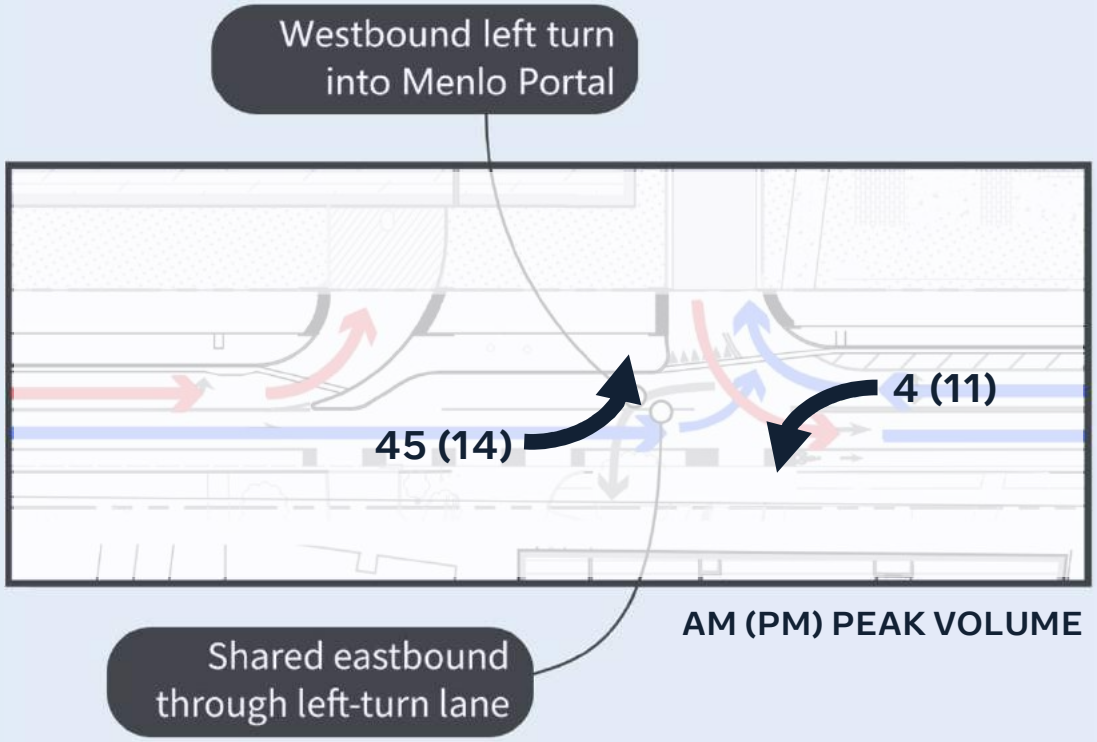
Proposed Near-Term



Proposed + Menlo Portal



Anticipated Future Left Turn Volumes & Queues



Eastbound Queuing[1]

Peak Hour	Existing	Proposed Near-Term	Proposed + Menlo Portal
AM Peak	N/A	25 ft. (1 Vehicle)	25 ft. (1 Vehicle)
PM Peak	N/A	0 ft. (No Queue)	0 ft. (No Queue)

1. Queue lengths rounded to nearest 25 ft.

Q & A

Please share your questions or feedback!

RIDE

Bay Area Transportation

Thank you!

RIDE

Bay Area Transportation

OUTREACH

- Postcards sent out
- Discussion with Menlo Portal applicant

RECOMMENDATIONS & NEXT STEPS

- Recommend to City Council to remove left-turn restriction
- Staff anticipates bringing item to Council in October

THANK YOU

CITY OF MENLO PARK

STAFF REPORT

Complete Streets Commission
Meeting Date: **10/13/2021**
Staff Report Number: **21-009-CSC**

Regular Business: **Recommend the Complete Streets Commission adopt Resolution No. 2021-3 to establish loading zone on Constitution Drive fronting 180 Constitution Drive**

Recommendation

Staff recommends that the Complete Streets Commission adopt Resolution No. 2021-3 (Attachment A) to establish one 66 foot long, five-minute passenger loading zone on Constitution Drive fronting 180 Constitution Drive, to support the Menlo Uptown development and other adjacent properties as outlined in the request memorandum (Attachment B).

Policy Issues

This recommendation is consistent with Section 11.24.027 of the City of Menlo Park Municipal Code, which authorizes the Complete Streets Commission to designate timed parking restrictions, including but not limited to loading zones and time of day restrictions, near schools and businesses at up to five spaces per location, except where the location is within the area designated as the "Downtown/Station Area" in the El Camino Real/Downtown Specific Plan, which shall be limited to three spaces per location. (Ord. 1034 § 2 (part), 2017).

This project is also consistent with policies stated in the 2016 general plan circulation element. These policies seek to maintain a safe, efficient, attractive, user-friendly circulation system that promotes a healthy, safe and active community and quality of life throughout Menlo Park.

Background

Menlo Uptown project description

The Menlo Uptown project will demolish the existing buildings at 141 Jefferson Drive and 180-186 Constitution Drive and construct three new buildings totaling 483 multifamily dwelling units (i.e., 441 rental units and 42 for-sale townhomes) and 2,940 square feet of commercial space for a non-profit health care urgent care center.

The residential units will be a mix of 172 studio rental units, 224 one-bedroom rental units, 33 two-bedroom rental units, 12 rental / 30 for-sale three-bedroom townhomes, and 12 for-sale four-bedroom townhome.

Menlo Uptown site layout

The Menlo Uptown project area map is shown on Attachment C. The proposed development would have frontages on both Constitution Drives and Jefferson Drive, connected by a publicly accessible paseo. The three buildings are designated as Buildings A, B, and TH.

Building A will contain 221 rental units and 2,940 square feet of commercial space on the ground floor.

Building B will include 220 rental units. Building TH will contain 42 for-sale townhomes.

On June 21, 2021, the Planning Commission approved the Menlo Uptown project. Subsequently, the project was appealed. On September 14, 2021, the City Council denied the appeal and approved the project.

Analysis

Constitution Drive is a two-lane roadway between Independence Drive and Chilco Street with bicycle lanes on both sides. The speed limit on Constitution Drive is 30 mph. Constitution Drive is designated as a mixed-use collector in the City's general plan circulation element. On-street parking is not allowed on either side.

Jefferson Drive a two-lane roadway between Chrysler Drive and Constitution Drive with bicycle lanes on both sides. It is classified as a mixed-use collector. The prima facie speed on Jefferson Drive is 25 mph. On street parking is not allowed on either side.

As indicated on Attachments A and B, Greystar is requesting one five-minute time restricted passenger loading zone on Constitution Drive fronting Building A at 180 Constitution Drive, where the non-profit health care urgent care center will be located. The proposed loading zone is illustrated on Figure 1 of Attachment B.

The passenger loading zone would accommodate two parking spaces, which is fewer than the maximum number of spaces (i.e., five) that the Complete Streets Commission can consider and approve. Greystar is requesting the loading zone in order "to offer guests and residents access to the building's services and amenities on a temporary basis and to provide passenger drop-off and pick up area for ride-sharing services (e.g., Uber, Lyft, etc.), delivery providers and similar services". Note the requested loading zone is on public roadway and would be available to the general public for non-project use.

The loading zone would be installed via a turn-out pocket outside the travel lane and would not obstruct vehicle and bicycle traffic. The new sidewalk along the project frontage would meander around the turn-out, providing an uninterrupted path of travel for pedestrians adjacent to the loading zone.

After considering Greystar's request, staff is recommending that the Complete Streets Commission approve the loading zone as requested for the following reasons:

- Currently, on-street parking is not allowed on either side of Constitution Drive. The loading zone would provide a designated area for guests/visitors, parents, ride sharing providers, delivery companies, and the general public to legally park temporarily, instead of illegally parking or stopping.
- The loading zone in the form of a turn-out pocket would provide an area that would not obstruct vehicle and bicycle traffic, that could occur if there were no loading zone present

Impact on City Resources

The loading zone would be installed by Greystar, the Menlo Uptown project developer, at its expense. No additional fund is required.

Environmental Review

The proposed installation of the loading zone on Constitution Drive is categorically exempt under Class 1 of the California Environmental Quality Act. Class 1 allows for minor alterations of existing facilities, including highways and streets, sidewalks, gutters, bicycle and pedestrian access, and similar facilities, as long as

there is negligible or no expansion of use.

Public Notice

Public notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting. Postcards were also mailed to property owners and occupants located within of 500-foot radius of the project location.

Attachments

A. Resolution
B. Greystar request memorandum
C. Menlo Uptown project area map

Report prepared by:
Kevin Chen, Senior Transportation Engineer

Report reviewed by:
Hugh Louch, Assistant Public Works Director – Transportation

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RESOLUTION NO. 2021-3

RESOLUTION OF THE COMPLETE STREETS COMMISSION OF THE CITY OF MENLO PARK AUTHORIZING THE ESTABLISHMENT OF ONE FIVE-MINUTE, 66-FOOT LONG LOADING ZONE ON CONSTITUTION DRIVE AND FRONTING 180 CONSTITUTION DRIVE

WHEREAS, the Menlo Uptown project proposes to demolish the existing buildings across the entire project site at 141 Jefferson Drive and 180-186 Constitution Drive and construct three new buildings totaling 483 multifamily dwelling units (i.e., 441 rental units and 42 for-sale townhomes) and 2,940 square feet of commercial space for a non-profit health care urgent care center; and,

WHEREAS, after the Planning Commission approved the Menlo Uptown project on June 21, 2021, an appeal was brought to City Council for consideration on September 14, 2021, at which time this project was ultimately approved by City Council with conditions of approval; and,

WHEREAS, the City has received a request from Greystar, the Menlo Uptown project applicant, to establish one 66-foot long five-minute loading zone on Constitution Drive fronting 180 Constitution Drive, to offer guests and residents access to the building's services and amenities (e.g., urgent care center) on a temporary basis and to provide space for passenger drop-off & pick up, package and other deliveries and similar services; and,

WHEREAS, the loading zone would be constructed as a turn-out pocket outside the travel lanes and the new sidewalk would meander around the turn-out pocket and therefore, would not obstruct vehicle, bicycle, and pedestrian traffic and impact safety on Constitution Drive; and,

WHEREAS, the loading zone being on public roadway would not be restricted to the Menlo Uptown project use only and could be used by the general public for non-project use; and,

WHEREAS, the City of Menlo Park, acting by and through its Complete Streets Commission, having considered and been fully advised in the matter and good cause appearing therefore.

NOW, THEREFORE BE IT RESOLVED, that the Complete Streets Commission of Menlo Park does hereby authorize the establishment of five-minute, 66-foot loading zone on Constitution Drive fronting 180 Constitution Drive.

I, Kevin Chen, City staff liaison to the Complete Streets Commission of Menlo Park, do hereby certify that the above and foregoing Commission Resolution was duly and regularly passed and adopted at a meeting by said Commission on the thirteenth day of October, 2021, by the following votes:

AYES:

NOES:

ABSENT:

ABSTAIN:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Official Seal of said City on this thirteenth day of October, 2021.

_____
Kevin Chen
Complete Streets Commission Liaison

TECHNICAL MEMORANDUM

Date: October 4, 2021

Deliver To: Complete Streets Commission

From: Matt Udouj

Subject: **Menlo Uptown – Complete Streets Commission Memorandum**

The purpose of this memorandum is to provide a brief description of the proposed passenger loading zone at Menlo Uptown. The passenger loading zone will be located in a turn-out curb pocket along the property street frontage in the public right of way and will be subject to a five-minute time limit. The turn-out is approximately 50' in length, accommodating up to two standard vehicles at a time. The turn-out curb pocket will be off-set from the street, providing temporary parking areas for idling delivery vehicles, ride share providers, and similar services that may otherwise stop in the middle of the road, potentially blocking the travel and bicycle lanes.

The public sidewalk will be located directly adjacent to the turn-out pocket and will follow the alignment of the curb to provide seamless pedestrian access. For small portions of the sidewalk that encroach onto private property due to the offset, a public sidewalk easement (or similar) will be provided to allow for pedestrian access.

The team is proposing the passenger loading zone to offer guests and residents access to the building's services and amenities on a temporary basis and to provide a passenger drop-off & pick up area for any ride-sharing services (e.g., Uber, Lyft, etc.). The team has worked closely with City staff throughout the project design process to locate the proposed passenger loading zone, which will be beneficial to the proposed project and pedestrians traveling in the public right of way.

Sincerely,

Matt Udouj

Name: Matt Udouj
Title: Vice President

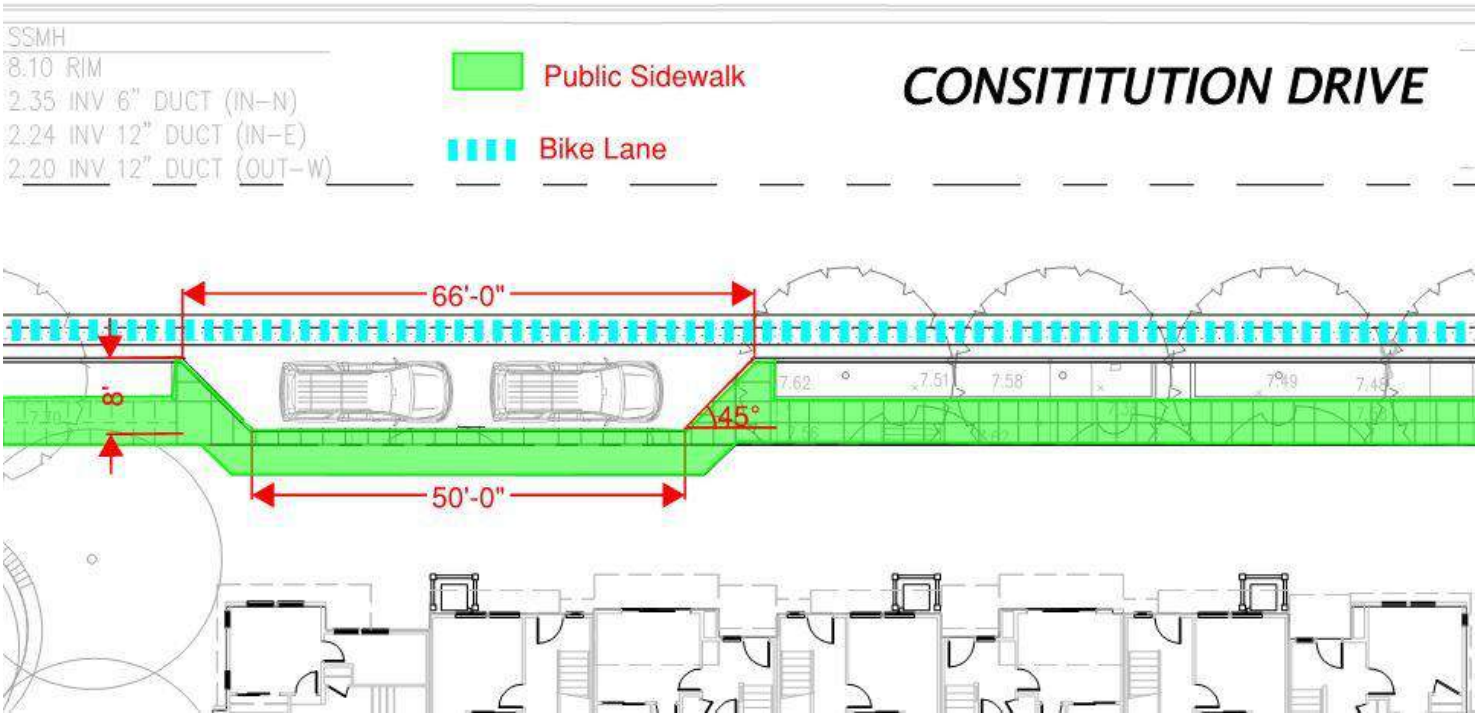
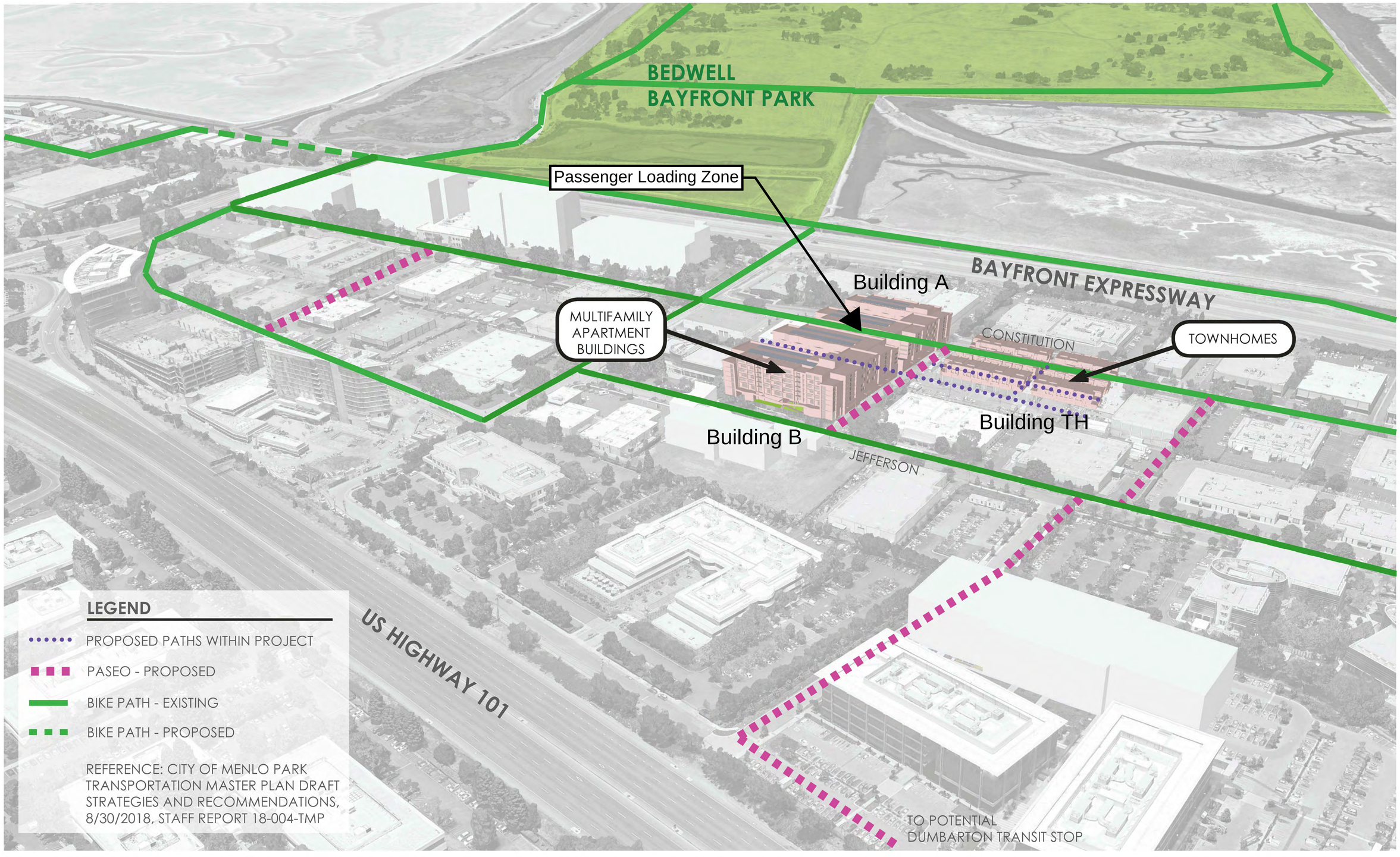


Figure 1 – *Menlo Uptown Drop-Off Zone*



GREYSTAR | HELLER MANUS ARCHITECTS | BKF 100+ YEARS | PGAdesign LANDSCAPE ARCHITECTS | ktgy Architecture + Planning | BDE ARCHITECTURE

MENLO UPTOWN HOUSING
141 JEFFERSON DR AND 172,180,186 CONSTITUTION DR, MENLO PARK, CA
03-05-2021

URBAN CONTEXT - INTEGRATION WITH CONNECT MENLO MOBILITY NETWORK

A-001b

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Public Works

STAFF REPORT

Complete Streets Commission
Meeting Date: **10/13/2021**
Staff Report Number: **21-010-CSC**

Regular Business: **Recommend the Complete Streets Commission adopt Resolution No. 2021-4 to establish loading zones on Constitution Drive and on Independence Drive**

Recommendation

Staff recommends that the Complete Streets Commission adopt Resolution No. 2021-4 (Attachment A) to establish 66-foot long, five-minute loading zones on Constitution Drive and Independence Drive, to support the Menlo Portal development and other adjacent properties as outlined in the request memorandum (Attachment B).

Policy Issues

This recommendation is consistent with Section 11.24.027 of the City of Menlo Park Municipal Code, which authorizes the Complete Streets Commission to designate timed parking restrictions, including but not limited to loading zones and time of day restrictions, near schools and businesses at up to five spaces per location, except where the location is within the area designated as the "Downtown/Station Area" in the El Camino Real/Downtown Specific Plan, which shall be limited to three spaces per location. (Ord. 1034 § 2 (part), 2017).

This project is also consistent with policies stated in the 2016 general plan circulation element. These policies seek to maintain a safe, efficient, attractive, user-friendly circulation system that promotes a healthy, safe and active community and quality of life throughout Menlo Park.

Background

Menlo Portal project description

The Menlo Portal project is proposing to demolish the existing buildings and site improvements across the entire project site at 115 Independence Drive and at 104 and 110 Constitution Drive and construct a seven-story approximately 326,816 square-foot residential apartment building with 335 units and a three-story approximately 34,499 square-foot office building, including approximately 1,600 square feet of non-office commercial space. A child care center is currently proposed for the non-office commercial space. The residential units are proposed to be a mix of studios, junior one-bedrooms, one-bedrooms, two-bedrooms and three-bedroom units.

Menlo Portal site layout

The Menlo Portal project area map is shown on Attachment C. The proposed apartment building would be located on the existing 115 Independence Drive and 110 Constitution Drive parcels, and would have frontages on both Independence and Constitution Drives. A central plaza, dog walk, and fire access lane would run north-south between the apartment building and the proposed residential development at 111 Independence Drive and the proposed commercial building at 104 Constitution Drive (which is part of the

project site). A fire and service access lane would also run north-south along the eastern edge of the apartment building. The apartment building would have seven stories containing 335 dwelling units located above two levels of above-grade structured parking. Driveways at the north and south of the building would provide access to an automated parking system within the building.

The three-story office building would have frontages on Independence and Constitution Drives. The office space would be located above two levels of above grade structured parking, lobbies, and commercial space intended to serve the neighborhood. Pedestrian access would be provided from the sidewalk on Constitution Drive and a driveway on Independence Drive would provide access to the parking garage. The non-office commercial space is currently proposed to be a child care center and would be located on Constitution Drive near the corner of Constitution Drive and Independence Drive.

On August 9, 2021, the Planning Commission approved the Menlo Portal project. On September 14, 2021, an appeal was brought to City Council for consideration on this project. Subsequently, City Council approved this project with additional conditions of approval.

Analysis

Constitution Drive is a two-lane roadway between Independence Drive and Chilco Street, with bicycle lanes on both sides. The speed limit on Constitution Drive is 30 mph. Constitution Drive is designated as mixed-use collector in the City's general plan circulation element. Constitution Drive, between Independence Drive and Chrysler Drive, is one way in the southbound direction until the first garage driveway. On-street parking is not allowed on both sides of Constitution Drive.

Independence Drive is a two-lane roadway with turn lanes at certain portions of the roadway between Constitution Drive and Chrysler Drive. It is classified as a mixed-use collector. The speed limit on Independence Drive is 25 mph. On street parking is not allowed on either side of Independence Drive. There are no bicycle lanes on Independence Drive but there are sharrows for both directions.

As indicated on Attachments A and B, Greystar is requesting five-minute time restricted loading zones on both Constitution Drive and Independence Drive, adjacent to the Menlo Portal project frontages. The proposed locations of the loading zones are illustrated on Figure 1 of Attachment B. The loading zone requested on Constitution Drive is a five-minute, 66-foot long loading zone and is located in front of the non-office commercial space along Constitution Drive, where a child care center is proposed. The loading zone requested on Independence Drive is a five-minute, 66-foot long loading zone and is located just north of the driveway to the office building. Both locations are in close proximity to the intersection of Constitution Drive and Independence Drive.

Each loading zone accommodates two parking spaces using City parking design standards. Four parking spaces for loading zones is fewer than the number of spaces (five) that the Complete Streets Commission can consider and approve. Greystar is requesting these loading zones in order "to offer guests and residents access to the building's services and amenities (e.g., Child Day Care, etc.) on a temporary basis and to provide passenger drop-off & pick up areas for ride-sharing services (e.g., Uber, Lyft, etc.), delivery providers and similar services". However, these requested loading zones are on public roadways and would be available to the general public for non-project use.

The loading zones would be installed via turn-out pockets outside the travel lanes and would not obstruct vehicle and bicycle traffic. The new sidewalk along the project frontages would meander around these turn-outs, providing an uninterrupted part of travel for pedestrians adjacent to the loading zones.

After considering Greystar's request, staff is recommending that the Complete Streets Commission approve the loading zones as requested for the following reasons:

- Currently, on-street parking is not allowed on either side of Constitution Drive or Independence Drive. The loading zones would provide designated areas for guests/visitors, parents, ride sharing providers, delivery companies, and the general public to legally park temporarily, instead of illegally parking or stopping along the project frontages.
- The loading zones in the form of turn-out pockets would provide areas for passenger drop-off and pick-up and delivery services that would not obstruct vehicle and bicycle traffic, that could occur if there were no loading zone present

Impact on City Resources

The loading zones would be installed by Greystar, the Menlo Portal project developer, at its expense. No additional funds are required.

Environmental Review

The proposed installation of the loading zones on Constitution Drive and on Independence Drive is categorically exempt under Class 1 of the California Environmental Quality Act. Class 1 allows for minor alterations of existing facilities, including highways and streets, sidewalks, gutters, bicycle and pedestrian access, and similar facilities, as long as there is negligible or no expansion of use.

Public Notice

Public notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting. Postcards were also mailed to property owners and occupants located within of 500-foot radius of the project location.

Attachments

A. Resolution
B. Greystar request memorandum
C. Menlo Portal project area map

Report prepared by:
Rene Baile, Associate Transportation Engineer

Report reviewed by:
Kristiann Choy, Senior Transportation Engineer
Hugh Louch, Assistant Public Works Director – Transportation

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RESOLUTION NO. 2021-4

RESOLUTION OF THE COMPLETE STREETS COMMISSION OF THE CITY OF MENLO PARK AUTHORIZING THE ESTABLISHMENT OF FIVE-MINUTE, 66-FOOT LOADING ZONES ON CONSTITUTION DRIVE AND ON INDEPENDENCE DRIVE

WHEREAS, the Menlo Portal project proposes to demolish the existing buildings and site improvements across the entire project site at 115 Independence Drive and at 104 and 110 Constitution Drive and construct a seven-story approximately 326,816 square-foot residential apartment building with 335 units and a three-story approximately 34,499 square-foot office building, including approximately 1,600 square feet of non-office commercial space; and,

WHEREAS, after the Planning Commission approved the Menlo Portal project on August 9, 2021, an appeal was brought to City Council for consideration on September 14, 2021, at which time this project was ultimately approved by City Council with conditions of approval; and,

WHEREAS, the City has received a request from Greystar, the Menlo Portal project applicant, to establish two 66-foot long five-minute loading zones adjacent to the Menlo Portal project frontages on Constitution Drive and on Independence Drive, to offer guests and residents access to the building's services and amenities (e.g., Child Day Care) on a temporary basis and to provide space for passenger drop-off & pick up, package and other deliveries and similar services; and,

WHEREAS, the loading zones would be constructed as turn-out pockets outside the travel lanes and the new sidewalks would meander around these turn-out packets and therefore, would not obstruct vehicle, bicycle, and pedestrian traffic and impact safety on Constitution Drive and Independence Drive; and,

WHEREAS, the loading zones being on public roadways would not be restricted to the Menlo Portal project use only and could be used by the general public for non-project use; and,

WHEREAS, the City of Menlo Park, acting by and through its Complete Streets Commission, having considered and been fully advised in the matter and good cause appearing therefore.

NOW, THEREFORE BE IT RESOLVED, that the Complete Streets Commission of Menlo Park does hereby authorize the establishment of five-minute, 66-foot loading zone at one location on Constitution Drive and another location on Independence Drive, adjacent to the Menlo Portal project frontages.

I, Kevin Chen, City staff liaison to the Complete Streets Commission of Menlo Park, do hereby certify that the above and foregoing Commission Resolution was duly and regularly passed and adopted at a meeting by said Commission on the thirteenth day of October , 2021, by the following votes:

AYES:

NOES:

ABSENT:

ABSTAIN:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Official Seal of said City on this thirteenth day of October, 2021.

_____
Kevin Chen
Complete Streets Commission Liaison

ATTACHMENT B

TECHNICAL MEMORANDUM

Date: October 4, 2021

Deliver To: Complete Streets Commission

From: Matt Udouj

Subject: **Menlo Portal – Complete Streets Commission Memorandum**

The purpose of this memorandum is to provide a brief description of the proposed passenger loading zones at Menlo Portal. The passenger loading zones will be located in turn-out curb pockets along the property street frontage in the public right of way and will be subject to five-minute time limits. Each zone is approximately 50' in length, accommodating up to 2 standard vehicles at a time. The two turn-out curb pockets will be off-set from the street, providing temporary parking areas for idling delivery vehicles, ride share providers, and similar services that may otherwise stop in the middle of the road, potentially blocking the travel and bicycle lanes.

The public sidewalk will be located directly adjacent to the turn-out pocket and will follow the alignment of the curb to provide seamless pedestrian access. For small portions of the sidewalk that encroach onto private property due to the off-set, a public sidewalk easement (or similar) will be provided to allow for pedestrian access

The reason the team is proposing the passenger loading zones is to offer guests and residents access to the building's services and amenities (e.g., Child Day Care, etc.) on a temporary basis and to provide passenger drop-off & pick up areas for ride-sharing services (e.g., Uber, Lyft, etc.), delivery providers, and similar services. The team has worked closely with City staff throughout the project design process to locate the proposed passenger loading zones, which will be beneficial to the proposed project and pedestrians traveling in the public right of way.

Sincerely,

Matt Udouj

Name: Matt Udouj
Title: Vice President

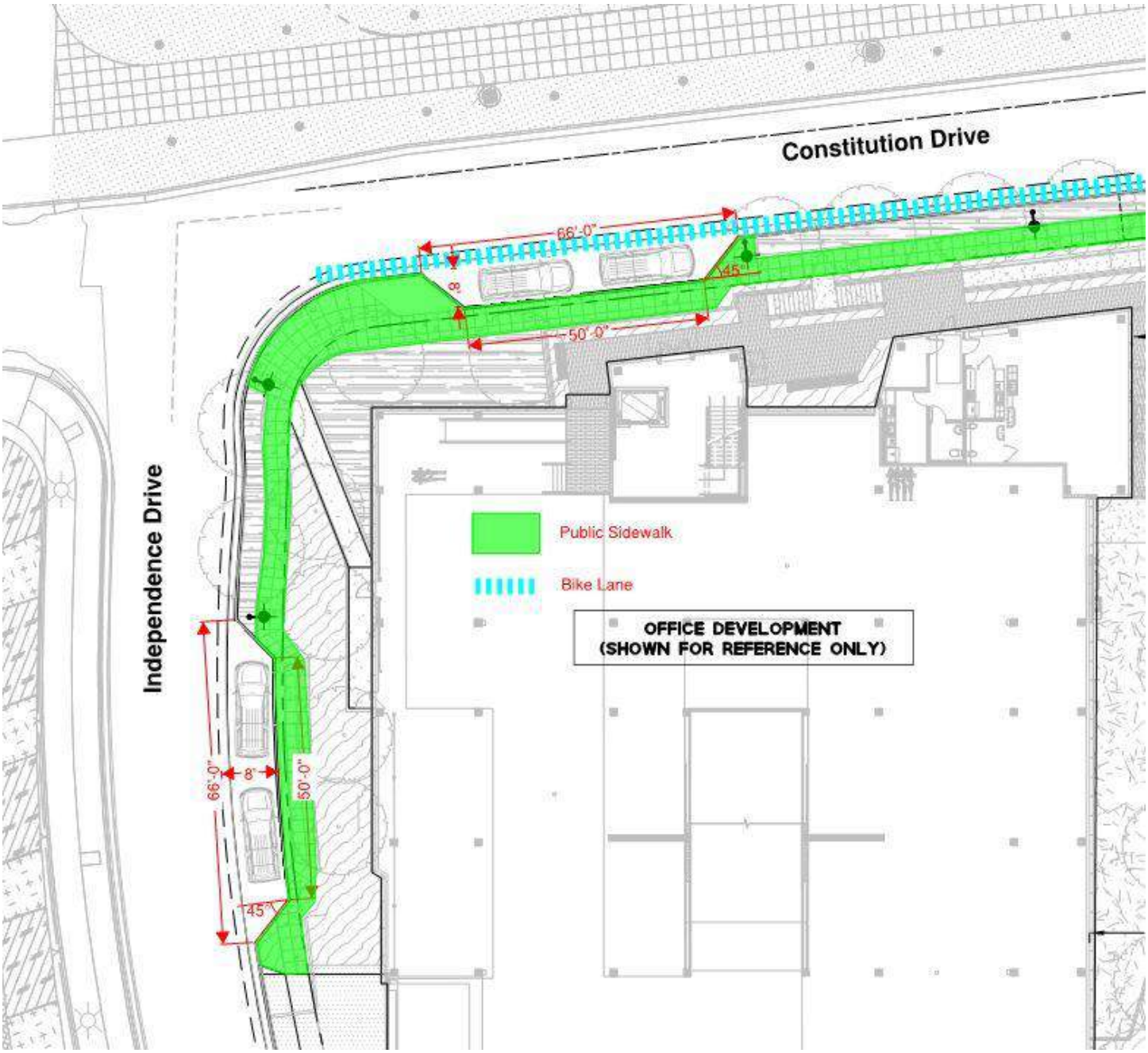
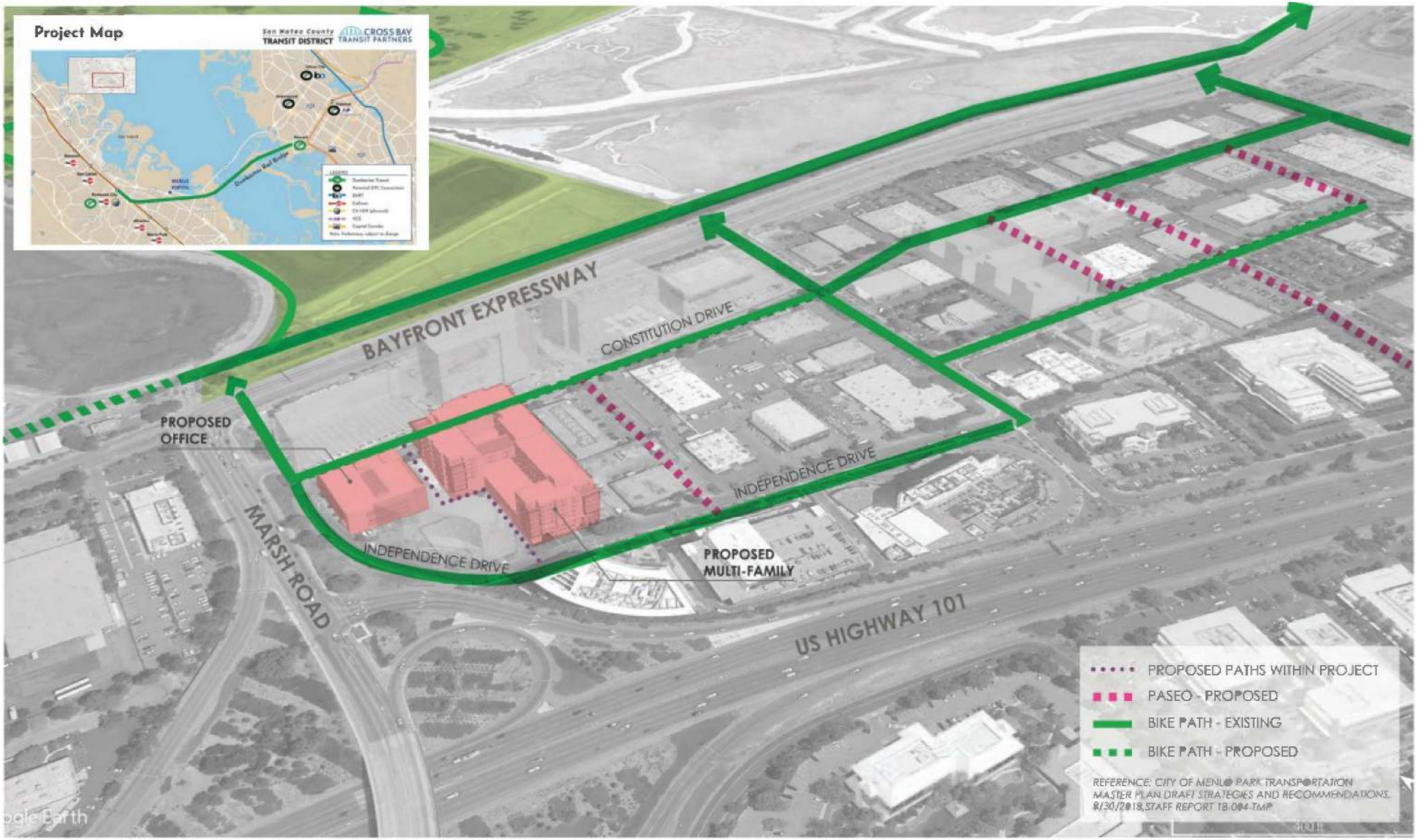


Figure 1 *– Menlo Portal Passenger Loading Zone*

ATTACHMENT C - MENLO PORTAL PROJECT AREA MAP



GREYSTAR | HMH | BKF 100 YEARS | PGAdesign LANDSCAPE ARCHITECTS | BDE ARCHITECTURE

MENLO PORTAL
104 & 110 CONSTITUTION DR., 115 INDEPENDENCE DRIVE, MENLO PARK, CA
06-25-2021

URBAN CONTEXT - INTEGRATION WITH CONNECT MENLO MOBILITY NETWORK

A-001b

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Public Works

CITY OF MENLO PARK

STAFF REPORT

Complete Streets Commission
Meeting Date: **10/13/2021**
Staff Report Number: **21-011-CSC**

Regular Business: **Recommend the City Council adopt a resolution to approve the through and left-turn restrictions from southbound Garwood Way at Oak Grove Avenue**

Recommendation

Staff recommends that the Complete Streets Commission recommend that the City Council adopt a resolution (Attachment A) to approve through and left-turn restrictions from southbound Garwood Way at Oak Grove Avenue to minimize anticipated safety concerns.

Policy Issues

The reconstruction and realignment of Garwood Way at Oak Grove Avenue is part of a mixed-use redevelopment project located at 1300 El Camino Real named Springline (formerly known as Station 1300).

This turn movement restriction is consistent with the policies and programs stated in the 2016 General Plan Circulation Element (eg, CIRC-1.3, CIRC-2.11, etc). These policies seek to maintain a safe, efficient, attractive, user-friendly circulation system that promotes a healthy, safe and active community and quality of life throughout Menlo Park.

Section 11.12.010 of the Menlo Park Municipal Code authorizes the City Council to order the installation, use, change or removal of traffic control devices, such as turning markers, restricted turns, and similar changes.

Background

Located to the east of the Springline project, Garwood Way will soon become a two-lane (i.e., one-lane in each direction) “Local Access” road that runs north-south parallel to El Camino Real, according to the street classification system defined in the 2016 General Plan Circulation Element. The new Garwood Way extension to Oak Grove Avenue, which replaced Derry Lane previously located approximately 30 feet east of Merrill Street, will align with Merrill Street to form a new four-legged intersection. The new connection will also provide another direct local route between Glenwood Avenue and Oak Grove Avenue.

The Springline project is bounded by El Camino Real to the west, Garwood Way to the east, Oak Grove Avenue to the south, and Marriott Residence Inn to the north. None of the Springline buildings are currently occupied. The anticipated timeline for occupancy of the residential buildings is spring of 2022, while the office buildings and retail space are expected to be occupied later.

There are three driveways proposed along Garwood Way that provide access to the Springline plaza underground parking, residential and retail areas. Based on the transportation chapter of the 2016 Springline project Environmental Impact Report (EIR), the site would generate approximately 3,750 daily

vehicle trips with 1,560 trips on Garwood Way between Glenwood Avenue and Oak Grove Avenue. Garwood Way will also have a Class III bicycle route for shared use with vehicles, as identified in the City's Transportation Master Plan. See Attachment B for a hyperlink to the transportation chapter of the project EIR.

Oak Grove Avenue is a two-lane east-west "Neighborhood Collector" road. Oak Grove Avenue provides a connection between El Camino Real and Laurel Street with sidewalk and Class II buffered bicycle lanes on both sides of the street and a speed limit of 25 miles per hour. Daily traffic volume on Oak Grove Avenue between El Camino Real and Laurel Street was 9,300 vehicles in 2019.

Similar and parallel to Oak Grove Avenue, Glenwood Avenue is a two-lane "Neighborhood Collector" road with sidewalk and Class II bicycle lanes on both sides of the street. There is a two-way stop-controlled intersection at Garwood Way and the closest marked crosswalk near this intersection is at San Antonio Street less than 150 feet west of Garwood Way.

Merrill Street is a two-lane north-south "Mixed Use Collector". Merrill Street provides a connection between Oak Grove Avenue and Ravenswood Avenue and provides access to the Menlo Park Caltrain station and its parking lots.

Both the extended Garwood Way and Merrill Street are stop-controlled on their approaches to Oak Grove Avenue. As described in the Springline project EIR, a traffic signal at the Oak Grove Avenue/Garwood Way-Merrill Street intersection is infeasible because of the immediate proximity of the Caltrain railroad tracks to the east.

Per approved plans, the southbound Garwood Way approach to Oak Grove Avenue would consist of one right-turn lane and one shared through/left-turn lane, and the northbound Merrill Street would maintain one shared left-turn/through/right-turn lane. Additionally, Caltrain recently installed a 30-foot long mountable median along the existing yellow centerline of Oak Grove Avenue as part of the agency's safety improvement programs. Attachment C illustrates the latest intersection layout and Attachment D shows Caltrain's new median improvement.

Analysis

Currently, there are existing at-grade railroad crossings on both Glenwood Avenue and Oak Grove Avenue just east of Garwood Way. All roadway users need to wait to cross tracks during the railroad gate downtime, causing temporary delays along all nearby streets. Additionally, the Samtrans and City Shuttle buses with connection to the Caltrain station are routed to make right-turns onto eastbound Oak Grove Avenue from northbound Merrill Street, which exacerbates queuing issues when the railroad gates are down. Occasionally, this has led to aggressive driving as vehicles try to avoid further delay. This is particularly concerning for Garwood Way left turning/through vehicles as they look for available gaps from both directions on Oak Grove Avenue to enter the roadway while navigating conflicting pedestrian and bicycle movements.

Furthermore, as shown in Attachment C, there will be a handful of surface parking spaces available for retail uses near the southern end of Springline project site, on the east side of Garwood Way. Patrons who park in this surface parking lot would utilize the crosswalk at Garwood Way throughout the day.

There are no marked facilities for pedestrians to cross Oak Grove Avenue on the east leg of the intersection. However, Oak Grove Avenue/Garwood Way-Merrill Street intersection will serve as the shortest possible pedestrian route between the Springline project site and the Menlo Park Caltrain station,

and it is expected to generate pedestrian activities from all sides of the streets. Bicycling is also expected by all user groups, including commuting, recreational, and other trips from Springline, to make use of the bikeway on Oak Grove Avenue.

As stated above, the proximity of the rail crossing coupling with the potential for vehicle queuing to extend on the tracks could incur further safety hazards to all users at this intersection. Implementation of the movement restriction during the morning and afternoon peak hours was also evaluated during the Springline project EIR, but the City's previous experience has found that partial restrictions are ineffective as they are often ignored by the drivers. A complete closure of through and left-turn movements would be the most effective way to reduce delays and potential conflicts with bicyclists, pedestrians, and other vehicles. Additionally, this will allow for the installation of a median nose on Garwood that would reduce pedestrians and bicyclists' exposure as they cross Garwood Way.

Diverted trips

In the Springline project EIR, all left-turn vehicles from Garwood Way to Oak Grove Avenue were projected to use either Laurel Street or Middlefield Avenue to access Willow Road. With limited alternate routes around the development and high traffic volume along El Camino Real during the morning and evening peak hours, the Springline project trips are likely to use Glenwood Avenue as the alternative due to the movement restriction. Attachment E illustrates the diverted project volumes and Cumulative scenario peak hour volumes.

The Cumulative scenario represents projected traffic volumes for the horizon year of 2040, including traffic that would be generated by implementation of fully occupied Springline project, as well as approved and pending developments within the City of Menlo Park. This scenario also incorporates a growth rate of 1 percent per year to account for growth in regional traffic and thus represents the highest demand on the roadway system in the EIR.

As evaluated above, the Springline project EIR projected 23 vehicles turning left from Garwood Way onto Oak Grove Avenue in the morning peak hour and 105 vehicles during the evening peak hour. These trips will be added to the right-turn traffic at Glenwood Avenue, increasing the expected evening peak hour traffic from 17 vehicles to 122 vehicles.

Congestion assessment

Key roadway and intersection locations under the Cumulative scenarios were assessed to determine roadway congestions due to the movement restriction.

As shown in Table 1 below, there is available roadway capacity on Glenwood Avenue than Oak Grove Avenue between El Camino Real and Middlefield Road. As a result, the shifting of Springline project trips would not generate new roadway operation deficiencies.

Table 1: Cumulative scenario daily roadway analysis

Roadway segment	Capacity	Volumes			TIA* compliant?	Exceed capacity?
		ADT	Project EIR	Turn Restriction		
Glenwood Avenue (El Camino Real to Laurel Street)	10,000	8,100	114	+358	Yes	No
Glenwood Avenue (Laurel Street to Middlefield Road)	10,000	6,100	51	+197	Yes	No
Laurel Street (Oak Grove Avenue to Ravenswood Avenue)	10,000	5,600	322	+161	Yes	No

Table 1: Cumulative scenario daily roadway analysis						
Roadway segment	Capacity	Volumes			TIA* compliant?	Exceed capacity?
		ADT	Project EIR	Turn Restriction		
Middlefield Road (Oak Grove Avenue to Ravenswood Avenue)	25,000	21,000	402	+197	Yes	No
Oak Grove Avenue (El Camino Real to Laurel Street)	10,000	12,500	716	-358	Yes	No
Oak Grove Avenue (Laurel Street to Middlefield Road)	10,000	11,400	394	-197	Yes	No
Notes: TIA = Transportation Impact Analysis guidelines						

Staff also updated the cumulative scenario intersection level of service (LOS) from the Springline project EIR to analyze the impact of these changes. Note the LOS in this condition assumed existing intersection operation. The results of the intersection LOS analysis are shown in Table 2. Detailed reports for the analyses are included in Attachment F.

Table 2: Cumulative scenario peak hour intersection levels of service								
Study intersection	Existing Intersection control	Morning Peak Hour				Evening Peak Hour			
		Project EIR		Turn Restriction		Project EIR		Turn Restriction	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Oak Grove Avenue/ Laurel Street	Signal	20.5	C	20.6	C	22.5	C	20.6	C
Oak Grove Avenue/ Middlefield Road	Signal	27.2	C	27.4	C	32.3	C	31.3	C
Glenwood Avenue/ Garwood Way	TWSC*	21.0	C	22.7	C	19.5	C	23.5	C
Glenwood Avenue/ Laurel Street	AWSC*	70.1	F	75.8	F	17.2	C	22.0	C
Glenwood Avenue/ Middlefield Road	TWSC*	>180	F	>180	F	>180	F	>180	F
Notes: TWSC = two-way stop controlled; AWSC = all-way stop controlled									

Based on the cumulative intersection LOS presented above and the anticipated added volumes, the intersections are not expected to see significant changes. Additionally, the movement restriction will improve the operation at Oak Grove Avenue/Garwood Way-Merrill Street.

Recommendation

Staff recommends that the Complete Streets Commission recommends that the City Council adopt a resolution to approve the through and left-turn restrictions from southbound Garwood Way at Oak Grove Avenue.

Attachment G illustrates the conceptual layout for proposed configuration at Oak Grove Avenue/ Garwood Way-Merrill Street intersection.

Next steps

Staff will evaluate Commission feedback and present the final recommendation to the City Council in November for approval.

If approved by the City Council, staff will proceed with final design of intersection improvements as a result of the movement restriction.

Impact on City Resources

Resources expended for project evaluation and intersection improvement design are considered part of the City's baseline operations. Construction for intersection improvements would be funded by the Transportation Minor project in the capital improvement program.

Environmental Review

Environmental review is categorically exempt under Class I (Existing Facilities) of the California Environmental Quality Act since it involves minor construction on a public street. No additional vehicle miles traveled or roadway capacity will be added as a result of the movement restriction.

Public Notice

Public notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting. Additional public outreach was achieved by sending notification postcards to the residents and property owners within 500 feet of the Oak Grove Avenue/Garwood Way-Merrill Street intersection. Individual outreach was completed to the Marriott Residence Inn and the Springline development.

Attachments

A. Draft Resolution
B. Hyperlink - Springline Environmental Impact Report - Chapter 3.1: menlopark.org/DocumentCenter/View/9727/1300-El-Camino-Real---Draft-EIR---Chapter-3-1---TransportationTraffic?bidId
C. Oak Grove Avenue/Garwood Way-Merrill Street intersection layout
D. Oak Grove Avenue Caltrain Median Improvement
E. Springline Diverted Project Trip Flow and Peak Hour Volume Comparison
F. Intersection Level of Service Analysis
G. Proposed Conceptual Design

Report prepared by:
Esther Jung, Assistant Engineer

Report reviewed by:
Kevin Chen, Senior Transportation Engineer
Hugh Louch, Assistant Public Works Director - Transportation

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DRAFT RESOLUTION NO.

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MENLO PARK AUTHORIZING THE THROUGH AND LEFT-TURN RESTRICTION ON GARWOOD WAY

WHEREAS, the mixed-use redevelopment located at 1300 El Camino Real named Springline will extend and align Garwood Way to Merrill Street at Oak Grove Avenue; and,

WHEREAS, a traffic signal at the intersection is infeasible due to the immediate proximity of the Caltrain railroad tracks and the potential for queuing to extend onto the tracks; and,

WHEREAS, the City anticipates that the installation of turn and through movement restrictions would minimize the vehicle-bicycle-pedestrian conflicts and alleviate safety concerns; and,

WHEREAS, the preliminary congestion analyses showed minimal changes to intersection and roadway operation with turn and through movement restrictions; and,

WHEREAS, the City of Menlo Park, acting by and through its City Council, having considered and been fully advised in the matter and good cause appearing therefore.

NOW, THEREFORE BE IT RESOLVED, that the City Council of Menlo Park does hereby authorize the restriction of through and left-turn movements from southbound Garwood Way at Oak Grove Avenue.

I, Judi A. Herren, City Clerk of Menlo Park, do hereby certify that the above and foregoing Council Resolution was duly and regularly passed and adopted at a meeting by said City Council on the xx day of November, 2021, by the following votes:

AYES:

NOES:

ABSENT:

ABSTAIN:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Official Seal of said City on this xx day of November, 2021.

_____

Judi A. Herren, City Clerk

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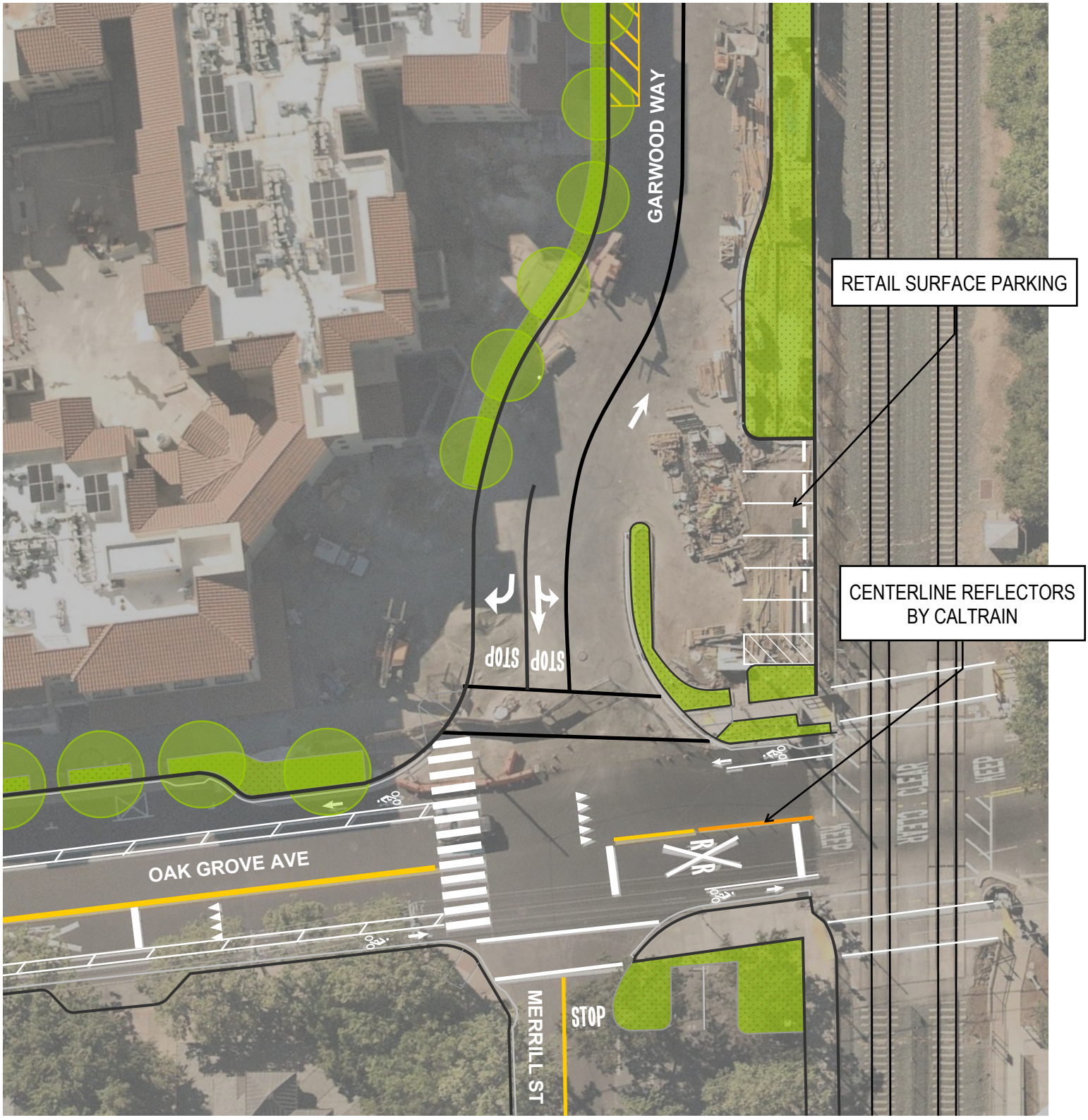
ATTACHMENT C: Approved Garwood Way-Oak Grove Avenue Intersection Layout



aerial image dated May 2021

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ATTACHMENT D: Oak Grove Avenue Caltrain Median Improvement

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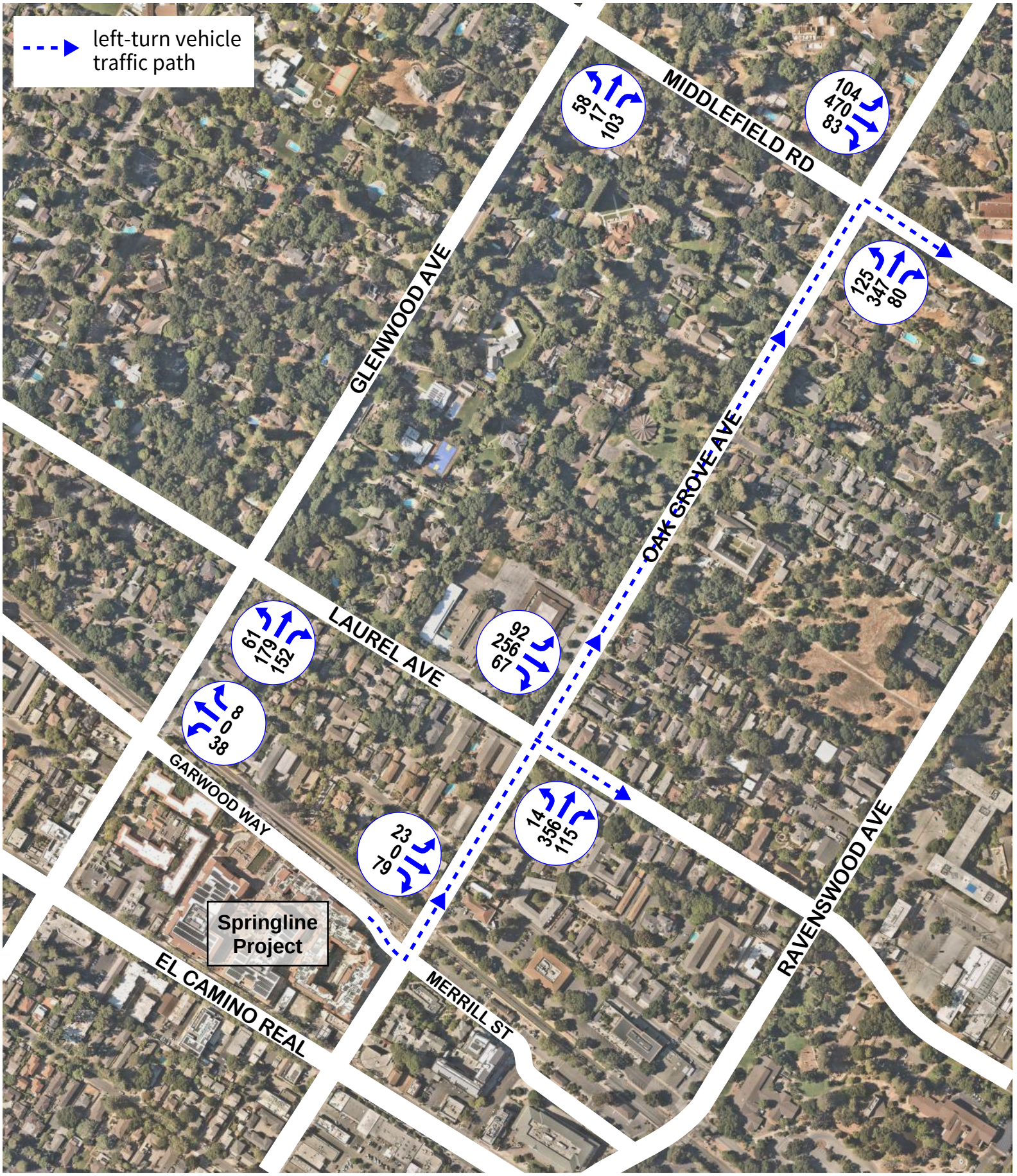
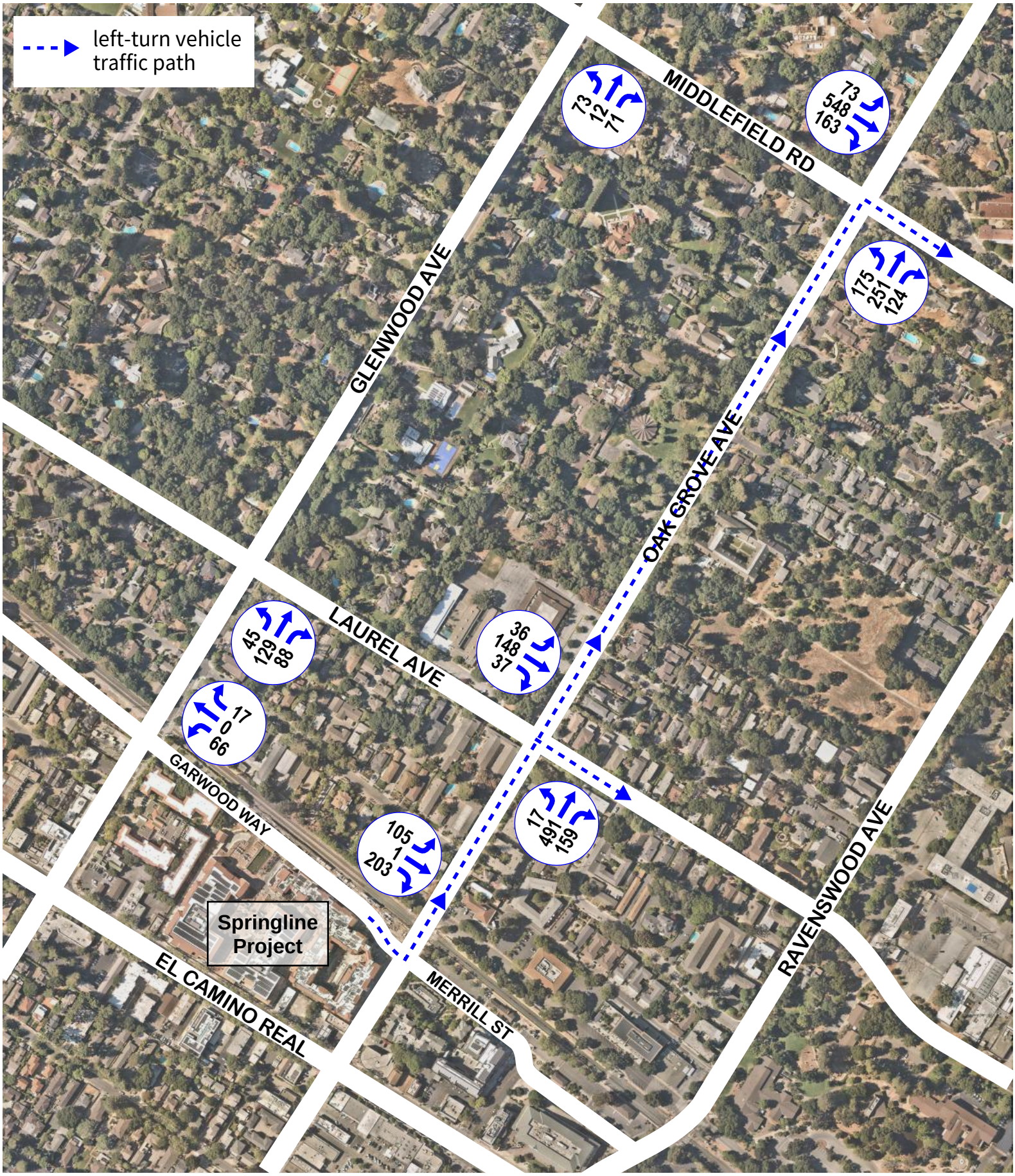
ATTACHMENT E: Trip Flow and Peak Hour Volume Comparison

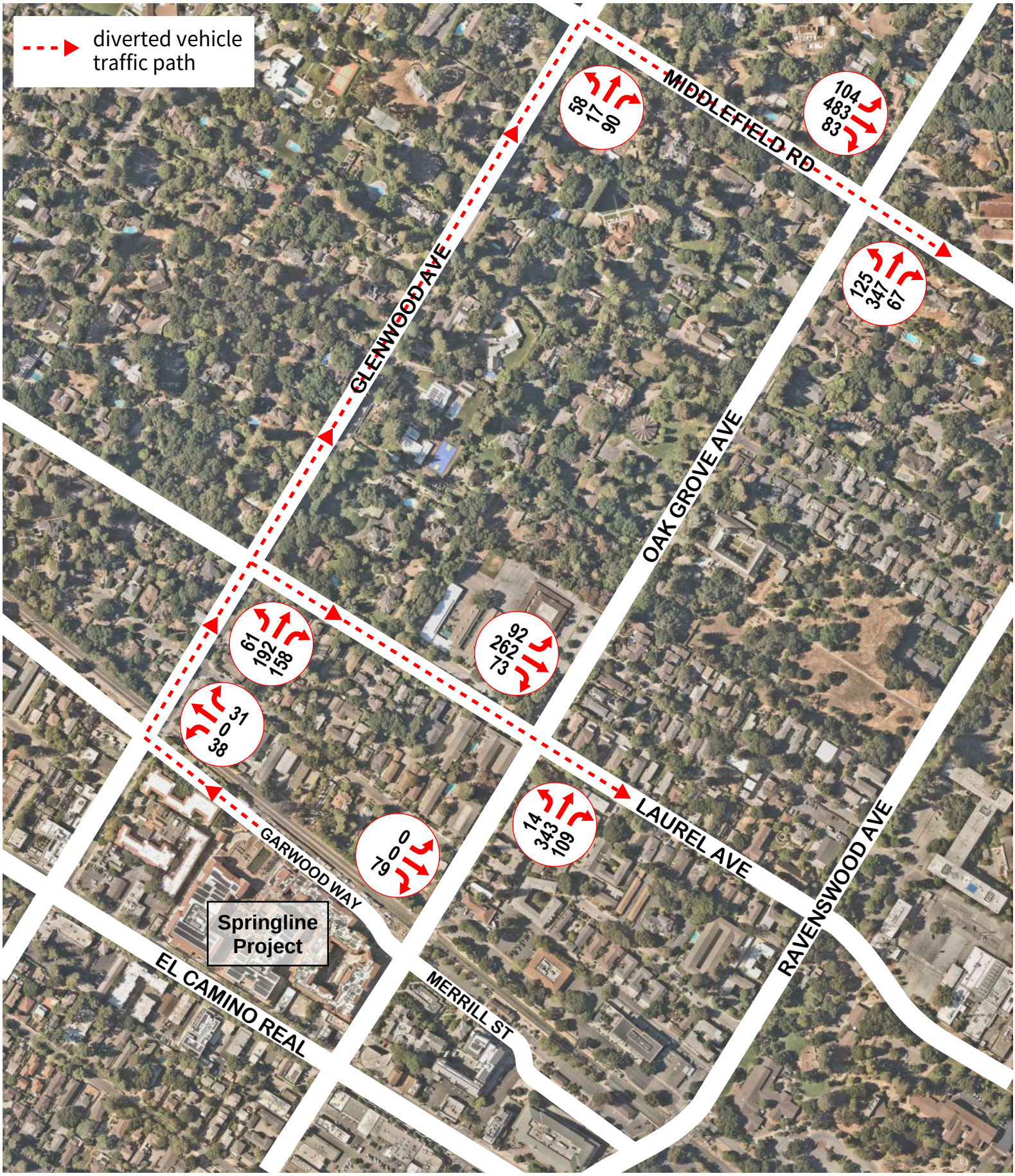
Cumulative Morning Peak Hour Volume - PROJECT EIR



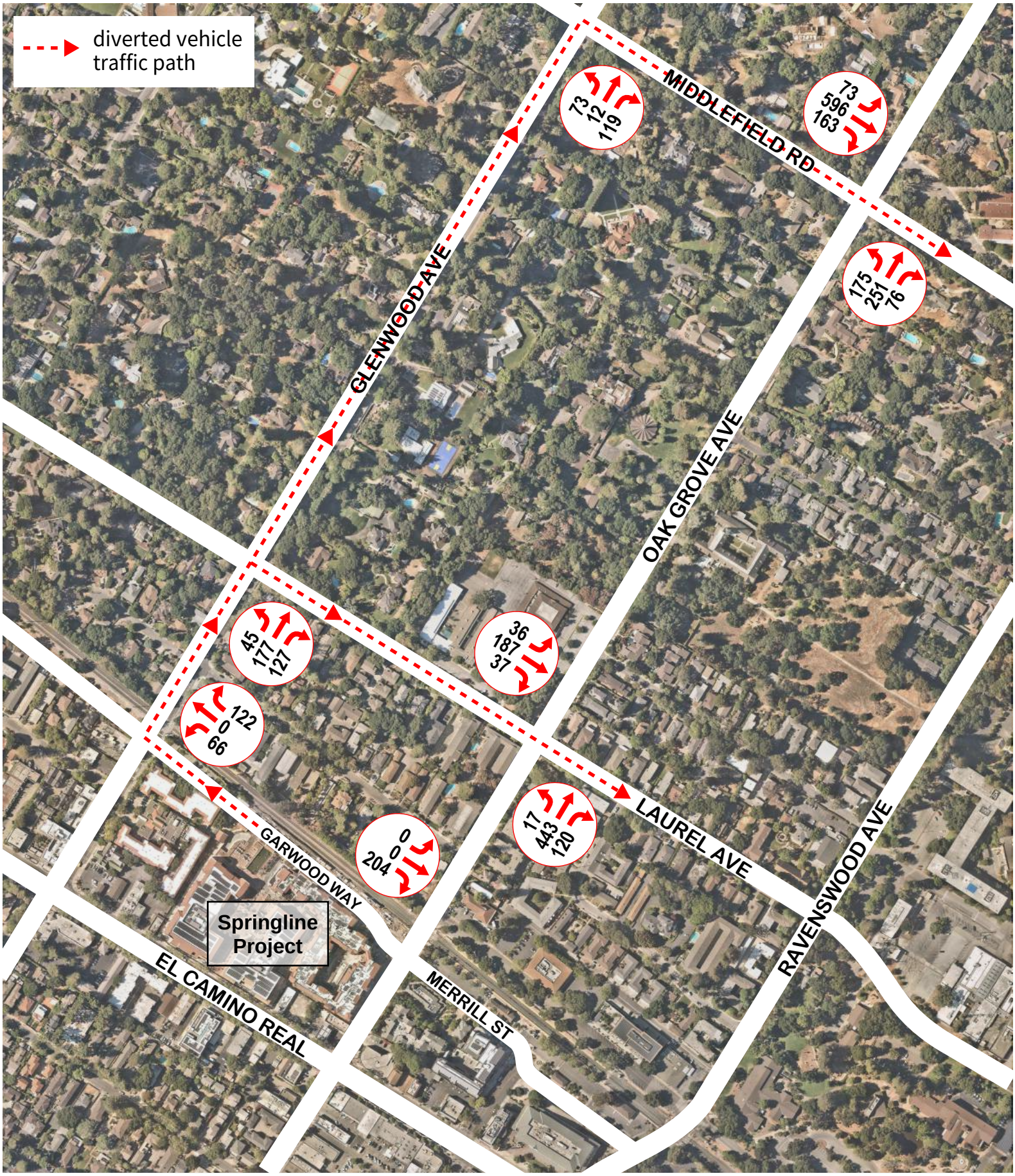
Cumulative Evening Peak Hour Volume - PROJECT EIR



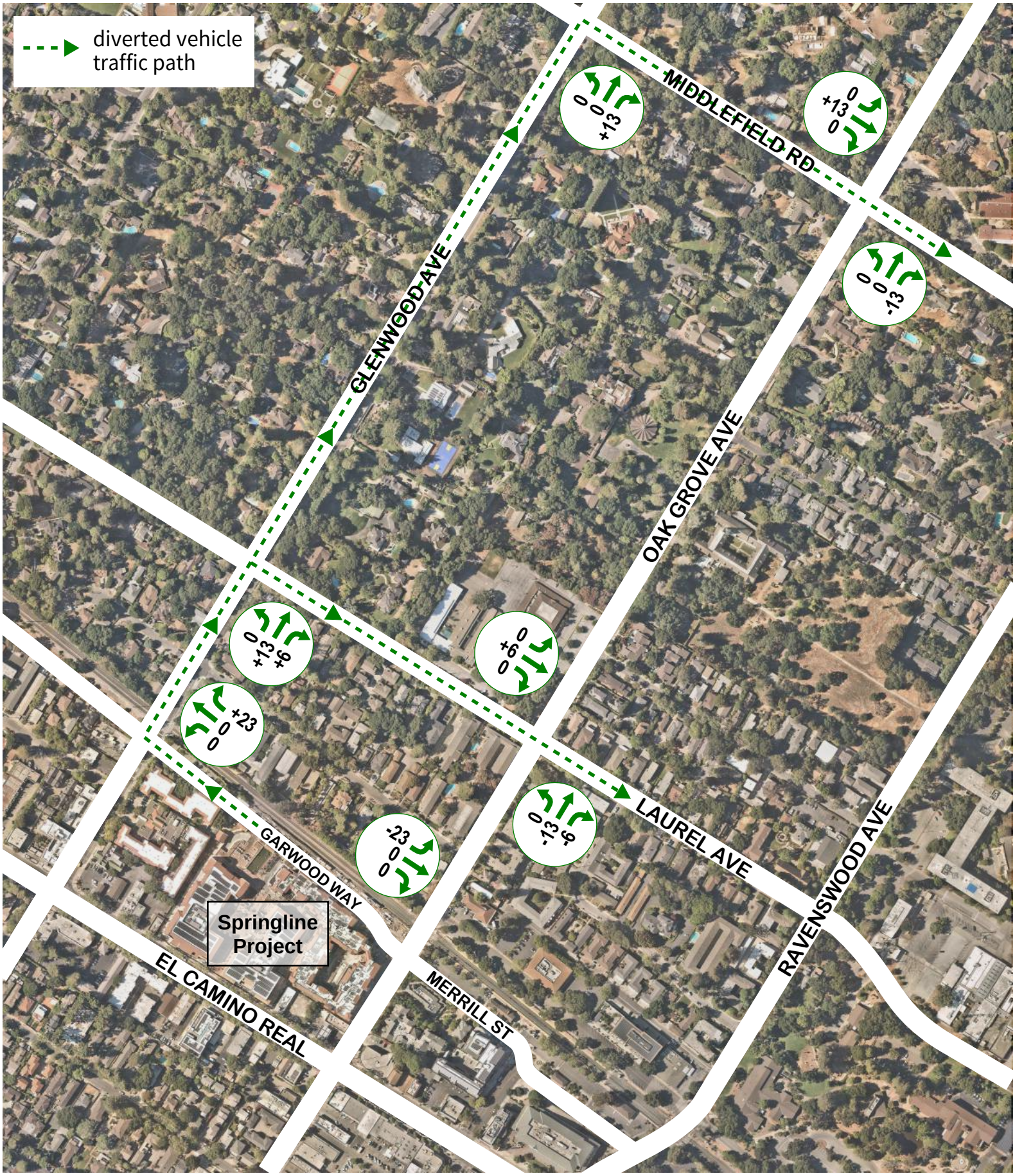
Cumulative Morning Peak Hour Volume - WITH RESTRICTIONS



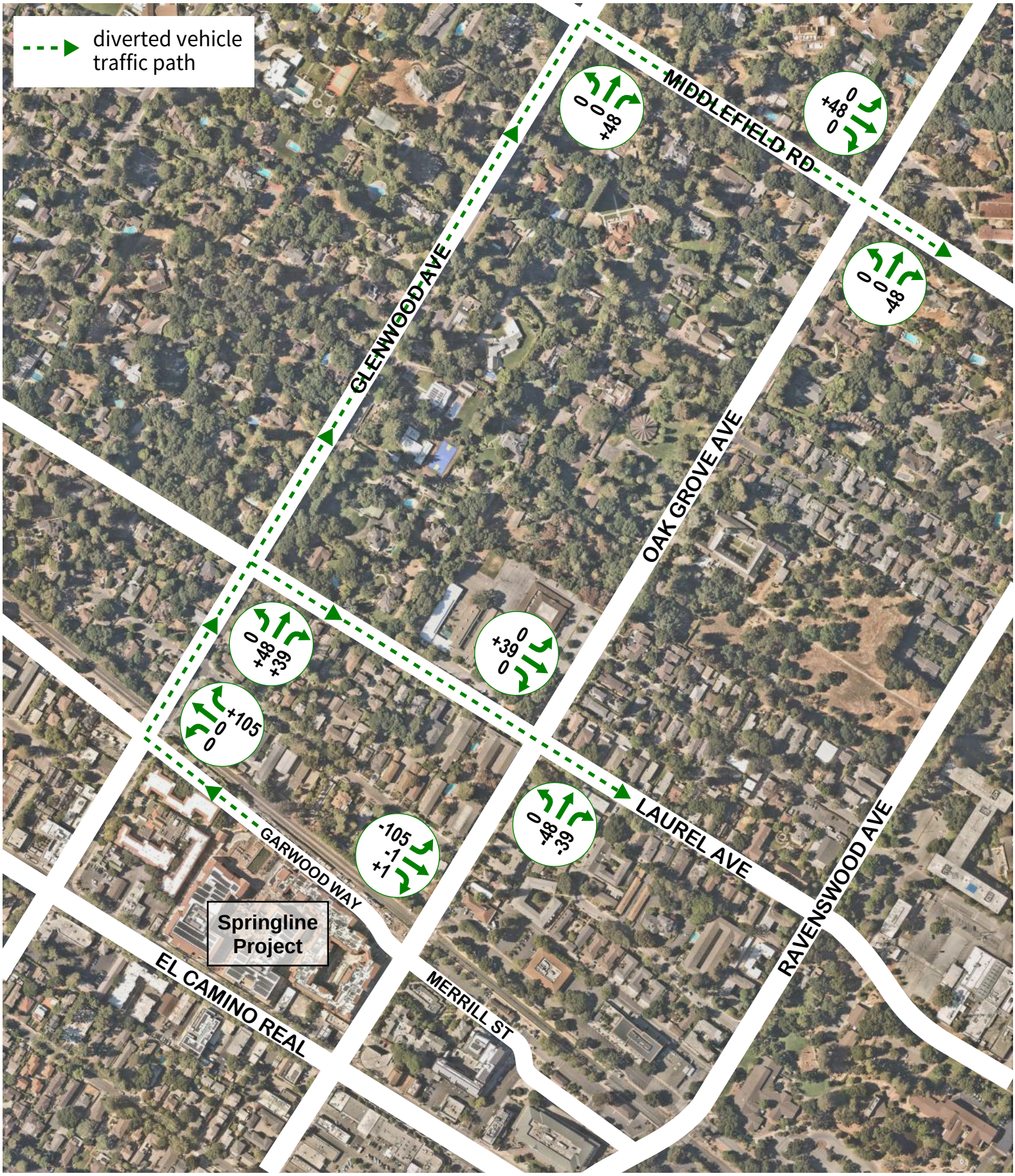
Cumulative Evening Peak Hour Volume - WITH RESTRICTIONS



Cumulative Morning Peak Hour Volume - Volume Change



Cumulative Evening Peak Hour Volume - Volume Change



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Report File: E:\MPA011AM with restrictions

Scenario 8 Cumulative (2040) AM + Project
9/23/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Middlefield Rd/Glenwood Ave-Linden Ave	Two-way stop	HCM 2000	NEB Thru	0.860	10,000.0	F
4	Middlefield Rd/Oak Grove Ave	Signalized	HCM 2000	NEB Left	0.915	27.4	C
9	Glenwood Ave/Laurel St	All-way stop	HCM 2000	NEB Thru	1.091	75.8	F
10	Oak Grove Ave/Laurel St	Signalized	HCM 2000	SEB Thru	0.968	20.6	C
12	Glenwood Ave/Garwood Way	Two-way stop	HCM 2000	NWB Left	0.174	22.7	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 3: Middlefield Rd/Glenwood Ave-Linden Ave

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2000	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

Intersection Setup

Name	Glenwood Avenue			Linden Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	60.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	95.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			10.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Glenwood Avenue			Linden Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	40	13	82	9	14	15	99	558	15	11	636	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	7	0	15	5	0	0	21	102	4	0	175	19
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	17	120	17	18	19	148	816	23	14	989	178
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9000	0.9400	0.9400	0.9000	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	5	32	5	5	5	39	227	6	4	275	47
Total Analysis Volume [veh/h]	62	18	128	18	19	20	157	907	24	15	1099	189
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.86	0.56	8.66	1.03	0.06	0.29	0.01	0.00	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	39.41	6266.99	4730.00	4546.51	14.41	0.00	0.00	10.00	0.00	0.00
Movement LOS	F	F	E	F	F	F	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	12.42	12.42	3.09	8.82	8.82	8.82	1.20	0.00	0.00	0.06	0.00	0.00
95th-Percentile Queue Length [ft/ln]	310.40	310.40	77.26	220.45	220.45	220.45	30.11	0.00	0.00	1.56	0.00	0.00
d_A, Approach Delay [s/veh]	3870.41			5150.98			2.08			0.12		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	414.56											
Intersection LOS	F											

Generated with PTV VISTRO

Version 2020 (SP 0-6)

Intersection Level Of Service Report

Intersection 4: Middlefield Rd/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 2000	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.915

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	240.00	100.00	100.00	40.00	100.00	100.00	95.00	100.00	100.00	95.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	95	263	39	19	261	168	82	398	40	45	276	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	10	13	5	7	34	48	90	7	46	133	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	347	63	29	341	249	153	599	58	104	486	83
Peak Hour Factor	0.9800	0.9500	0.9800	0.9500	0.9500	0.9500	0.9800	0.9800	0.9500	0.9500	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	91	16	8	90	66	39	153	15	27	124	21
Total Analysis Volume [veh/h]	128	365	64	31	359	262	156	611	61	109	496	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	4	0	0	8	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	32	0	0	32	0	0	54	0	0	54	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	39	0	0	39	0	0	41	0	0	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	1	0	0	1	0	0	1	0	0	1	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	35	35	35	35	37	37	37	37
g / C, Green / Cycle	0.44	0.44	0.44	0.44	0.46	0.46	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.37	0.24	0.05	0.36	0.34	0.37	0.34	0.32
Total Saturation Flow Adjustment	0.18	0.96	0.36	0.92	0.24	0.97	0.17	0.96
s, saturation flow rate [veh/h]	350	1821	680	1745	460	1837	317	1822
c, Capacity [veh/h]	153	797	297	763	213	850	147	843
d1, Uniform Delay [s]	19.97	16.56	13.26	19.65	17.49	18.22	17.61	16.97
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	39.35	2.60	0.70	9.26	19.96	7.42	28.50	4.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

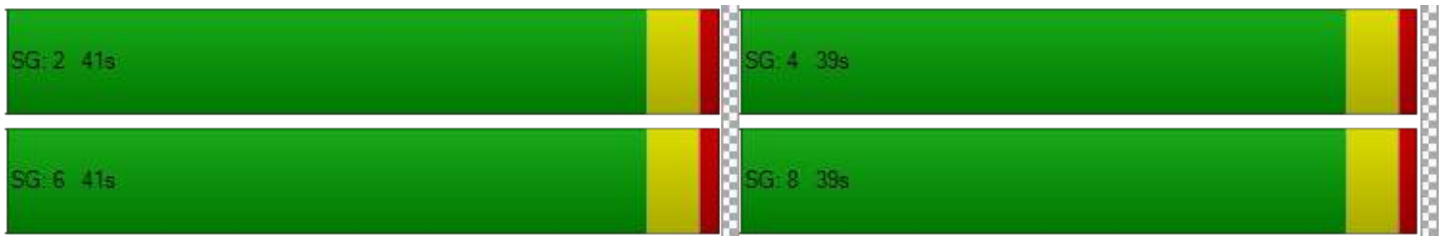
X, volume / capacity	0.84	0.54	0.10	0.81	0.73	0.79	0.74	0.69
d, Delay for Lane Group [s/veh]	59.32	19.16	13.96	28.91	37.44	25.64	46.11	21.56
Lane Group LOS	E	B	B	C	D	C	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.60	8.04	0.46	15.27	3.69	15.77	2.68	12.14
50th-Percentile Queue Length [ft/ln]	90.06	200.97	11.46	381.70	92.29	394.17	66.91	303.60
95th-Percentile Queue Length [veh/ln]	7.52	14.47	1.15	25.15	7.67	25.90	5.85	20.50
95th-Percentile Queue Length [ft/ln]	187.92	361.82	28.79	628.73	191.77	647.51	146.22	512.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.32	19.16	19.16	13.96	28.91	28.91	37.44	25.64	25.64	46.11	21.56	21.56
Movement LOS	E	B	B	B	C	C	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	28.39			28.20			27.86			25.44		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	27.44											
Intersection LOS	C											
Intersection V/C	0.915											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Glenwood Ave/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	75.8
Analysis Method:	HCM 2000	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.091

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	47	136	125	31	174	11	48	160	11	7	280	29
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	22	0	0	40	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	196	160	40	263	14	61	205	14	9	358	37
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	54	44	11	72	4	17	56	4	2	98	10
Total Analysis Volume [veh/h]	67	215	176	44	289	15	67	225	15	10	393	41
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	458	397	388	444
Degree of Utilization, x	1.09	0.88	0.79	1.08

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	15.71	8.74	6.81	15.02
95th-Percentile Queue Length [ft]	392.70	218.47	170.30	375.40
Approach Delay [s/veh]	100.08	49.99	39.63	96.09
Approach LOS	F	E	E	F
Intersection Delay [s/veh]	75.83			
Intersection LOS	F			

Intersection Level Of Service Report
Intersection 10: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 2000	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.968

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	11	245	79	30	345	61	30	107	16	72	206	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	26	6	0	71	0	7	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	340	107	38	513	78	45	137	20	92	264	67
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	97	30	11	146	22	13	39	6	26	75	19
Total Analysis Volume [veh/h]	16	386	122	43	583	89	51	156	23	105	300	76
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	8	8	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	16	16	16	16	16	16	16	16	16	16	16	16
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Split [s]	34	34	34	34	34	34	26	26	26	26	26	26
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	22	22
g / C, Green / Cycle	0.50	0.50	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.30	0.41	0.15	0.30
Total Saturation Flow Adjustment	0.93	0.92	0.79	0.84
s, saturation flow rate [veh/h]	1761	1744	1509	1603
c, Capacity [veh/h]	881	872	553	588
d1, Uniform Delay [s]	10.68	12.71	14.20	17.19
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.95	8.51	2.29	12.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

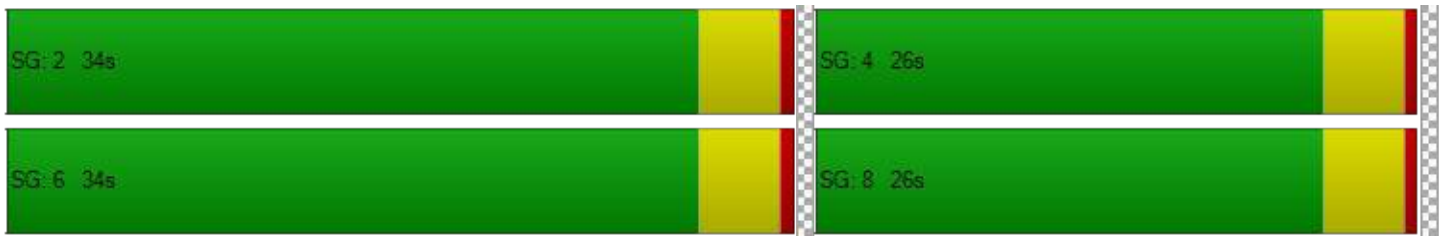
X, volume / capacity	0.59	0.82	0.42	0.82
d, Delay for Lane Group [s/veh]	13.63	21.23	16.49	29.20
Lane Group LOS	B	C	B	C
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	7.34	13.18	3.26	9.53
50th-Percentile Queue Length [ft/ln]	183.57	329.42	81.61	238.28
95th-Percentile Queue Length [veh/ln]	13.44	22.03	6.92	16.67
95th-Percentile Queue Length [ft/ln]	335.99	550.69	173.06	416.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.63	13.63	13.63	21.23	21.23	21.23	16.49	16.49	16.49	29.20	29.20	29.20
Movement LOS	B	B	B	C	C	C	B	B	B	C	C	C
d_A, Approach Delay [s/veh]	13.63			21.23			16.49			29.20		
Approach LOS	B			C			B			C		
d_I, Intersection Delay [s/veh]	20.59											
Intersection LOS	C											
Intersection V/C	0.968											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Glenwood Ave/Garwood Way

Control Type:	Two-way stop	Delay (sec / veh):	22.7
Analysis Method:	HCM 2000	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.174

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue						Garwood Way		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue						Garwood Way		
Base Volume Input [veh/h]	3	251	4	2	261	10	2	0	23	14	0	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	15	58	17	23	0	35	0	8	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	336	63	20	357	13	38	0	37	18	0	15
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	95	18	6	101	4	11	0	11	5	0	4
Total Analysis Volume [veh/h]	5	382	72	23	406	15	43	0	42	20	0	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.02	0.00	0.00	0.17	0.00	0.07	0.09	0.00	0.03
d_M, Delay for Movement [s/veh]	8.18	0.00	0.00	8.32	0.00	0.00	22.71	21.47	13.84	21.83	20.20	12.02
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.06	0.06	0.06	0.92	0.92	0.92	0.38	0.38	0.38
95th-Percentile Queue Length [ft/ln]	0.33	0.33	0.33	1.59	1.59	1.59	23.03	23.03	23.03	9.41	9.41	9.41
d_A, Approach Delay [s/veh]	0.09			0.43			18.33			17.32		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	2.37											
Intersection LOS	C											

Vistro File: C:\...\MPA011 AM with restrictions.vistro
Report File: E:\MPA011AM with restrictions

Scenario 8 Cumulative (2040) AM + Project
9/23/2021

Turning Movement Volume: Summary

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Middlefield Rd/Glenwood Ave-Linden Ave	58	17	120	17	18	19	148	816	23	14	989	178	2417

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Middlefield Rd/Oak Grove Ave	125	347	63	29	341	249	153	599	58	104	486	83	2637

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
9	Glenwood Ave/Laurel St	61	196	160	40	263	14	61	205	14	9	358	37	1418

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Oak Grove Ave/Laurel St	14	340	107	38	513	78	45	137	20	92	264	67	1715

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
12	Glenwood Ave/Garwood Way	4	336	63	20	357	13	38	0	37	18	0	15	901

1300 El Camino Real

Vistro File: C:\...\MPA011 PMwith restrictions.vistro
Scenario 6 Cumulative (2040) PM + Project
Report File: E:\MPA011PMwithrestrictiions
9/24/2021

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
3	Middlefield Rd/Glenwood Ave-Linden Ave	Two-way stop	HCM 2000	NEB Left	8.371	4,283.3	F
4	Middlefield Rd/Oak Grove Ave	Signalized	HCM 2000	NEB Left	1.074	31.3	C
9	Glenwood Ave/Laurel St	All-way stop	HCM 2000	NWB Thru	0.755	22.0	C
10	Oak Grove Ave/Laurel St	Signalized	HCM 2000	NWB Thru	0.925	20.6	C
12	Glenwood Ave/Garwood Way	Two-way stop	HCM 2000	SEB Left	0.044	23.5	C

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 3: Middlefield Rd/Glenwood Ave-Linden Ave

Control Type:	Two-way stop	Delay (sec / veh):	4,283.3
Analysis Method:	HCM 2000	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	8.371

Intersection Setup

Name	Glenwood Avenue			Linden Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	60.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	95.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			10.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Glenwood Avenue			Linden Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	54	9	96	8	11	14	96	724	22	11	488	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	0	10	2	0	0	15	172	3	0	97	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	12	133	12	14	18	138	1099	31	14	722	102
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	3	36	3	4	5	38	299	8	4	196	28
Total Analysis Volume [veh/h]	79	13	145	13	15	20	150	1195	34	15	785	111
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane		No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	8.37	0.50	0.40	1.84	0.61	0.09	0.20	0.01	0.00	0.03	0.01	0.00
d_M, Delay for Movement [s/veh]	4283.26	4039.87	21.22	1440.39	1077.50	947.57	10.92	0.00	0.00	11.52	0.00	0.00
Movement LOS	F	F	C	F	F	F	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	12.88	12.88	1.85	6.43	6.43	6.43	0.73	0.00	0.00	0.08	0.00	0.00
95th-Percentile Queue Length [ft/ln]	322.04	322.04	46.33	160.83	160.83	160.83	18.34	0.00	0.00	2.04	0.00	0.00
d_A, Approach Delay [s/veh]	1662.33			1121.65			1.19			0.19		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	174.61											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 4: Middlefield Rd/Oak Grove Ave

Control Type:	Signalized	Delay (sec / veh):	31.3
Analysis Method:	HCM 2000	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.074

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Middlefield Road			Middlefield Road		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	240.00	100.00	100.00	40.00	100.00	100.00	95.00	100.00	100.00	95.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Middlefield Road			Middlefield Road		
Base Volume Input [veh/h]	128	194	11	6	106	57	108	662	19	45	407	123
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	11	3	48	4	6	27	14	151	2	15	88	6
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	175	251	62	12	142	100	152	998	26	73	609	163
Peak Hour Factor	0.8900	0.9500	0.8900	0.9500	0.9500	0.9500	0.8900	0.8900	0.9500	0.9500	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	66	17	3	37	26	43	280	7	19	171	46
Total Analysis Volume [veh/h]	197	264	70	13	149	105	171	1121	27	77	684	183
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	4	0	0	8	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	5	0	0	5	0	0	5	0	0	5	0
Maximum Green [s]	0	32	0	0	32	0	0	54	0	0	54	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	25	0	0	25	0	0	55	0	0	55	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	1	0	0	1	0	0	1	0	0	1	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	21	21	51	51	51	51
g / C, Green / Cycle	0.26	0.26	0.26	0.26	0.64	0.64	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.24	0.19	0.02	0.15	0.49	0.62	0.53	0.48
Total Saturation Flow Adjustment	0.43	0.95	0.30	0.92	0.18	0.98	0.08	0.95
s, saturation flow rate [veh/h]	817	1804	573	1747	350	1856	146	1804
c, Capacity [veh/h]	214	474	151	459	223	1183	93	1150
d1, Uniform Delay [s]	28.67	26.70	22.26	25.46	10.29	13.78	11.11	10.12
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	43.34	8.54	1.13	4.76	21.98	19.92	54.34	4.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.71	0.09	0.55	0.77	0.97	0.83	0.75
d, Delay for Lane Group [s/veh]	72.01	35.24	23.39	30.22	32.27	33.69	65.46	14.73
Lane Group LOS	E	D	C	C	C	C	E	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.33	8.10	0.24	5.61	3.74	35.25	2.02	16.70
50th-Percentile Queue Length [ft/ln]	158.13	202.48	6.11	140.15	93.48	881.22	50.43	417.58
95th-Percentile Queue Length [veh/ln]	11.91	14.56	0.62	10.80	7.75	56.43	4.58	27.32
95th-Percentile Queue Length [ft/ln]	297.64	364.05	15.59	269.92	193.82	1410.71	114.38	682.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.01	35.24	35.24	23.39	30.22	30.22	32.27	33.69	33.69	65.46	14.73	14.73
Movement LOS	E	D	D	C	C	C	C	C	C	E	B	B
d_A, Approach Delay [s/veh]	48.88			29.88			33.51			18.86		
Approach LOS	D			C			C			B		
d_I, Intersection Delay [s/veh]	31.34											
Intersection LOS	C											
Intersection V/C	1.074											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Glenwood Ave/Laurel St

Control Type:	All-way stop	Delay (sec / veh):	22.0
Analysis Method:	HCM 2000	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	29	138	108	8	184	14	77	223	6	6	73	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	8	14	0	0	22	0	1	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	191	138	10	258	18	100	285	8	8	93	15
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	50	36	3	68	5	26	75	2	2	24	4
Total Analysis Volume [veh/h]	47	201	145	11	272	19	105	300	8	8	98	16
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	565	535	547	489
Degree of Utilization, x	0.69	0.56	0.76	0.25

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.46	3.47	6.63	0.98
95th-Percentile Queue Length [ft]	136.38	86.81	165.86	24.44
Approach Delay [s/veh]	22.60	18.09	27.13	12.80
Approach LOS	C	C	D	B
Intersection Delay [s/veh]	22.04			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 10: Oak Grove Ave/Laurel St

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 2000	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.925

Intersection Setup

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			25.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Oak Grove Avenue			Oak Grove Avenue			Laurel Street			Laurel Street		
Base Volume Input [veh/h]	13	287	55	30	262	48	78	232	38	28	155	29
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	62	39	0	26	0	3	1	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	17	429	109	38	361	61	103	298	49	36	198	37
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	119	30	11	100	17	29	83	14	10	55	10
Total Analysis Volume [veh/h]	19	477	121	42	401	68	114	331	54	40	220	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	2	2	2	6	6	6	8	8	8	4	4	4
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	Lag	-	-	Lag	-	-	Lag	-	-
Minimum Green [s]	4	4	4	4	4	4	4	4	4	4	4	4
Maximum Green [s]	16	16	16	16	16	16	16	16	16	16	16	16
Amber [s]	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All red [s]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Split [s]	33	33	33	33	33	33	27	27	27	27	27	27
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Walk [s]	1	1	1	1	1	1	1	1	1	1	1	1
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	C	C
C, Cycle Length [s]	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	2.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29	29	23	23
g / C, Green / Cycle	0.48	0.48	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.35	0.30	0.33	0.18
Total Saturation Flow Adjustment	0.94	0.89	0.79	0.87
s, saturation flow rate [veh/h]	1779	1696	1504	1657
c, Capacity [veh/h]	860	820	577	635
d1, Uniform Delay [s]	12.26	11.46	17.07	13.94
k, delay calibration	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.11	3.56	15.91	2.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.62	0.87	0.47
d, Delay for Lane Group [s/veh]	17.37	15.02	32.99	16.46
Lane Group LOS	B	B	C	B
Critical Lane Group	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.98	7.50	10.57	4.34
50th-Percentile Queue Length [ft/ln]	249.62	187.49	264.34	108.41
95th-Percentile Queue Length [veh/ln]	17.33	13.67	18.19	8.76
95th-Percentile Queue Length [ft/ln]	433.28	341.82	454.84	219.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.37	17.37	17.37	15.02	15.02	15.02	32.99	32.99	32.99	16.46	16.46	16.46
Movement LOS	B	B	B	B	B	B	C	C	C	B	B	B
d_A, Approach Delay [s/veh]	17.37			15.02			32.99			16.46		
Approach LOS	B			B			C			B		
d_I, Intersection Delay [s/veh]	20.65											
Intersection LOS	C											
Intersection V/C	0.925											

Sequence

Ring 1	-	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 12: Glenwood Ave/Garwood Way

Control Type:	Two-way stop	Delay (sec / veh):	23.5
Analysis Method:	HCM 2000	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.044

Intersection Setup

Name	Glenwood Avenue			Glenwood Avenue			Garwood Way			Garwood Way		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Glenwood Avenue			Glenwood Avenue			Garwood Way			Garwood Way		
Base Volume Input [veh/h]	14	203	2	0	259	11	2	0	105	6	0	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800	1.2800
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	5	63	10	13	0	63	0	17	0	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	18	265	66	10	345	14	66	0	151	8	1	4
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	74	18	3	96	4	18	0	42	2	0	1
Total Analysis Volume [veh/h]	20	294	73	11	383	16	73	0	168	9	1	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.01	0.00	0.00	0.24	0.00	0.24	0.04	0.00	0.01
d_M, Delay for Movement [s/veh]	8.16	0.00	0.00	8.05	0.00	0.00	23.48	23.03	16.51	23.51	17.81	11.26
Movement LOS	A	A	A	A	A	A	C	C	C	C	C	B
95th-Percentile Queue Length [veh/ln]	0.05	0.05	0.05	0.03	0.03	0.03	2.57	2.57	2.57	0.17	0.17	0.17
95th-Percentile Queue Length [ft/ln]	1.32	1.32	1.32	0.70	0.70	0.70	64.24	64.24	64.24	4.24	4.24	4.24
d_A, Approach Delay [s/veh]	0.42			0.22			18.63			19.60		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	4.77											
Intersection LOS	C											

Turning Movement Volume: Summary

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	Middlefield Rd/Glenwood Ave-Linden Ave	73	12	133	12	14	18	138	1099	31	14	722	102	2368

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4	Middlefield Rd/Oak Grove Ave	175	251	62	12	142	100	152	998	26	73	609	163	2763

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
9	Glenwood Ave/Laurel St	45	191	138	10	258	18	100	285	8	8	93	15	1169

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
10	Oak Grove Ave/Laurel St	17	429	109	38	361	61	103	298	49	36	198	37	1736

ID	Intersection Name	Northeastbound			Southwestbound			Northwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
12	Glenwood Ave/Garwood Way	18	265	66	10	345	14	66	0	151	8	1	4	948

ATTACHMENT G: Conceptual Design

TYPE II
OBJECT MARKER

RIGHT TURN
SIGN (R3-5R)

GARWOOD WAY

OAK GROVE AVE

MERRILL ST

12 ft

PROPOSED CONCRETE MEDIAN

CENTERLINE REFLECTORS
BY CALTRAIN

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