CIRCULATION

EXISTING CONDITIONS REPORT

PUBLIC REVIEW DRAFT

JANUARY 2015

CONNECTMENLO

menlo park land use & mobility update

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Public Review Existing Circulation Conditions Report

OVERVIEW

This report provides an overview of the City of Menlo Park's existing plans, policies, and regulations that affect circulation patterns in Menlo Park. It also describes the travel characteristics, roadway system, parking standards and management, pedestrian and bicycle networks, and public transit system in Menlo Park. In addition, the report focuses on key issues and opportunities in the M-2 Area and ends with a summary of key findings citywide.

One of the most significant transportation issues in Menlo Park is the amount of regional commute traffic that passes through the M-2 Area and Belle Haven, causing severe congestion as far south as Middlefield Road along Marsh and Willow Roads in particular (see Table 5 of the Economics Report for a breakdown of commute flows denoting where Menlo Park Residents work and where Menlo Park workers live). A simple analysis of traffic to and from the Dumbarton Bridge using counts on Willow Road, Bayfront Expressway, and University Avenue during peak commute hours– and subtracting trips that did not originate from or travel to streets in the M-2 Area – indicates that 79 percent of morning peak and 88 percent of evening peak traffic is regional pass-through travel. These estimates might be affected slightly by vehicles turning into Belle Haven streets, both downward to reflect drivers going to and from homes, but also upward to include traffic cutting through Belle Haven at rush hour to bypass the major streets.

CURRENT PLANS, POLICIES, AND REGULATIONS

1994 CITY OF MENLO PARK GENERAL PLAN

The City of Menlo Park's most recent General Plan update occurred in 1994 and includes now outdated land use and traffic projections (only through 2010). The Circulation Element identified goals, policies, and actions, many of which were supportive of a balanced and multimodal transportation system as well as a Complete Streets approach (see Table 1). Circulation and transportation goals include:

- To maintain a circulation system using the Roadway Classification System that will provide for the safe and efficient movement of people and goods throughout Menlo Park for residential and commercial purposes.

TABLE 1 CURRENT GENERAL PLAN CIRCULATION AND TRANSPORTATION GOALS, POLICIES, AND ACTIONS

Goal/Policy #	Goal / Policy Text
Roadway Network	
Goal II-A	To maintain a circulation system using the Roadway Classification System that will provide for the safe and efficient movement of people and goods throughout Menlo Park for residential and commercial purposes.
Policy II-A-1	Level of Service D (40 seconds average stopped delay per vehicle) or better shall be maintained at all City-controlled signalized intersections during peak hours, except at the intersection of Ravenswood A venue and Middlefield Road and at intersections along Willow Road from Middlefield Road to US I 0 I.
Policy II-A-2	The City should attempt to achieve and maintain average travel speeds of 14 miles per hour (Level of Service D) or better on El Camino Real and other arterial roadways controlled by the State and at 46 miles per hour (Level of Service D) or better on US 101. The City shall work with Caltrans to achieve and maintain average travel speeds and intersection levels of service consistent with standards established by the San Mateo County Congestion Management Plan.
Policy II-A-3	The City shall work with Caltrans to ensure that average stopped delay on local approaches to State-controlled signalized intersections does not exceed Level of Service E (60 seconds per vehicle).
Policy II-A-4	New development shall be restricted or required to implement mitigation measures in order to maintain the levels of service and travel speeds specified in Policies II-A-I through II-A-3.
Policy II-A-5	The City shall employ appropriate modem technology traffic signal equipment with the objective of limiting average vehicle delay to Level of Service E (60 seconds average vehicle delay) on any approach to a City-controlled signalized intersection during peak hour periods and attempt to approach demand control during off-peak periods in conjunction with good fiscal planning.
Policy II-A-6	The City shall work with Caltrans to ensure they use appropriate modem technology traffic signal equipment on State routes with the objective of limiting average vehicle delay to Level of Service E (60 seconds average vehicle delay) on all minor approach movements during peak hour periods and attempt to approach demand control during off-peak periods in conjunction with good fiscal planning.
Policy II-A-7	All streets should operate consistent with the Roadway Classification System Guidelines in Part II of the General Plan. To protect local streets, the City shall develop and implement a Residential Traffic Management Program that defines a process to initiate and evaluate neighborhood traffic issues, identifies acceptable levels of traffic volumes, speed and diversion and establishes a process whereby the City will use good faith efforts to implement all reasonable design and traffic management improvements to attain traffic volumes on local residential streets not to exceed 1 ,500 to 2,500 vehicles per day depending on the size and characteristics of the street. In order to determine priority of funding and urgency, the Residential Traffic Management Program shall include a point system that includes rating of streets based on such criteria as speed, volume, accidents, near-accidents, and pedestrian activities. Any proposed design or traffic management improvements should not divert a substantial volume of traffic to other Menlo Park streets of the same or lower classification. Any proposed design changes or traffic management improvements shall invite public input from all residents living on adjacent streets which might be affected by any traffic management improvements and/or design changes which could divert traffic onto their street.
Policy II-A-8	New development shall be reviewed for its potential to generate significant traffic volumes on local streets in residential areas and shall be required to mitigate potential significant traffic problems.
Policy II-A-9	The City shall establish, as a priority, the protection of local streets in residential areas from excessive speeding and excessive volumes of through traffic. For the purposes of this policy, 'through traffic' shall mean traffic having neither an origin nor a destination within the relevant neighborhood. Adequate capacity on arterial streets should be provided to encourage, to the extent possible, their use for Menlo Park residential traffic.
Policy II-A-10	The City shall review all plan lines on City streets.
Policy II-A-11	The City shall institute and maintain a congestion monitoring program for City and State facilities.

TABLE 1 CURRENT GENERAL PLAN CIRCULATION AND TRANSPORTATION GOALS, POLICIES, AND ACTIONS

Goal/Policy #	Goal / Policy Text
Policy II-A-12	The City shall endeavor to provide for the safe, efficient, and equitable use of streets by pedestrians and bicyclists through good roadway design, maintenance, and effective traffic law enforcement.
Policy II-A-13	The City shall work with adjacent jurisdictions to secure adequate funding for improvements and to develop methods to reduce traffic impacts on a regional and subregional basis.
Policy II-A-14	The City staff shall work and consult actively with other agencies that have transportation impacts on the city of Menlo Park.
Policy II-A-15	The City shall carefully review and evaluate any proposal by the City of Palo Alto and/or Stanford University to connect Sand Hill Road to El Camino Real to evaluate the potential impacts and benefits of such connection on the City of Menlo Park. Included in such evaluation shall be an alternative analysis of a Sand Hill Road/El Camino Real intersection with and without a connection to Alma Street in Palo Alto as well as an analysis of no direct connection to El Camino Real north of the Stanford Shopping Center. It shall be the policy of the City to oppose any specific Sand Hill Road connection proposal unless (a) the City Council makes findings that the benefits of such proposal(s) outweigh the impacts to the City of Menlo Park and the San Francisquito Creek and (b) Sand Hill Road between Arboretum and El Camino Real remains a minimum distance of I 00 feet from the San Francisquito Creek. The City Council shall consider holding an advisory election on any specific proposal to connect Sand Hill Road to El Camino Real.
Policy II-A-16	The City shall work with appropriate agencies to improve the operation of the freeway and major arterials in the U.S. 1O1 / Bayshore corridor. The City opposes the use of Middlefield Road as an alternative route to relieve freeway congestion. The City supports the extension of the Bayfront Expressway as an appropriate method to provide alternative routes to the Bayshore Freeway. Adequate environmental protection for marsh and wetlands along the route should be provided.
Policy II-A-17	The City shall work cooperatively with the County Congestion Management Agency on the implementation of the Countywide Congestion Management Program and Deficiency Plans. The City will not add any more City streets or intersections to the Countywide Congestion Management Program without a public vote.
Policy II-A-18	The City shall conduct a thorough feasibility study of the grade separation projects included in the Measure A sales tax expenditure plan, including all impacts of such proposed projects and alternatives to the proposed projects, and shall support only those grade separations that provide sufficient traffic and rail service benefits to offset potential negative impacts to the community. The City shall evaluate all alternatives to any grade separations and shall attempt to gauge public opinion, possibly through an advisory election, before proceeding with a grade separation project. Any approval of a grade separation project shall include findings specifying why the alternatives are not suitable and the reasons for proceeding with the grade separation project.
Policy II-A-19	It shall be the intent of the City to design traffic improvement projects to preserve and improve the aesthetics of the city.
Public Transit	
Goal II-B	To promote the use of public transit.
Policy II-B-1	The City shall consider transit modes in the design of transportation improvements and the review and approval of development projects.
Policy II-B-2	As many activities as possible should be located within easy walking distance of transit stops, and transit stops should be convenient and close to as many activities as possible.
Policy II-B-3	The City shall promote improved public transit service and increased transit ridership, especially to office and industrial areas and schools.
Policy II-B-4	The capacity and attractiveness of the commuter railroad service should be increased, and rights-of-ways for future transit service should be protected.

TABLE 1 CURRENT GENERAL PLAN CIRCULATION AND TRANSPORTATION GOALS, POLICIES, AND ACTIONS

Goal/Policy #	Goal / Policy Text
Policy II-B-5	The City shall work with appropriate agencies to agree on long-term peninsula transit service that reflects Menlo Park's desires and is not disruptive to the city.
Policy II-B-6	The City shall support extension of Cal Train to the Market Street area in San Francisco.
Policy II-B-7	The City shall oppose termination in Menlo Park of any future extension of BART.
Transportation Demand Management	
Goal II-C	To promote the use of alternatives to the single occupant automobile.
Policy II-C-1	The City shall work with all Menlo Park employers to encourage employees to use alternatives to the single occupant automobile in their commute to work.
Policy II-C-2	The City shall provide information to existing and new Menlo Park employers to assist their employees in identifying potential carpools, transit alternatives and other commute alternatives.
Policy II-C-3	The City will consider working with the school districts to encourage alternatives to single occupancy vehicle use, such as carpools and vanpools, for trips being generated by local schools.
Policy II-C-4	The City shall coordinate its transportation demand management efforts with other agencies providing similar services within San Mateo County.
Policy II-C-5	The City shall identify potential funding sources, including the Bay Area Air Quality Management District, to supplement City and private monies to support transportation demand management activities of the City and local employers.
Policy II-C-6	The City shall, to the degree feasible, assist Menlo Park employers in meeting the Average Vehicle Ridership (A VR) targets established by the Bay Area Air Quality Management District.
Policy II-C-7	Commuter shuttle service between the industrial work centers and the Downtown Transportation Center should be maintained and improved, within fiscal constraints. The City shall encourage Sam Trans and other agencies to provide funding to support shuttle services.
Bicycles	
Goal II-D	To promote the safe use of bicycles as a commute alternative and for recreation.
Policy II-D-1	The City shall endeavor to maintain or improve roadway maintenance through debris removal, intersection sight clearance and pavement quality on all streets and highways except those where bicycle access is prohibited.
Policy II-D-2	The City shall, within available funding, work to complete a system of bikeways within Menlo Park.
Policy II-D-3	The design of streets within Menlo Park shall consider the impact of street cross section, intersection geometries and traffic control devices on bicyclists.
Policy II-D-4	The City shall require new commercial and industrial development to provide secure bicycle storage facilities on-site.
Policy II-D-5	The City shall encourage transit providers within San Mateo County to provide improved bicycle access to transit including secure storage at transit stations and on-board storage where feasible.
Pedestrians	
Goal 11-E	To promote walking as an commute alternative and for short trips.
Policy II-E-1	The City shall require all new development to incorporate safe and attractive pedestrian facilities on-site.
Policy II-E-2	The City shall endeavor to maintain safe sidewalks and walkways where existing within the public right-of-way.
Policy II-E-3	Appropriate traffic control shall be provided for pedestrians at intersections.

TABLE 1 CURRENT GENERAL PLAN CIRCULATION AND TRANSPORTATION GOALS, POLICIES, AND ACTIONS

Goal/Policy #	Goal / Policy Text
Policy II-E-4	The City shall incorporate appropriate pedestrian facilities, traffic control, and street lighting within street improvement projects to maintain or improve pedestrian safety.
Policy II-E-5	The City shall support full pedestrian access across all legs of an intersection at all signalized intersections which are City-controlled and at the signalized intersections along El Camino Real.
Policy II-E-6	The City shall prepare a safe school route program to enhance the safety of school children who walk to school.
Parking	
Goal II-F	To provide adequate parking in the Downtown area, especially for retail customers and CalTrain patrons.
Policy II-F-1	Adequate off-street parking should be required for all new development in the Downtown Area.
Policy II-F-2	Short-term retail customer parking shall be first priority for the allocation of parking spaces in Downtown parking plazas. Long-term employee parking shall be located in such a manner that it does not create a shortage of customer parking adjacent to retail shops.
Policy II-F-3	The City shall work with the Joint Powers Board to provide parking at the Downtown Transportation Center which is adequate and does not negatively impact nearby uses.

- To promote the use of public transit.
- To promote the use of alternatives to the single occupant automobile.
- To promote the safe use of bicycles as a commute alternative and for recreation.
- To promote walking as a commute alternative and for short trips.
- To provide adequate parking in the Downtown area, especially for retail customers and Caltrain patrons.

COMPLETE STREETS POLICY

Adopted in 2013, the Complete Streets Policy of the City of Menlo Park expresses the City's desire and commitment to create and maintain streets that provide safe, comfortable, and convenient travel for all categories of users and abilities through a comprehensive, integrated transportation network. The policy calls for all relevant departments and agencies of the City to work towards making Complete Streets practices a routine part of everyday operations, project approach, and programs. Additionally, Complete Streets infrastructure should be considered for incorporation into all significant planning, funding, design, approval, and implementation of any significant construction, reconstruction, or alteration of streets within the City.

COMPREHENSIVE BICYCLE DEVELOPMENT PLAN

The 2005 Menlo Park Comprehensive Bicycle Development Plan provides a blueprint for a citywide system of bike lanes, bike routes, bike paths, bicycle parking and other related facilities to allow for safe, efficient and convenient bicycle travel within the City and to regional destinations in the Bay Area. The purpose of the plan is to build on the success of previous bicycle infrastructure improvements by enhancing and expanding the existing bikeway network, connecting gaps, addressing constrained areas, and providing for greater local and regional connectivity.

NEIGHBORHOOD TRAFFIC MANAGEMENT PLAN

Established in 2004, the Neighborhood Traffic Management Plan (NTMP) is intended to provide consistent, citywide policies for neighborhood traffic management to ensure equitable and effective solutions that enhance the safety and livability of neighborhoods in Menlo Park. The document provides instruction for residents in identifying appropriate neighborhood traffic management measures such as driver education, enforcement, and physical improvements that can be utilized in addressing specific neighborhood traffic issues. An important component of the NTMP is to build consensus through neighborhood and stakeholder meetings, resident surveys, as well as trial installations prior to permanent installation of physical improvements.

SIDEWALK MASTER PLAN

The 2009 City of Menlo Park Sidewalk Master Plan serves as a guide for the allocation of capital, maintenance, administrative, and matching funds for sidewalk facilities. The primary purpose of the plan is to prioritize sidewalk installation by providing an inventory of existing gaps in the City's walkway network and identifying opportunities to close those gaps in the network. The plan applies prioritization criteria to establish rankings for sidewalk segments into areas of high, medium, and low need.

TRANSPORTATION IMPACT FEE

The City of Menlo Park updated its Transportation Impact Fee (TIF) program in 2009 to help fund transportation improvements that are needed in conjunction with new development. The intent of the fee is to maintain adequate service levels as new development places a strain on the existing transportation network. Transportation impact fees ensure that development pays a proportional fair share of the cost of the transportation infrastructure deemed necessary and reasonably related to accommodating the impact of

development in Menlo Park. The transportation impact fees collected may only be used for construction of new arterial streets, sidewalks, bicycle lanes, and other physical enhancements to the transportation network. The City can escalate the TIF rates for various land uses annually based on the Engineering News-Record (ENR) Construction Cost Index percentage change for San Francisco.

SAN MATEO COUNTY COMPREHENSIVE BICYCLE AND PEDESTRIAN PLAN

The 2011 San Mateo County Comprehensive Bicycle and Pedestrian Plan designates Pedestrian Focus Areas and a Countywide Bikeway Network. The plan identifies El Camino Real as the corridor in the county with the highest densities of population and employment, and thus pedestrian activity. The plan notes that the high level of through-movement along this corridor necessitates the need for bicycle and pedestrian improvements. Although biking, walking, and transit percentages in San Mateo County are lower than the averages for the Bay Area, Menlo Park has one of the highest percentages of commuters commuting by bicycle in the Bay Area. In 2000 this figure was 3.7 percent (three times the Bay Area average) and rose to 7.2 percent of workers in 2006-2008.

TRANSPORTATION DEMAND MANAGEMENT GUIDELINES

The City of Menlo Park Transportation Demand Management (TDM) Guidelines provides options for the City to encourage the use of innovative strategies to mitigate the traffic impact of new development projects. For projects that would create between 0.5 second and 1.0 second of delay to any impacted study intersections (with unmitigated significant traffic impacts), an exemption from the EIR review process may be granted if the project applicant is able to develop and implement acceptable TDM measures satisfactory to the City's Transportation Division. TDM measures identified in the Guidelines include, but are not limited to:

- Charging employees for parking
- Employer subsidized transit tickets
- Preferential parking for carpools/vanpools
- Employer shuttles
- Parking cash-out
- Shared parking
- Provision of bicycle storage and showers

In addition to the City's TDM Guidelines, the City/County Association of Governments of San Mateo County provides Congestion Management Program guidelines that must be followed for all development projects that a) generate a net 100 or more peak hour trips on the Congestion Management Program roadway network; and b) the project is subject to CEQA review. The C/CAG list of acceptable TDM measures is similar to the City Guidelines list.

EL CAMINO REAL/DOWNTOWN SPECIFIC PLAN

This El Camino Real/Downtown Specific Plan focuses on new development in an area well-served by transit with a host of mixed uses, it encourages transit and non-motorized modes to reduce reliance on single-occupant vehicles, minimize congestion, limit land dedicated to parking, and reduce greenhouse gas emissions. The specific plan envisions the following:

- A vehicular system that accommodates local traffic on El Camino Real.
- An integrated pedestrian network of expansive sidewalks, promenades and paseos along El Camino Real and within Downtown Menlo Park.
- A bicycle network that builds on existing plans and integrates more fully with Downtown and proposed public space improvements in the area.
- Modified parking rates for private development based on current industry standards.

The City is currently conducting a related study, the El Camino Real Corridor Study, to review potential transportation and safety improvements to El Camino Real between Sand Hill Road and Encinal Avenue. The study will evaluate potential impacts to traffic, active transportation, safety, parking and aesthetics.

TRAVEL CHARACTERISTICS

Travel characteristics are indicators of the success of a transportation system. A successful transportation system should balance all modes of travel, increase mobility and access, contribute to quality of life, and provide options for residents and workers. This section reviews current travel characteristics associated with Menlo Park in an effort to measure its current performance.

Journey-to-work mode splits are integral to understanding transportation habits and patterns in Menlo Park, representing 30% of all trips. As shown in Table 2, residents of Menlo Park typically drive alone at rates comparable to San Mateo County, whereas neighboring Santa Clara County exhibits higher drive-alone rates. Menlo Park commuters use alternative modes of transportation, including bicycling and working from home, at rates higher than San Mateo County residents. In addition, Menlo Park has proportionally more

public transportation users and bicyclists than neighboring cities in Santa Clara County. However, Menlo Park residents take public transportation and walk less than residents in other San Mateo County cities. These trends provide context for understanding vehicle ownership rates. Table 2 also provides trends over time, illustrating the significant increase in Menlo Park residents commuting by bike between 1990, when 3 percent cycled, and 2013, when 7 percent cycled to work.

TABLE 2 JOURNEY-TO-WORK MODE SPLIT

	City of Menlo Park			San Mateo County			Santa Clara County		
Journey-to-Work Mode Split	2013	2000	1990	2013	2000	1990	2013	2000	1990
Drive Alone	71%	76%	72%	70%	72%	72%	76%	77%	78%
Carpool	7%	7%	12%	11%	13%	13%	11%	12%	12%
Public Transportation	4%	4%	5%	9%	7%	7%	3%	4%	3%
Walk	3%	2%	3%	3%	2%	3%	2%	2%	2%
Bicycle	7%	4%	3%	1%	1%	1%	2%	1%	1%
Other means	0%	1%	1%	1%	1%	1%	1%	1%	1%
Work from home	9%	7%	3%	5%	4%	3%	5%	3%	3%

Source: US Census Bureau 2013 (2009-2013, 5-year average), 2000 and 1999 (Percentages may not total 100% due to rounding)

VEHICLE OWNERSHIP

As shown in Table 3, a greater percentage of Menlo Park households own one or two vehicles than the San Mateo countywide average, but fewer households in Menlo Park own more than three vehicles. Similar to trends nationwide, renter-occupied households own fewer vehicles than owner-occupied units. In Menlo Park, 9 percent of renter households are car-free, as compared to 1 percent of owners. The vast majority of owner-occupied households own two or more vehicles, whereas the majority of renters own no more than one vehicle.

TABLE 3 VEHICLE OWNERSHIP RATES

Number of Vehicles Available	Menlo Park Owner Occupied	Menlo Park Renter Occupied	San Mateo County Owner Occupied	San Mateo County Renter Occupied	Santa Clara County Owner Occupied	Santa Clara County Renter Occupied
No Vehicles	1%	9%	3%	10%	2%	8%
1 Vehicle	25%	49%	22%	44%	19%	42%
2 Vehicles	46%	35%	43%	33%	45%	36%
3+ Vehicles	27%	8%	31%	13%	34%	14%

As a percentage of total households, Menlo Park households own fewer vehicles on average than San Mateo County households at large. In Menlo Park, 13 percent of households do not own a vehicle, whereas only 3 percent of San Mateo County households and 5 percent of Santa Clara County households are car-free. In addition, Menlo Park households average fewer than two vehicles, and San Mateo County households average more than two vehicles.

Combining this information with the journey-to-work data, it is evident that Menlo Park is home to a population that relies on alternative modes of transportation. With nearly a quarter of the population walking, biking, and using public transportation, it is necessary to ensure transit connectivity and quality bicycle and pedestrian infrastructure. All streets cater to automobile traffic, while only some provide infrastructure for pedestrians, cyclists, and transit users. In school zones, streets are well-balanced, but key traffic corridors lack complete infrastructure for additional modes of transportation.

Figures 1 and 2, which depict vehicle ownership in Menlo Park by Census Tract, show that Downtown residents are less dependent on automobiles, with the highest rates of zero-car households.

SAFE ROUTES TO SCHOOL

The City of Menlo Park is home to four elementary/middle school districts, which cross into neighboring jurisdictions: Menlo Park City School District, Ravenswood City School District, Las Lomitas Elementary School District, and Redwood City School District. Figure 3 shows the locations of both public and private schools within Menlo Park and nearby communities.

Menlo Park City School District has been particularly active in promoting Safe Routes to School (SR2S) programs for Oak Knoll, Encinal, Hillview, Menlo, Sacred Heart, and St. Raymond's Schools, all of which rely on Valparaiso Avenue and surrounding streets. The program began in 1997 at Oak Knoll School, with plan updates in 2002 and 2013. Each plan identifies issues and opportunities, with the goal of obtaining grant funding for infrastructure improvements and programs at the schools. The Ravenswood City School District also has a SR2S program funded by the San Mateo County Office of Education and the City/ County Association of Governments of San Mateo County. The Ravenswood District promotes walking and bicycling to school through programs like Walking School Buses, Bicycle Trains, and various other special events.

Over the years, the Menlo Park City School District's SR2S program has reduced the number of automobile trips significantly. During the October 8, 2014 International Walk to School Day event, the District survey found 13 percent of students walk to school, 24 percent bicycle, 10 percent take public transit, 10 percent carpool, and 41 percent are driven alone by parents. Hillview School, in particular, has the highest rate of bicycling in the district, with an average of 36 percent, along with a high usage of public transportation

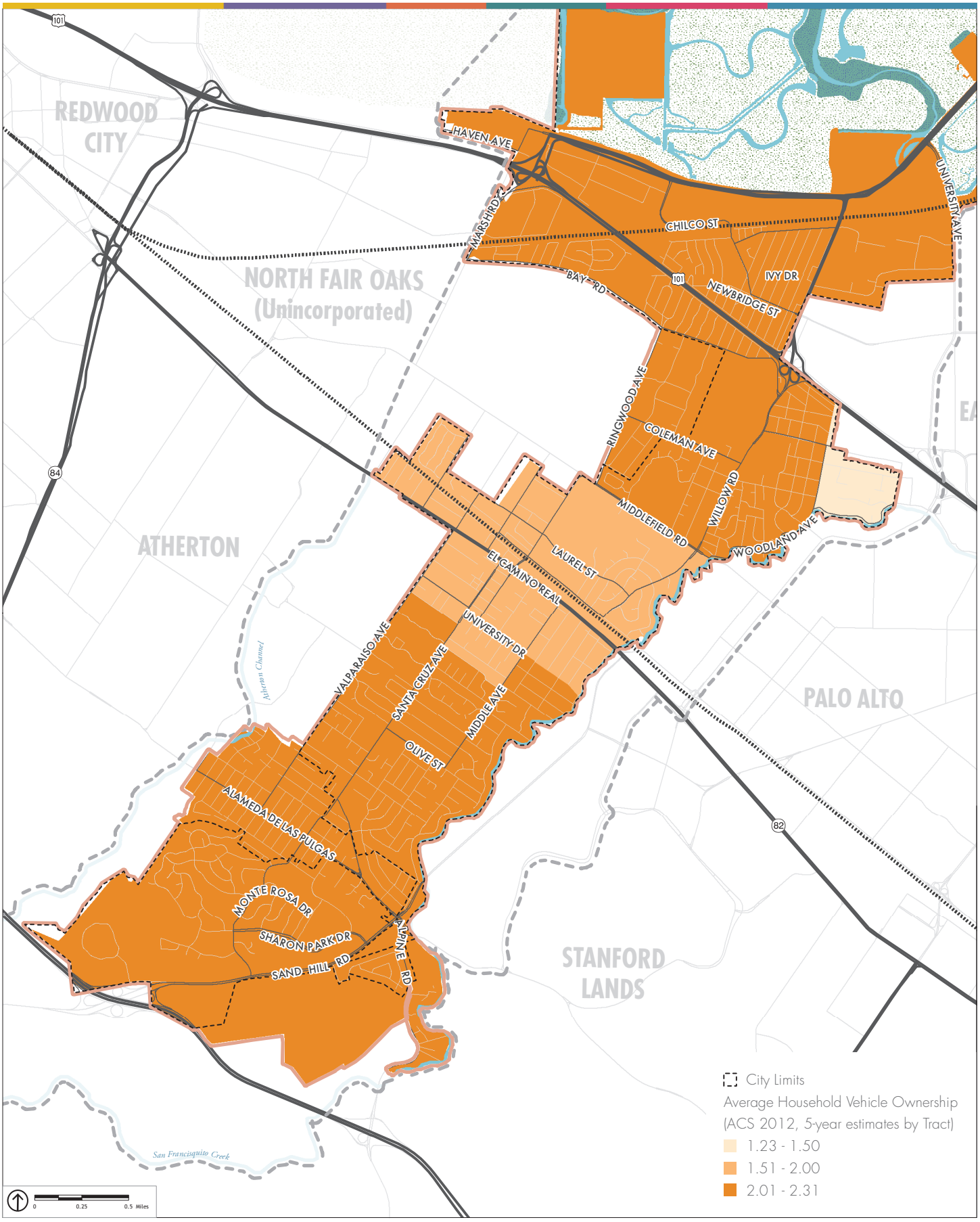

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FIGURE 1: AVERAGE VEHICLE OWNERSHIP BY CENSUS TRACT

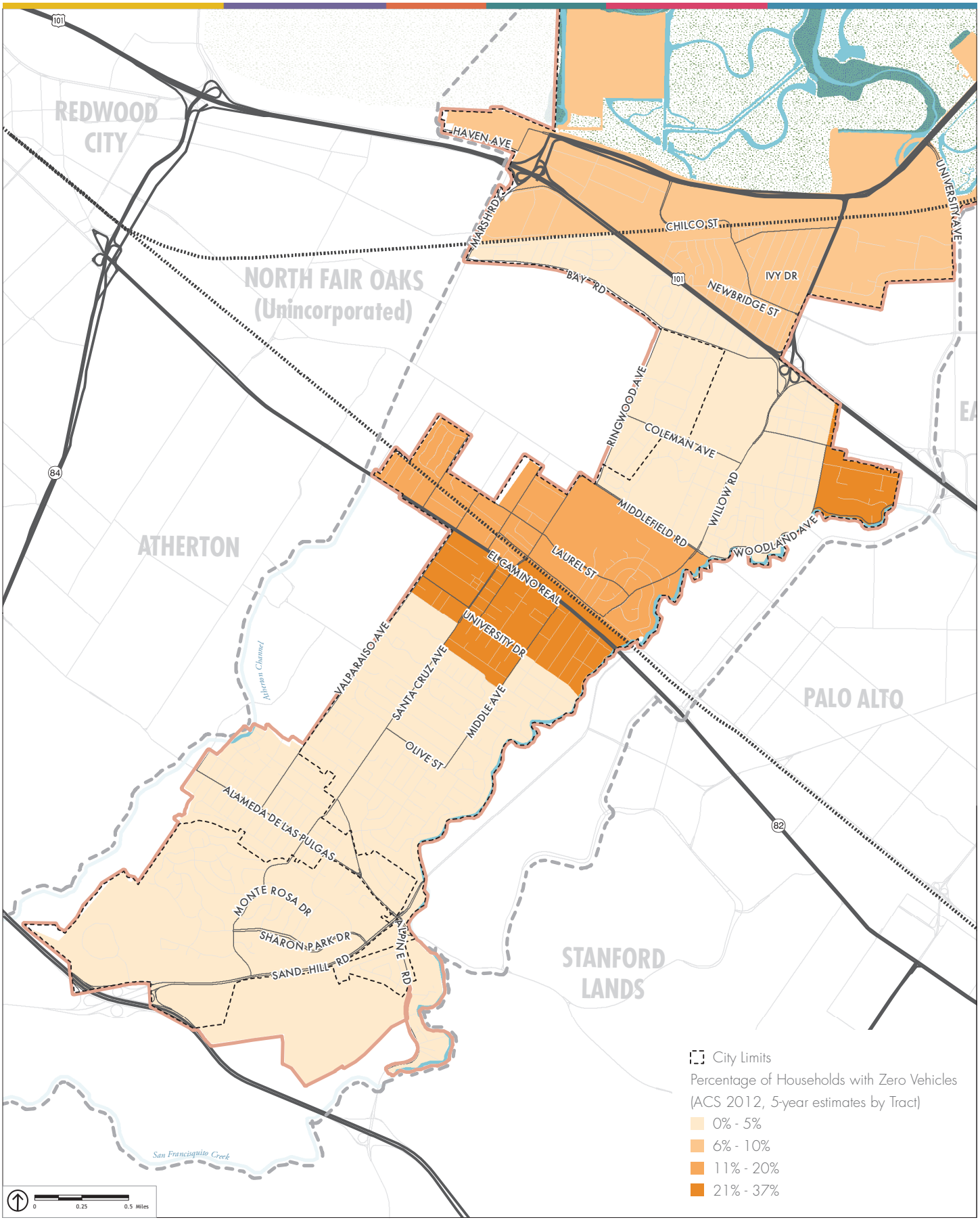

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FIGURE 2: ZERO VEHICLE HOUSEHOLDS BY CENSUS TRACT

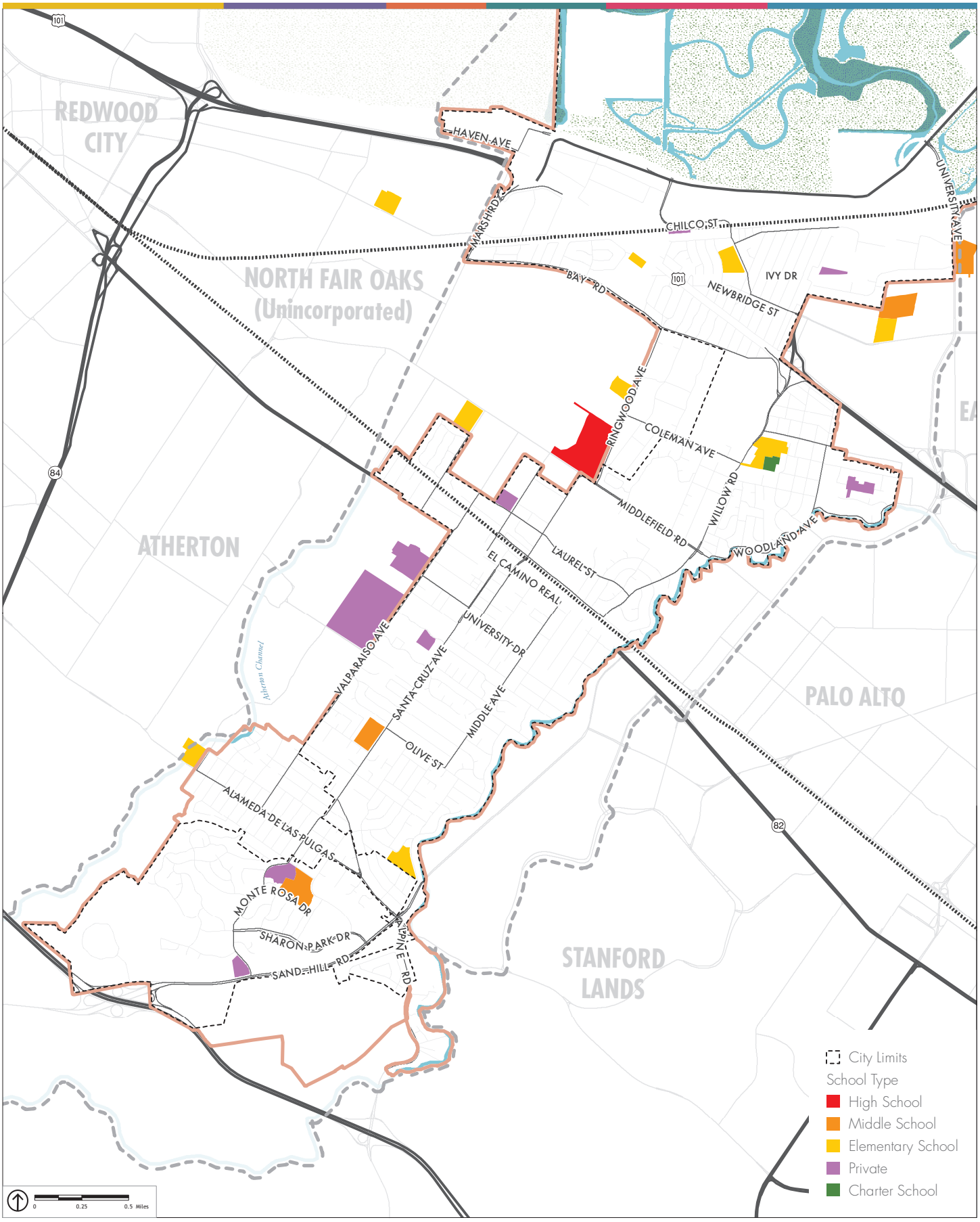

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FIGURE 3: SCHOOL LOCATIONS

(19 percent). The Safe Routes to School program has also encouraged public transportation for schools such as Encinal Elementary, where walking and bicycling infrastructure is beyond Menlo Park's control as the routes lie in neighboring Atherton. At Encinal, 13 percent of students use public transportation to travel to school.

In support of the SR2S program in Menlo Park, key streets around schools have restricted turns and parking during morning arrival and afternoon dismissal to reduce cut-through traffic and school drop-off traffic. This creates safer pedestrian and bicycling conditions by reducing potential automobile conflicts.

ROADWAY SYSTEM

DESCRIPTION OF ROADWAY NETWORK

The current General Plan designates a roadway classification system for the existing roadway network in the City of Menlo Park. It includes Freeway/Expressway, Primary Arterial, Minor Arterial, Collector and Local. Figure 4 shows the existing roadway network in the City of Menlo Park.

REGIONAL ROADWAY CONTEXT

Within Menlo Park, the following freeways/expressways/state highways are designated as Routes of Regional Significance:

- *US 101 (Bayshore Freeway)* is an eight-lane, north-south freeway that runs between Los Angeles, California and Olympia, Washington, and is a major regional freeway on the San Francisco Peninsula. It connects Menlo Park with the other cities on the Peninsula. There is one high occupancy vehicle (HOV) lane in both directions through Menlo Park. Two interchanges serve Menlo Park, at Willow Road and Marsh Road.
- *I-280 (Junipero Serra Freeway)* is an eight-lane, north-south freeway that connects San Jose with San Francisco. There is one HOV lane in both directions through Menlo Park. One interchange serves Menlo Park at Sand Hill Road.
- *Bayfront Expressway (SR 84)* is a six-lane, east-west expressway that connects the Peninsula to the east via the Dumbarton Bridge. Within the City of Menlo Park, it connects Marsh Road with the Dumbarton Bridge.

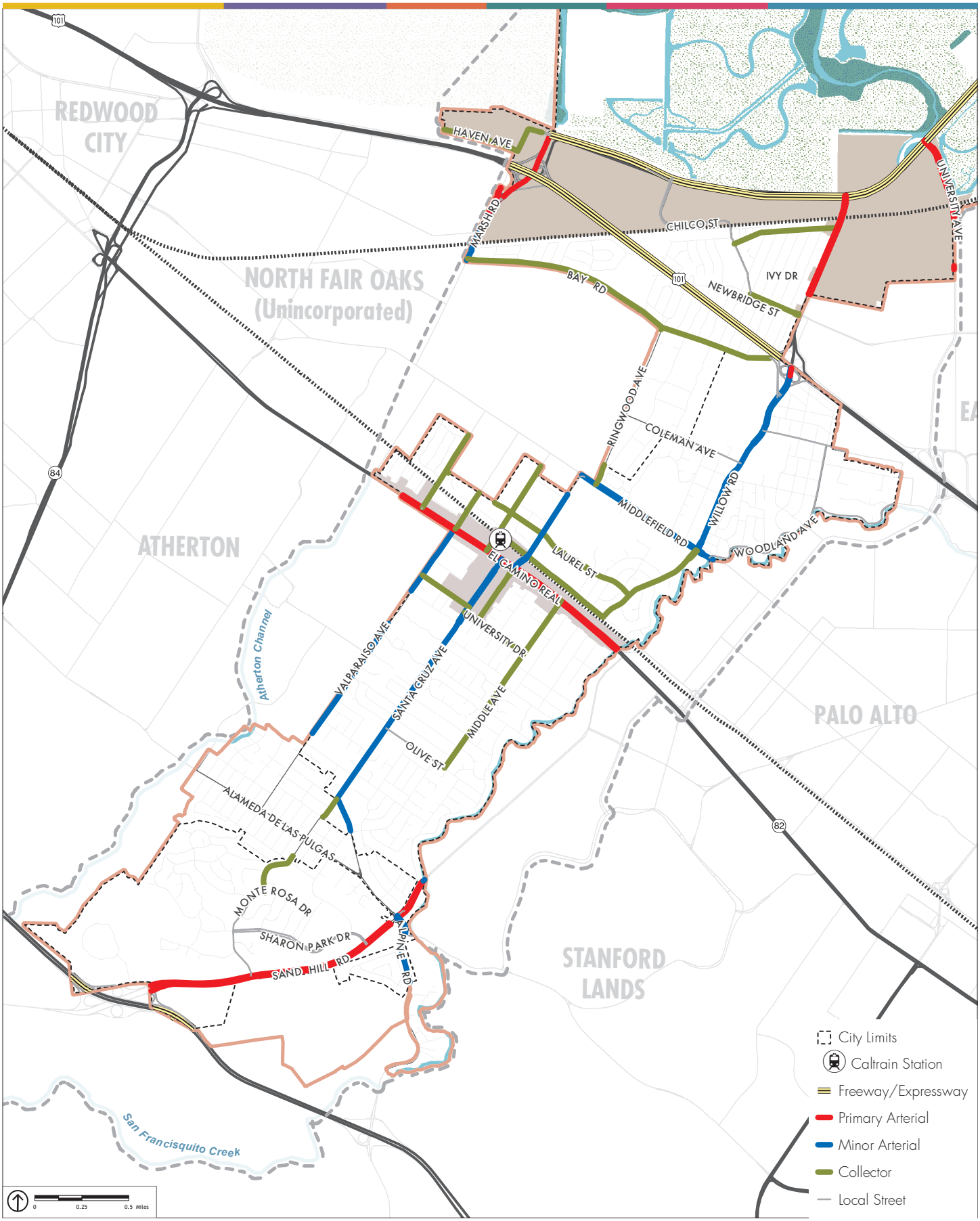

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FIGURE 4: CITY CIRCULATION SYSTEM

- *El Camino Real (SR 82)* is a primary north-south arterial that connects San Jose with San Francisco. It enters Menlo Park north of Sand Hill Road as a six-lane arterial, becomes a four-lane arterial near Downtown Menlo Park, and exits the city as a five-lane arterial (three southbound lanes and two northbound lanes) north of Encinal Avenue.

CITY OF MENLO PARK STREET SYSTEM

Freeways and Expressways

As designated in the Menlo Park General Plan, freeways/expressways are access-controlled or limited-access-controlled facilities that carry regional and/or sub-regional traffic. The following facilities are designated as freeways/expressways in Menlo Park (see Figure 4). Caltrans controls all of the below listed facilities.

TABLE 4 FREEWAYS/EXPRESSWAYS

Roadway	From	To
US 101	Marsh Road	Willow Road
I-280	N. City Limits	S. City Limits
Bayfront Expressway (SR 84)	Marsh Road	University Avenue

Primary Arterial Streets

Primary Arterial Streets serve major activity centers and high-volume traffic corridors within the urbanized area and accommodate a high proportion of through trips. Within Menlo Park, the following streets are designated as primary arterial streets:

TABLE 5 PRIMARY ARTERIAL STREETS

Roadway	From	To
El Camino Real (SR 82)[a]	Alejandra Avenue	S. City Limits
Junipero Serra Boulevard	Alpine Road	City Limits
Marsh Road	Bohannon Drive	Bayfront Expressway (SR 84)
Sand Hill Road	I-280	Santa Cruz Avenue
University Avenue (SR 109)[a]	City Limits	Bayfront Expressway (SR 84)
Willow Road (SR 114)[a]	City Limits	Bayfront Expressway (SR 84)

a. Caltrans controls this roadway.

Minor Arterial Streets

Minor Arterial Streets interconnect with and augment the freeway and primary arterial street network. Minor Arterial Streets provide greater access to abutting property and carry more locally-oriented traffic than do the Primary Arterial Streets. Within the City of Menlo Park, the following streets are designated as minor arterial streets:

TABLE 6 MINOR ARTERIAL STREETS

Roadway	From	To
Alpine Road	City Limits	Sand Hill Road
Marsh Road	Bay Road	Bohannon Drive
Middlefield Road	N. City Limits	S. City Limits
Ravenswood Avenue	El Camino Real (SR 82)	Middlefield Road
Sand Hill Road	Santa Cruz Avenue	San Francisquito Creek
Santa Cruz Avenue	Oakdell Drive	El Camino Real (SR 82)
Valparaiso Avenue	City Limits	El Camino Real (SR 82)
Willow Road	Middlefield Road	Bayshore Freeway (US 101)

Collector Streets

Collector Streets serve to channel traffic from local streets within residential, commercial, and industrial areas into the arterial system. The streets shown in Table 7 are designated as collector streets in Menlo Park.

Local Streets

Local Streets primarily carry traffic from the immediately adjacent land use and typically serve relatively low volumes of short trips. Within the City of Menlo Park, all streets not otherwise classified are designated local streets.

Plan Lines and Reserved Rights of Way

Through Municipal Code Chapter 13.16 and through reservations on subdivision maps, the City has identified locations on private property for potential future right-of-way improvements. Examples of corridors include Hamilton Avenue, Willow Road, Middlefield Road, Burgess Drive, Garwood Way, and Oak Grove Avenue. As part of the General Plan Update, the City may want to determine whether or not to

TABLE 7 COLLECTOR STREETS

Roadway	From	To
Alma Street	Willow Road	Oak Grove Avenue
Avy Road	Monte Rosa Drive	Santa Cruz Drive
Bay Road	Willow Road	Marsh Road
Bohannon Drive	Marsh Road	Scott Drive
Chilco Street	Constitution Drive	Bayfront Expressway (SR 84)
Chrysler Drive	Constitution Drive	Bayfront Expressway (SR 84)
Constitution Drive	Chilco Street	Chrysler Drive
Crane Street	Oak Grove Avenue	Menlo Avenue
Encinal Avenue	El Camino Real (SR 82)	City Limits
Glenwood Avenue	El Camino Real (SR 82)	Laurel Street
Hamilton Avenue	Chilco Street	Willow Road
Haven Avenue	Marsh Road	City Limits
Laurel Street	Willow Road	Glenwood Avenue
Menlo Avenue	University Drive	El Camino Real (SR 82)
Middle Avenue	Olive Street	El Camino Real (SR 82)
Newbridge Street	Willow Road	Chilco Street
O'Brien Drive	Willow Road	University Avenue
Oak Grove Avenue	University Drive	City Limits
Ringwood Avenue	Middlefield Road	City Limits
Scott Drive	Bohannon Drive	Marsh Road
Sharon Park Drive	Sand Hill Road	Monte Rosa Drive(East)
Sharon Road	Sharon Park Drive	Alameda de las Pulgas
University Drive	Middle Avenue	Valparaiso Avenue
Willow Road	Alma Street	Middlefield Road

abandon claims to certain land for future right-of-way and whether other land may be needed for other potential public right of way improvements, including bicycle and pedestrian access.

Emergency Response Routes

The Menlo Park Fire Protection District (MPFPD) identified Primary Emergency Response routes (see Figure 5) to better manage rapid deployment of emergency vehicles and maintain acceptable emergency response times for the community. These routes are used in response to emergency medical calls, vehicle accidents, hazardous materials incidents, and fire incidents. The specific routes were chosen to balance public safety, traffic calming, and emergency response issues. Special consideration should be given to the use of traffic calming devices and their impacts to emergency response vehicles on MPFPD primary response routes.

STUDY INTERSECTION LEVEL OF SERVICE

LEVEL OF SERVICE ANALYSIS METHODOLOGY

Level of service (LOS) is a qualitative description of intersection operations and is typically reported using an A through F letter rating system to describe vehicle travel delay and congestion. LOS A indicates free flow conditions with little or no vehicle delay, and LOS F indicates jammed conditions with excessive vehicle delays and long back-ups.

Operating conditions at the study intersections were evaluated using the 2000 Highway Capacity Manual (HCM 2000) Operations methodology. Peak-hour traffic operational conditions for signalized intersections are reported as average control delay for the overall intersection in seconds per vehicle with corresponding LOS. The LOS methodology is detailed in Appendix A.

PERFORMANCE METRICS

Under the local jurisdiction standards, the performance of an intersection or a segment is measured based on the following metrics:

Intersections are evaluated using a metric focused on average stopped delay per vehicle during peak hours. LOS D (40 seconds average stopped delay per vehicle) or better is to be maintained at all City-controlled signalized intersections during peak hours, except at the intersection of Ravenswood Avenue and Middlefield Road and at intersections along Willow Road from Middlefield to US 101.

The City attempts to achieve and maintain average travel speeds of 14 miles per hour (LOS D) or better on El Camino Real and other arterial roadways controlled by the State and 46 miles per hour (LOS D) or better on US 101.

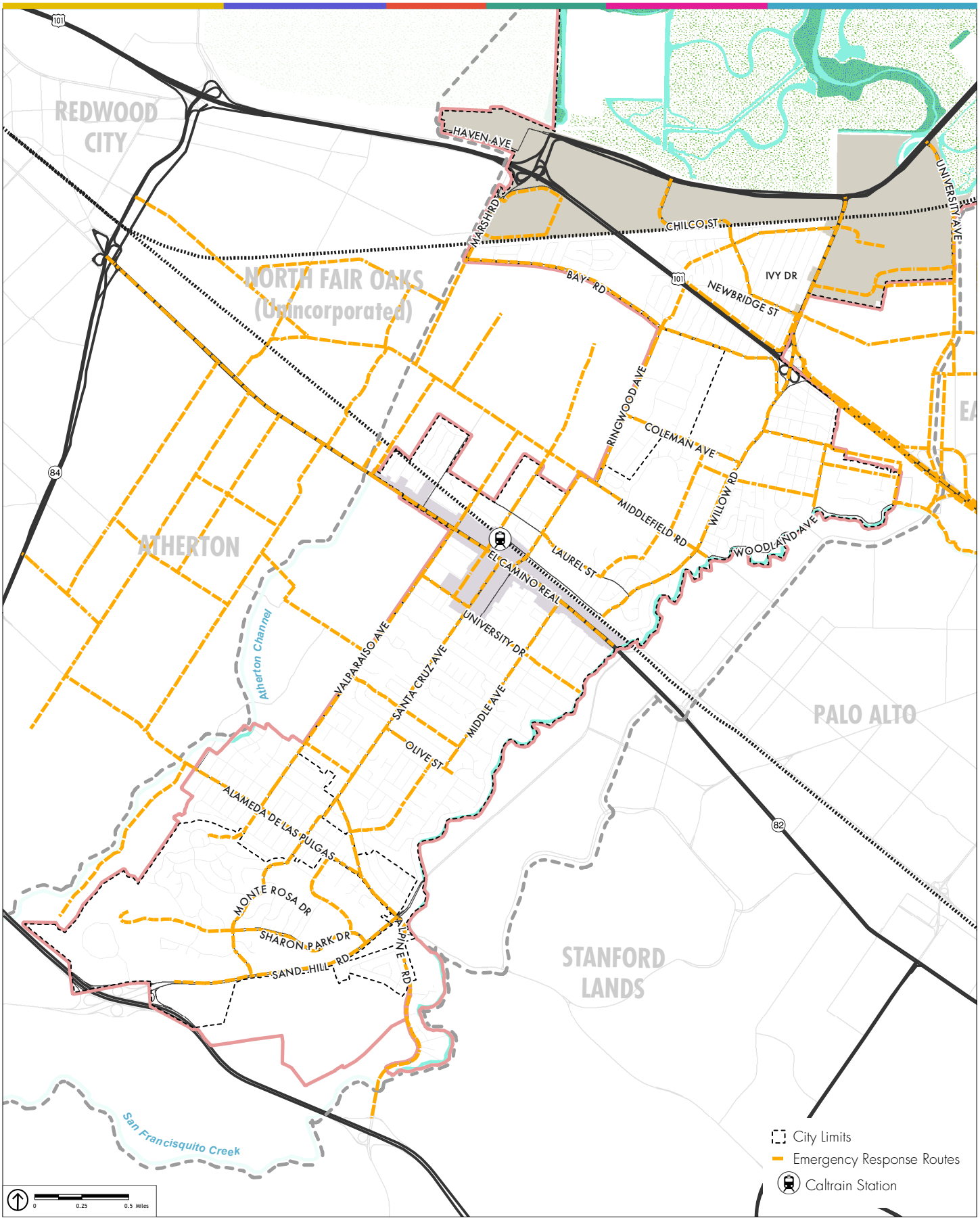

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FIGURE 5: EMERGENCY RESPONSE ROUTES

EXISTING PEAK HOUR VOLUMES

The vehicular turning movement volumes for all the 50 study intersections were received from the City of Menlo Park (see Figures 6-6D).

INTERSECTION LEVEL OF SERVICE ANALYSIS RESULTS

Table 8 summarizes the results of LOS Analysis. Detailed LOS calculations are contained in Appendix B.

EXISTING AVERAGE DAILY TRAFFIC VOLUMES

The existing average daily traffic volumes for all the 86 study segments were received from the City of Menlo Park. Table 9 summarizes current roadway segment and freeway segment average daily traffic (ADT), respectively. Appendix C includes the data sheets for the roadway segment ADT counts.

MULTI-MODAL LEVEL OF SERVICE

The State Office of Planning and Research is currently considering means other than LOS to measure transportation system performance. Potential metrics may include vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, and automobile trips generated. Another more detailed and data-intensive candidate is Multimodal Level of Service (MMLOS), which considers pedestrian, bicycle, and transit efficiency in addition to automobile delays. The 2010 Highway Capacity Manual (HCM) contains the most commonly used method for calculating MMLOS: a qualitative description of operations at intersections or along roadway segments characterizing perceptions of safety and quality of service. The metrics quantifying MMLOS vary by travel mode, and a separate rating is given for each mode.

Examples of types of measurements used in the MMLOS methodology include but are not limited to: quality of the pavement and perceived separation for bicycle LOS, bus stop amenities and waiting times for transit LOS, and perceived separation between pedestrians and vehicles as well as average intersection delay for pedestrian LOS. It should be noted that there are limitations in this method, including lacking qualitative measures of the surrounding infrastructure and environment as well as the assumption that the conditions analyzed are in a steady state. The 2010 HCM method was tested on a few case study segments and intersections in Menlo Park by calculating the MMLOS for pedestrians, bicyclists, and transit service. The findings illustrated some limitations with the methodology. For example, one travel direction of the Marsh Road/Bayfront Expressway intersection scored as well for pedestrian LOS as the Laurel Street/Oak Grove Avenue intersection, which highlights the importance of analyzing each travel direction for each mode. In

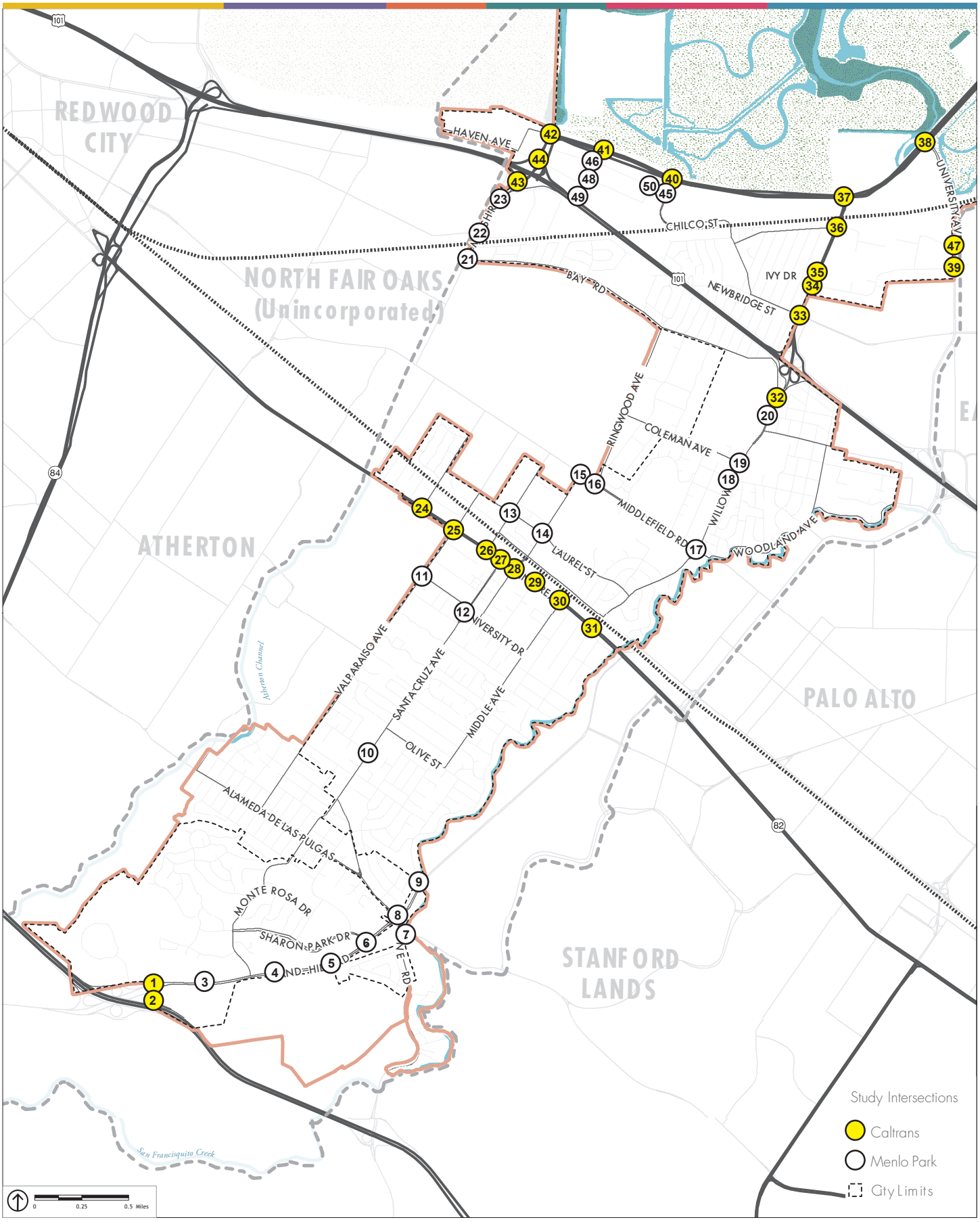

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FIGURE 6: STUDY INTERSECTIONS

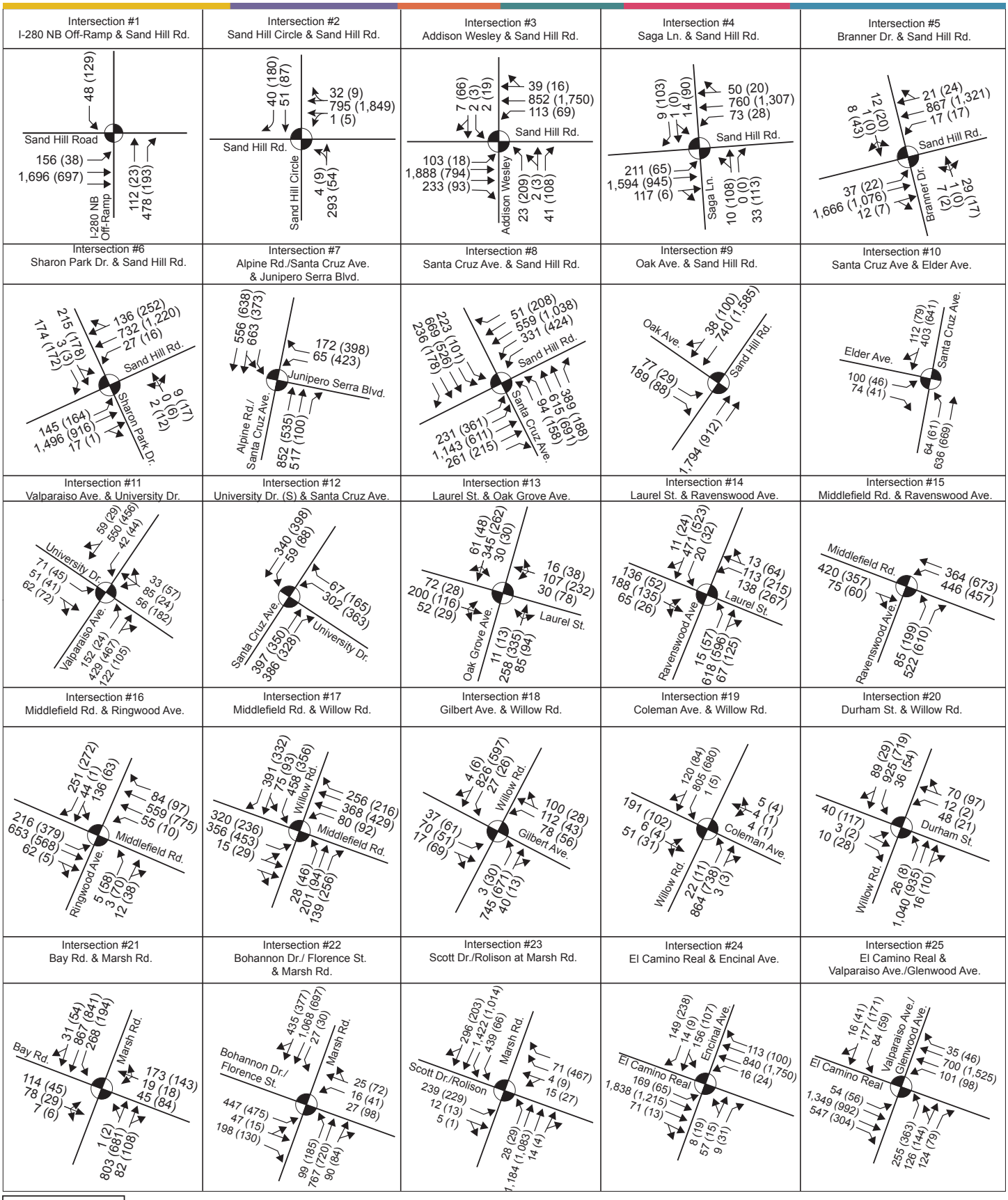

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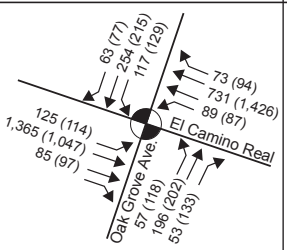
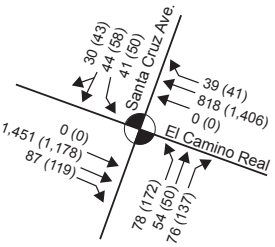
FIGURE 6-A: TRAFFIC VOLUMES, LANE GEOMETRY, AND TRAFFIC CONTROLS

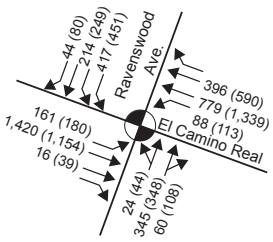
Intersection #26
El Camino Real & Oak Grove Ave.



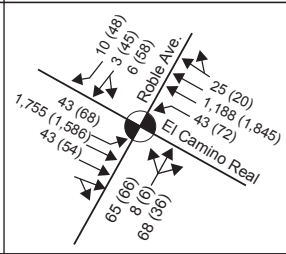
Intersection #27
El Camino Real & Santa Cruz Ave.



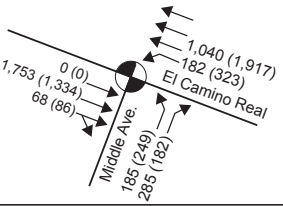
Intersection #28
El Camino Real & Ravenswood Ave.



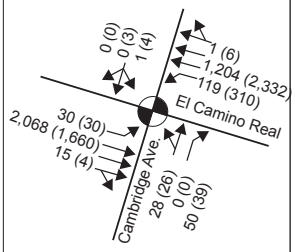
Intersection #29
El Camino Real & Roble Ave.



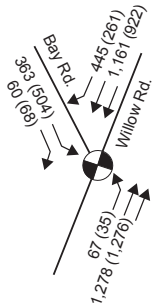
Intersection #30
El Camino Real & Middle Ave.



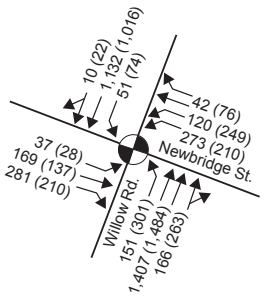
Intersection #31
El Camino Real & Cambridge Ave.



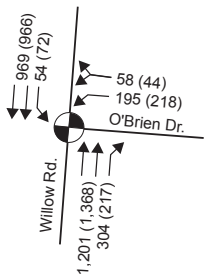
Intersection #32
Bay Rd. & Willow Rd.



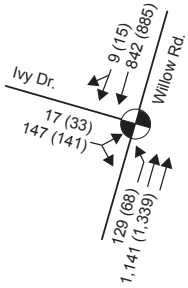
Intersection #33
Newbridge St. & Willow Rd.



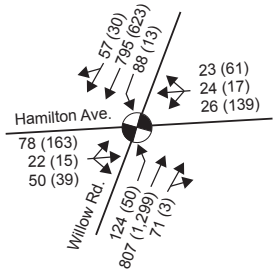
Intersection #34
O'Brien Dr. & Willow Rd.



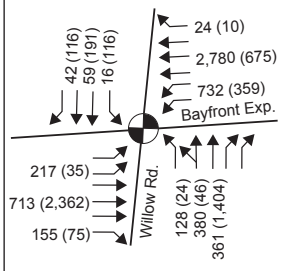
Intersection #35
Ivy Dr. & Willow Rd.



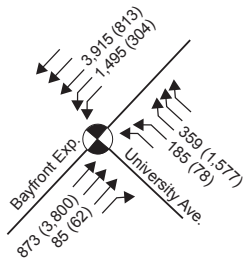
Intersection #36
Hamilton Ave. & Willow Rd.



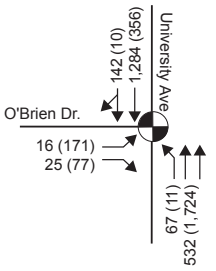
Intersection #37
Bayfront Exp. & Willow Rd.



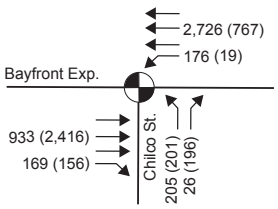
Intersection #38
Bayfront Exp. & University Ave.



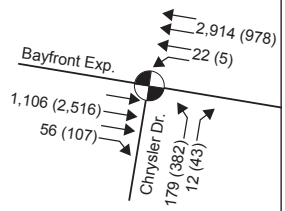
Intersection #39
O'Brien Dr. & University Ave.



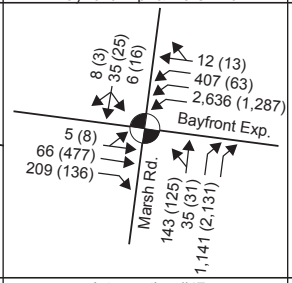
Intersection #40
Bayfront Exp. & Chilco St.



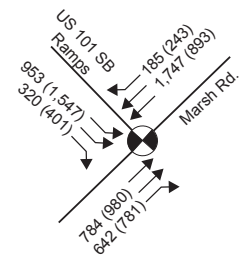
Intersection #41
Bayfront Exp. & Chrysler Dr.



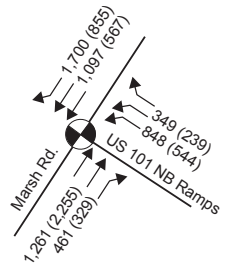
Intersection #42
Bayfront Exp. & Marsh Rd.



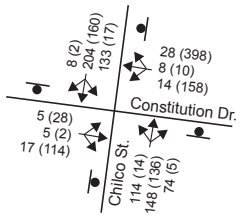
Intersection #43
US 101 SB Ramps & Marsh Rd.



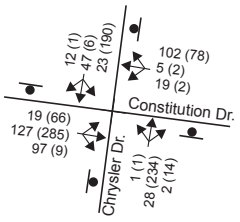
Intersection #44
US 101 NB Ramps & Marsh Rd.



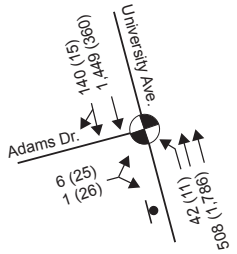
Intersection #45
Chilco St. & Constitution Dr.



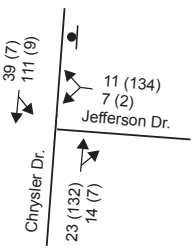
Intersection #46
Chrysler Dr. & Constitution Dr.



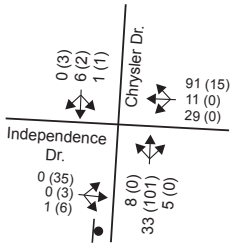
Intersection #47
University Ave. & Adams Dr.



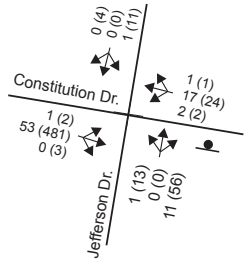
Intersection #48
Chrysler Dr. & Jefferson Dr.



Intersection #49
Chrysler Dr. & Independence Dr.



Intersection #50
Jefferson Dr. & Constitution Dr.



LEGEND

- Traffic Signal
- Stop Sign

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FIGURE 6-B: TRAFFIC VOLUMES, LANE GEOMETRY, AND TRAFFIC CONTROLS

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FIGURE 6-C: TRAFFIC VOLUMES, LANE GEOMETRY, AND TRAFFIC CONTROLS

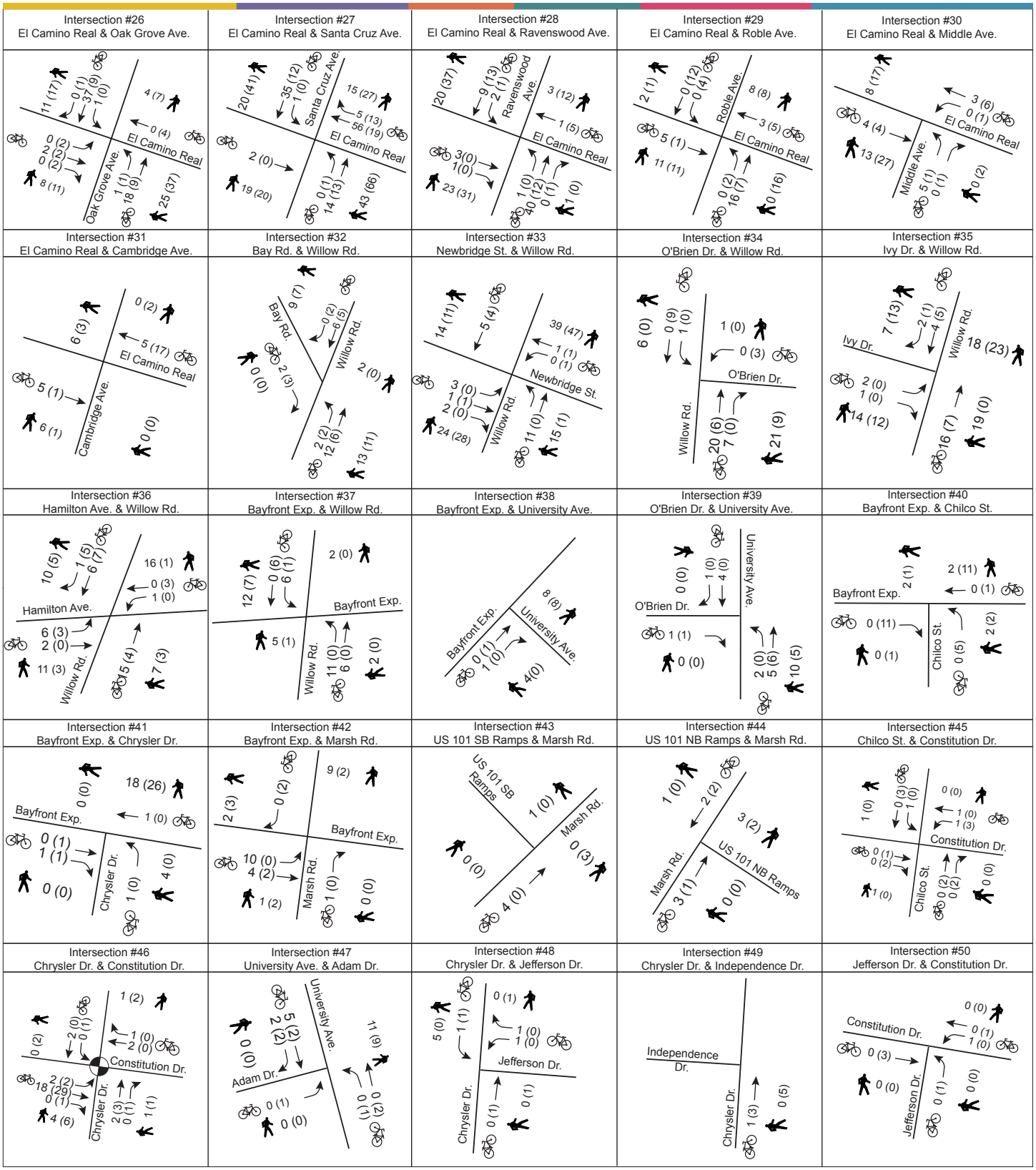

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FIGURE 6-D: TRAFFIC VOLUMES, LANE GEOMETRY, AND TRAFFIC CONTROLS

TABLE 8 PEAK HOUR INTERSECTION LEVELS OF SERVICE – EXISTING CONDITIONS

Int No.	Intersection	Control	Jurisdiction	LOS Threshold	AM Peak Hour LOS	PM Peak Hour LOS
1	Sand Hill Rd. & Hwy 280 NB Off-Ramp	Signal	Caltrans	D	C	C
2	Sand Hill Rd. & Sand Hill Cir.	Signal	Caltrans	D	B	D
3	Sand Hill Rd. & Addison-Wesley	Signal	Menlo Park	D	D	C
4	Saga Ln. & Sand Hill Rd.	Signal	Menlo Park	D	D	D
5	Branner Dr. & Sand Hill Rd.	Signal	Menlo Park	D	D	C
6	Sharon Park Dr. & Sand Hill Rd.	Signal	Menlo Park	D	C	D
7	Alpine Rd./ Santa Cruz Ave. & Junipero Serra Blvd	Signal	Menlo Park	D	D	D
8	Santa Cruz Ave. & Sand Hill Rd.	Signal	Menlo Park	D	D	D
9	Oak Ave./ Vine Rd. & Sand Hill Rd.	Signal	Menlo Park	D	B	A
10	Santa Cruz Ave. & Elder Ave.	Signal	Menlo Park	D	B	A
11	Valparaiso Ave. & University Dr.	Signal	Menlo Park	D	B	C
12	Santa Cruz Ave. & University Dr. (S)	Signal	Menlo Park	D	B	B
13	Oak Grove Ave. & Laurel St.	Signal	Menlo Park	C	B	B
14	Ravenswood Ave. & Laurel St.	Signal	Menlo Park	D	C	C
15	Middlefield Rd. & Ravenswood Ave.	Signal	Menlo Park	D	D	C
16	Middlefield Rd. & Ringwood Ave.	Signal	Menlo Park	D	C	D
17	Middlefield Rd. & Willow Rd.	Signal	Menlo Park	D	D	D
18	Willow Rd. & Gilbert Ave.	Signal	Menlo Park	D	B	C
19	Willow Rd. & Coleman Ave.	Signal	Menlo Park	D	C	B
20	Willow Rd. & Durham St.	Signal	Menlo Park	D	B	C
21	Marsh Rd. & Bay Rd.	Signal	Menlo Park	D	C	C
22	Marsh Rd. & Bohannon Dr.	Signal	Menlo Park	D	C	D
23	Marsh Rd. & Scott Dr.	Signal	Menlo Park	D	C	D
24	El Camino Real & Encinal Ave.	Signal	Caltrans	D	B	B
25	El Camino Real & Glenwood Ave.	Signal	Caltrans	D	D	D
26	El Camino Real & Oak Grove Ave.	Signal	Caltrans	D	C	C
27	El Camino Real & Santa Cruz Ave.	Signal	Caltrans	D	B	B
28	El Camino Real & Ravenswood Ave.	Signal	Caltrans	D	D	D
29	El Camino Real & Roble Ave.	Signal	Caltrans	D	A	B

TABLE 8 PEAK HOUR INTERSECTION LEVELS OF SERVICE – EXISTING CONDITIONS

Int No.	Intersection	Control	Jurisdiction	LOS Threshold	AM Peak Hour LOS	PM Peak Hour LOS
30	El Camino Real & Middle Ave.	Signal	Caltrans	D	B	B
31	El Camino Real & Cambridge Ave.	Signal	Caltrans	D	A	B
32	Willow Rd. & Bay Rd.	Signal	Caltrans	D	C	C
33	Willow Rd. & Newbridge St.	Signal	Caltrans	D	D	D
34	Willow Rd. & O'Brien Dr.	Signal	Caltrans	D	B	B
35	Willow Rd. & Ivy Dr.	Signal	Caltrans	D	B	B
36	Willow Rd. & Hamilton Ave.	Signal	Caltrans	D	C	C
37	Willow Rd. & Bayfront Expwy.	Signal	Caltrans	D	C	D
38	Bayfront Expwy. & University Ave.	Signal	Caltrans	D	C	**F**
39	University Ave. & O'Brien Dr.	Signal	Caltrans	D	A	A
40	Bayfront Expwy. & Chilco St.	Signal	Caltrans	D	B	B
41	Bayfront Expwy. & Chrysler Dr.	Signal	Caltrans	D	B	C
42	Bayfront Expwy. & Marsh Rd.	Signal	Caltrans	D	C	**E**
43	Marsh Rd. & US-101 SB	Signal	Caltrans	D	D	C
44	Marsh Rd. & US-101 NB	Signal	Caltrans	D	B	D
45	Chilco St. & Constitution Dr.	All-Way Stop	Menlo Park	C	B	C
46	Chrysler Dr. & Constitution Dr.	All-Way Stop	Menlo Park	C	A	B
47	University Ave. & Adams Dr.	Side-street Stop	Caltrans	D	**F**	**F**
48	Chrysler Dr. & Jefferson Dr.	Side-street Stop	Menlo Park	C	B	B
49	Chrysler Dr. & Independence Dr.	Side-street Stop	Menlo Park	C	B	A
50	Jefferson Dr. & Constitution Dr.	Side-street Stop	Menlo Park	C	A	C

Notes:
1. LOS = Level of Service, Delay = Average control delay per vehicle
2. Delay / LOS are for overall intersection
3. **Bold** indicates unacceptable operational conditions based on applicable city/Caltrans standards.

another case, a segment roadway could not be analyzed using the HCM methodology because it does not have signalized intersections at both ends of the segment.

TABLE 9 ROADWAY SEGMENTS AVERAGE DAILY TRAFFIC – EXISTING CONDITIONS

Segment No.	Roadway	Segment Between		Jurisdiction	Classification	Existing ADT
1	Alameda De Las Pulgas	Avy Ave.	Santa Cruz Ave.	Menlo Park	Minor Arterial	12,400
2	Alameda De Las Pulgas	Valparaiso Ave.	Avy Ave.	San Mateo County	Minor Arterial	15,300
3	Alameda De Las Pulgas	City Limits	Valparaiso Ave.	San Mateo County	Minor Arterial	16,100
4	Alma St.	Ravenswood Ave	Oak Grove Ave.	Menlo Park	Collector	1,600
5	Alma St.	Willow Rd.	Ravenswood Ave.	Menlo Park	Collector	3,200
6	Alpine Rd.	City Limits	Junipero Serra Blvd.	Menlo Park	Minor Arterial	23,300
7	Avy Ave.	City Limit	Alameda de las Pulgas	Atherton	Collector	4,600
8	Avy Ave.	Alameda de las Pulgas	Santa Cruz Ave.	Menlo Park	Collector	5,900
9	Bay Rd.	Greenwood Dr.	Marsh Rd.	Menlo Park	Collector	5,500
10	Bay Rd.	Ringwood Ave.	Greenwood Dr.	Menlo Park	Collector	5,700
11	Bay Rd.	Willow Rd.	Ringwood Ave.	Menlo Park	Collector	7,600
12	Bohannon Dr	Cambpell Ave.	Marsh Rd.	Menlo Park	Collector	3,900
13	Chilco St	Constitution Dr.	Bayfront Expwy.	Menlo Park	Collector	7,000
14	Chrysler Dr.	Constitution Dr.	Bayfront Expwy.	Menlo Park	Collector	4,000
15	Constitution Dr.	Chilco St.	Chrysler Dr.	Menlo Park	Collector	2,400
16	Crane St.	Oak Grove Ave.	Santa Cruz Ave.	Menlo Park	Collector	2,700
17	Crane St.	Santa Cruz Ave.	Menlo Ave.	Menlo Park	Collector	2,400
18	Encinal Ave.	El Camino Real	Laurel St.	Menlo Park	Collector	5,600
19	Encinal Ave.	Laurel St.	Middlefield Rd.	Menlo Park	Collector	5,000
20	Glenwood Ave.	El Camino Real	Laurel St.	Menlo Park	Collector	6,000
21	Hamilton Ave.	Willow Rd.	Chilco St.	Menlo Park	Collector	2,800
22	Haven Ave.	Bayfront Expwy./Marsh Rd.	City Limit	Menlo Park	Collector	7,400

TABLE 9 ROADWAY SEGMENTS AVERAGE DAILY TRAFFIC – EXISTING CONDITIONS

Segment No.	Roadway	Segment Between		Jurisdiction	Classification	Existing ADT
23	Junipero Serra Blvd.	City Limit	Alpine Rd.	Menlo Park	Primary Arterial	16,000
24	Laurel St.	Oak Grove Ave.	Glenwood Ave.	Menlo Park	Collector	4,100
25	Laurel St.	Ravenswood Ave.	Oak Grove Ave.	Menlo Park	Collector	4,400
26	Laurel St.	Willow Rd.	Ravenswood Ave.	Menlo Park	Collector	4,500
27	Marsh Rd.	City Limit	Bay Rd.	Menlo Park	Minor Arterial	22,900
28	Marsh Rd.	Bay Rd.	Bohannon Dr.	Menlo Park	Primary Arterial	25,800
29	Marsh Rd.	Bohannon Dr.	Scott Dr.	Menlo Park	Primary Arterial	32,400
30	Menlo Ave.	University Ave.	Crane St.	Menlo Park	Collector	7,400
31	Menlo Ave.	Crane St.	El Camino Real	Menlo Park	Collector	8,600
32	Middle Ave.	Olive St.	University Dr.	Menlo Park	Collector	7,200
33	Middle Ave.	University Dr.	El Camino Real	Menlo Park	Collector	8,900
34	Middlefield Rd.	Ravenswood Ave.	Oak Grove Ave.	Atherton	Minor Arterial	14,800
35	Middlefield Rd.	Willow Rd.	Ravenswood Ave.	Menlo Park	Minor Arterial	19,700
36	Middlefield Rd.	City Limits	Willow Rd.	Menlo Park	Minor Arterial	18,400
37	Newbridge St.	Willow Rd.	Chilco St.	Menlo Park	Collector	7,000
38	Oak Grove Ave.	University Dr.	Crane St.	Menlo Park	Collector	6,400
39	Oak Grove Ave.	Crane St.	El Camino Real	Menlo Park	Collector	7,700
40	Oak Grove Ave.	El Camino Real	Laurel St.	Menlo Park	Collector	9,600
41	Oak Grove Ave.	Laurel St.	Middlefield Rd.	Menlo Park	Collector	8,700
42	O'Brien Dr.	Kavanaugh Dr.	Willow Rd.	Menlo Park	Collector	6,400
43	O'Brien Dr.	University Ave.	Kavanaugh Dr.	Menlo Park	Collector	3,300
44	Ravenswood Ave.	El Camino Real	Alma St.	Menlo Park	Minor Arterial	24000

TABLE 9 ROADWAY SEGMENTS AVERAGE DAILY TRAFFIC – EXISTING CONDITIONS

Segment No.	Roadway	Segment Between		Jurisdiction	Classification	Existing ADT
45	Ravenswood Ave.	Alma St.	Laurel St.	Menlo Park	Minor Arterial	18,800
46	Ravenswood Ave.	Laurel St.	Middlefield Rd.	Menlo Park	Minor Arterial	16,600
47	Ringwood Ave.	Middlefield Rd.	Bay Rd.	San Mateo County	Collector	7,300
48	Sand Hill Rd.	I-280	Sharon Park Dr.	Menlo Park	Primary Arterial	28,000
49	Sand Hill Rd.	Santa Cruz Ave.	Sharon Park Dr.	Menlo Park	Primary Arterial	30,800
50	Sand Hill Rd.	Santa Cruz Ave.	City Limits	Menlo Park	Minor Arterial	32,700
51	Santa Cruz Ave.	Junipero Serra Blvd	Sand Hill Rd.	Menlo Park	Minor Arterial	26,500
52	Santa Cruz Ave.	Sand Hill Rd.	Alameda de las Pulgas	San Mateo County	Minor Arterial	23,200
53	Santa Cruz Ave.	Alameda de las Pulgas	Avy Ave./Orange Ave.	Menlo Park	Minor Arterial	10,900
54	Santa Cruz Ave.	Avy Ave./Orange Ave	Olive St.	Menlo Park	Minor Arterial	14,500
55	Santa Cruz Ave.	Olive St.	University Dr.	Menlo Park	Minor Arterial	15,300
56	Santa Cruz Ave.	University Dr.	Crane St.	Menlo Park	Minor Arterial	7,600
57	Santa Cruz Ave.	Crane St.	El Camino Real	Menlo Park	Minor Arterial	7,400
58	Scott Dr.	Marsh Rd.	Campbell Ave.	Menlo Park	Collector	4,800
59	Sharon Park Dr.	Sand Hill Rd.	Sharon Rd.	Menlo Park	Collector	10,000
60	Sharon Rd.	Sharon Park Dr.	Alameda de las Pulgas	Menlo Park	Collector	3,800
61	University Dr.	Middle Ave.	Menlo Ave.	Menlo Park	Collector	5,900
62	University Dr.	Menlo Ave.	Santa Cruz Ave.	Menlo Park	Collector	9,300
63	University Dr.	Santa Cruz Ave.	Oak Grove Ave.	Menlo Park	Collector	7,200
64	University Dr.	Oak Grove Ave.	Valparaiso Ave.	Menlo Park	Collector	5,100
65	Valparaiso Ave.	Alameda de las Pulgas	Cotton St.	Menlo Park	Minor Arterial	12,100
66	Valparaiso Ave.	Cotton St.	University Ave.	Menlo Park	Minor Arterial	14,400

TABLE 9 ROADWAY SEGMENTS AVERAGE DAILY TRAFFIC – EXISTING CONDITIONS

Segment No.	Roadway	Segment Between		Jurisdiction	Classification	Existing ADT
67	Valparaiso Ave.	University Dr.	El Camino Real	Menlo Park	Minor Arterial	13,000
68	Willow Rd.	Alma St.	Laurel St.	Menlo Park	Collector	3,400
69	Willow Rd.	Laurel St.	Middlefield Rd.	Menlo Park	Collector	5,200
70	Willow Rd.	Middlefield Rd.	Gilbert Ave.	Menlo Park	Collector	24,330
71	Chilco St.	Hamilton Ave.	Terminal Ave.	Menlo Park	Collector	4,800
72	Chilco St.	Ivy Dr.	Hamilton Ave.	Menlo Park	Collector	2,700
73	Chilco St.	Newbridge St.	Ivy Dr.	Menlo Park	Collector	2,100
74	Hamilton Ave.	Willow Rd.	Hamilton Ct.	Menlo Park	Collector	2,600
75	Willow Rd.	Gilbert Ave.	Coleman Ave.	Menlo Park	Minor Arterial	24,400
76	Willow Rd.	Coleman Ave.	Durham St.	Menlo Park	Minor Arterial	41,200
77	Willow Rd.	Durham St.	Bay Rd.	Menlo Park	Minor Arterial	34,100
78	Chilco St.	Terminal Ave.	Constitution Dr.	Menlo Park	Collector	5,100
79	Chrysler Dr.	Constitution Dr.	Independence Dr.	Menlo Park	Collector	3,300
80	Chrysler Dr.	Independence Dr.	Commonwealth Dr.	Menlo Park	Collector	1,100
81	Adams Dr.	University Dr.	Adams Ct.	Menlo Park	Local	1,300
82	Olive St.	Santa Cruz Ave.	Middle Ave.	Menlo Park	Local	2,500
83	Olive St.	Middle Ave.	Oak Ave.	Menlo Park	Local	3,100
84	Cambridge Ave.	University Dr.	El Camino Real	Menlo Park	Local	1,600
85	Linfield Dr.	Middlefield Rd.	Waverley St.	Menlo Park	Local	1,800
86	Waverley St.	Laurel St.	Linfield Dr.	Menlo Park	Local	1,700

PARKING STANDARDS AND MANAGEMENT

The Menlo Park Municipal Code, current through September 9, 2014, outlined a variety of parking requirements in sections 16.52, 16.58, 16.72, and 16.74 for the City of Menlo Park, described below.

OFF-STREET PARKING REQUIREMENTS

The existing off-street parking for Menlo Park, outlined in Table 10, has varying requirements based on land uses and/or zoning districts such as single-family homes, multifamily dwellings, restaurants, grocery stores, offices, and other commercial uses. The requirements are placed on new development, and are typically calculated by square footage of the proposed development. In some instances, the parking requirement is calculated by number of units or number of seats/beds (apartments, theaters, hospitals, etc.).

While Table 10 outlines the parking requirements, reductions in parking requirements for commercial and industrial land uses may be allowed through an administrative permit. The current Municipal Code's requirements are higher than industry standard guidelines, such as the Institution of Transportation Engineers (among others). As a result, these requirements were adjusted in the El Camino Real and Downtown Specific Plan to better reflect industry standards for various land uses (discussed below).

In addition to the uses in Table 10, parking near train stations is required to be sufficient for the train passengers. However, there are no specific numerical requirements. The Menlo Park Caltrain Station utilizes a 155-space off-street, paid parking lot with a $5 daily rate or $50 monthly rate.

Menlo Park manages off-street parking in the downtown area in eight parking plazas. In total, there are 1,186 spaces available to the public. With additional parking garages, and reductions for the construction of pocket parks, pedestrian links, and a market place adjacent or on the sites of the existing parking plazas, the future supply will be an estimate of 1,547 to 1,827 pending design approvals and actual implementation.

USE-BASED GUIDELINES

While zoning regulations determine the amount of parking required for a given commercial and industrial use (based on zoning district) property owners may apply for administrative permits to reduce parking requirements for a particular use (see Table 10). In determining parking reduction requests, the following factors may come into consideration: primary use of the building, unique physical features of the building, numbers of employees and customers, transportation demand management measures, hours of operation, shared parking arrangements, availability of on-street parking, surrounding land uses, and proximity to residential neighborhoods.

EL CAMINO REAL/DOWNTOWN SPECIFIC PLAN

The El Camino Real/Downtown Specific Plan calls for parking requirements that are closer to industry standards, and allow for the consolidation of parking in off-site locations. Currently, new development in the downtown area can be provided in the parking plazas for up to 1.0 floor area ratio (FAR). Parking for downtown developments at a density of 2.0 FAR must accommodate the additional parking on-site or nearby. This allows for developments with lower parking requirements to accommodate vehicles in a centralized location, as opposed to on-site. This is an effective means of incentivizing economic development in the city, as it reduces the financial requirements on smaller developments. The plan recommends that the City adhere to a Parking Management Plan to be added to its yearly Capital Improvement Project, thereby ensuring that existing parking is effectively utilized and minimizing the need for new parking spaces.

New minimum parking space requirements are also recommended in the Specific Plan for multi-family dwellings, office space, retail, supermarkets, restaurants, and hotels (See Table 10). In addition, the Specific Plan discusses consolidating downtown parking supply into a few plazas as a means of consolidating traffic at fewer points, and providing downtown development with requirements that reflect the multimodal behavior of its residents and employees. Finally, of special note is the inclusion of station area guidelines, with parking minimums and maximums for dwellings that are within the station area or within its sphere of influence.

Moreover, the Specific Plan recommends managing the existing parking supply and discusses various options including time limits for parking, parking pricing increases, unbundling parking from development (such that each is priced separately), establishing a Parking Benefits District to finance public improvements downtown, car-share programs, and a Parking Implementation Plan. Proposed parking supplies account for the constructions of two parking garages and street-level improvements, such as sidewalk widening.

PUBLIC PARKING

The City of Menlo Park's on-street parking policy places priority in ensuring residents are able to park in their neighborhoods, with little impact from visitor parking. While most housing development is expected to have off-street parking, the on-street policy accounts for situations in which there is insufficient off-street parking for residents. In addition, Menlo Park has initiated a variety of time and payment limits in order to create turnover in the commercial areas where visitors are more likely to park.

TABLE 10 OFF-STREET PARKING REQUIREMENTS

Use	Parking Spaces Required
Dwellings	2 spaces per unit, at least 1 of which shall be in a garage or carport
Housing for Elderly	1 garage space per 3 dwelling units
Boardinghouses	1 space per two occupants, at least half of the required spaces shall be in a garage or carport
Rest Homes, Convalescent Homes	1 space per four beds
Churches	1 space per 5 seats
Offices	1 space per 200 sq. ft. of gross floor area
Public Utility Facilities	1 space for every 2 employees on the maximum working shift, plus 1 space for each company vehicle permanently assigned to the facility
Well-Patient/Short Facility for surgery, medical and post-operative care, and requiring overnight stay	1.25 spaces per bed plus 1 space per employee on largest shift
R-4 District	2 spaces for each unit with 2 bedrooms or more 1.5 spaces for each unit with 1 bedroom 1 space for each studio unit Plus 1 guest space for every 3 units
R-4-S District	2 spaces for units w/2 or more bedrooms; 1.5 spaces for 1 bedroom unit; 1 space per studio,
C-1, C-1-A Districts	1 space per 200 sq. ft. of gross floor area
C-1-C District	1 space per 250 sq. ft. of gross floor area
C-2, C-2-A, C-2-B, C-4 Districts	6 spaces per 1,000 sq. ft. of gross floor area
M-2 and M-3 Districts	1 space per 300 sq. ft. of gross floor area
Use-Based Guidelines	General Office: 3.3 spaces per 1,000 sq. ft. of gross floor area; Medical Office: 5 spaces per 1,000 sq. ft. of gross floor area; Retail and Personal Service: 5 spaces per 1,000 sq. ft. of gross floor area; Restaurants: 6 spaces per 1,000 sq. ft. of gross floor area; Hotel: 1.1 spaces per room
Downtown Specific Plan Rates	Station Area Dwellings: 1 min. - 1.5 max. spaces per unit; Station Area Sphere of Influence Dwellings: 1 min. space per unit; General Office: 3.8 min. spaces per 1,000 sq. ft. of gross floor area; Medical Office: 4.5 min. spaces per 1,000 sq. ft. of gross floor area; Retail and Personal Service: 4 min. spaces per 1,000 sq. ft. of gross floor area; Supermarket: 5.5 min. spaces per 1,000 sq. ft. of gross floor area; Restaurants: 6 min. spaces per 1,000 sq. ft. of gross floor area; Hotel: 1.25 min. spaces per room

Menlo Park currently requires permits for residential areas and prohibits non-permitted vehicles in or within 300 feet of a residential district from 2:00 a.m. to 5:00 a.m., unless a professional activity categorized as an emergency arises. Vehicles with disabled permits are exempt from this ordinance.

For residential units without sufficient off-street parking, the City of Menlo Park grants up to three residential on-street parking permits per unit. In addition, neighborhoods can create residential parking permit districts in order to preserve on-street parking for local residents. To create a parking district, City staff must verify there are visitor parking impacts to the neighborhood of at least 25 percent. In addition, residents can create a parking district with majority approval. Permits are also given to R-3, R-3A, and R-3C zones if the building or complex in which the residential unit is located was not required to have two parking spaces per unit at the time of construction.

Additional on-street parking is available for the downtown plazas, with annual parking permits, full-day parking permits, and half-day parking permits granted. The City also has paid parking available in a pay-by-space format, where the first two hours are free, and the remaining time requires payment. The City of Menlo Park currently manages 409 on-street parking spaces in the downtown area on Santa Cruz Avenue, Chestnut Street, Oak Grove Avenue, and adjacent streets. Along with the 1,186 off-street spaces, Menlo Park manages a total of 1,595 spaces in the downtown area.

The Menlo Park Downtown Parking Plan, adopted in 2011, outlines changes to the parking management for the downtown parking plazas, managed by the City. The plan requires paid parking equipment for three of eight parking plazas for visitors looking to park for more than two hours. In addition, parking spaces along Santa Cruz Avenue were changed from 2-hour time limits to 1-hour time limits to incentivize turnover and enhance retail business. The parking plan also included new 15-minute parking spaces along Santa Cruz Avenue for short-term visits to the downtown area.

BICYCLE PARKING

Bicycle storage is also an integral portion of the Specific Plan with standards for Downtown areas and new commercial development sites outside of the downtown. Currently, bicycle parking requirements exist for areas affected by the Downtown Specific Plan and R-4-S districts (see Table 11). Under the Downtown Specific Plan, new commercial-use buildings or retail store fronts are required to provide bicycle parking within 50 feet of entrances, with number of spaces calculated per 1,000 square feet (sf) gross floor area (gfa) (for commercial uses) and per number of units (for residential uses). Bicycle parking requirements for R-4-S districts are calculated under the same guidelines for multi-family dwellings under the Downtown Specific Plan. Under both guidelines, commercial and residential uses also have short-term bicycle parking requirements to accommodate visitors.

TABLE 11 BICYCLE PARKING REQUIREMENTS

Zoning Guideline	Use	Bike Parking Long Term	Bike Parking Short Term (Visitor)
Downtown Specific Plan	Single Family Dwelling	-	-
	Multi-Family Dwelling – with private garage for each unit	-	1 space for every 10 units
	Multi-Family Dwelling – without private garage	1 space per unit	1 space for every 10 units
	Office and Medical Office	1 space for each 10,000 sq. ft. of floor area; minimum requirement 2 spaces	1 space for each 20,000 sq. ft. of floor area; minimum requirement 2 spaces
	Retail and Personal Service	1 space for each 12,000 sq. ft. of floor area; minimum requirement 2 spaces	1 space for each 5,000 sq. ft. of floor area; minimum requirement 2 spaces
	Supermarket and Restaurant	1 space for each 12,000 sq. ft. of floor area; minimum requirement 2 spaces	1 space for each 2,000 sq. ft. of floor area; minimum requirement 2 spaces
	Hotel	1 space for every 20 rooms; minimum requirement 2 spaces	1 space for every 20 rooms; minimum requirement 2 spaces
	Automotive sales, rental, and delivery; automotive servicing; automotive repair and cleaning	1 space for each 12,000 sq. ft. of floor area; minimum requirement 2 spaces	1 space for each 20,000 sq. ft. of floor area; minimum requirement 2 spaces
	Off-street parking lots and garages available to the general public (with or without fee)	1 space for each 20 automobile spaces; minimum requirement is 2 spaces; unattended surface parking lots excepted	Minimum of 6 spaces or 1 per 20 auto spaces; unattended surface parking lots excepted
R-4-S	Multi-family Dwelling	1 space per unit where a private garage (per unit) is not provided	1 space per every 10 units

PEDESTRIAN NETWORK

This section of the existing conditions analysis summarizes the existing and planned pedestrian facilities. Some areas of Menlo Park have high rates of walking, and the pedestrian network is a critical part of the City's transportation system. Menlo Park's commitment to have a robust, connected, and safe pedestrian network is important for residents and workers that use all modes of transportation because many trips begin or end as pedestrian trips. Menlo Park's General Plan contains policies that support maintaining the existing pedestrian infrastructure and further support providing safe, efficient, and equitable use of streets by pedestrians through good roadway design. There is an additional policy in the General Plan that requires all new development to incorporate safe and attractive pedestrian facilities on-site.

EXISTING FACILITIES

The most recent sidewalk inventory conducted for the City of Menlo Park was in 2009 for the City's Sidewalk Master Plan. The plan analyzed all of the streets in Menlo Park and categorized them based on the existence of sidewalk facilities on the street. The three groups in the inventory for pedestrian facilities are: continuous sidewalks on both sides, partial sidewalk on at least one side, or no sidewalks. Of the 1,203 Menlo Park segments surveyed, less than half (46 percent) have continuous sidewalks on both sides of the roadway. Figure 7 shows the existing pedestrian infrastructure in Menlo Park categorized by the sides of the street sidewalks exist. The figure shows a general pattern of neighborhoods within Menlo Park where there are complete sidewalk facilities. These neighborhoods include Belle Haven, the Willows, Linfield Oaks, and the Downtown core.

The City of Menlo Park contains a street grid that is conducive for many pedestrian crossings. The crossings come in two types: controlled and uncontrolled. The controlled crossings are at locations that are signalized or stop controlled, and can either be marked or unmarked. Menlo Park uses special crosswalk treatments in its downtown area to increase visibility with pavers, and yellow high visibility crosswalks near its schools. For uncontrolled crossings, which are those on street segments without stop signs or signals, Menlo Park generally enhances the crosswalk with higher visibility striping, signage, or in-roadway warning lights. Crosswalks with in-pavement flashing lights in Menlo Park include:

- Ravenswood Avenue at Alma Street
- Middlefield Road at Linfield Drive
- Oak Grove Avenue at Merrill Street
- Oak Grove Avenue between El Camino Real and Hoover Street (midblock)
- Crane Street between Oak Grove Avenue and Valparaiso Avenue (midblock)

Some deficiencies exist within the pedestrian facilities in the City of Menlo Park that reduce the quality of the walking network. For instance, some sidewalks exist with connection to the street via a rolled curb instead of a vertical curb which makes it easier for vehicles to park on. Gaps also exist throughout the network where sidewalks abruptly end at a property line.

PLANNED AND PROPOSED FACILITIES

The recommendations in the Sidewalk Master Plan guide future implementation of pedestrian and sidewalk facilities. Included in these guidelines is the requirement that sidewalks shall be provided on at least one side of the roadway and preferably on both sides wherever possible. The Master Plan also details design criteria for the facilities, which include a recommendation for 5 feet of clearance with a minimum standard of 4 feet

as well as a buffer between the sidewalk and roadway where high vehicle volumes exist. Vertical curbs and gutters are recommended where there is a high level of pedestrian activity, and American with Disabilities Act (ADA) compliant curb ramps are also required. The total cost to install sidewalks citywide in 2009 was estimated at approximately $45,000,000.

The Sidewalk Master Plan does not identify any specific sidewalk segments planned for implementation; instead the document analyzes sidewalk deficiencies by using a mathematical ranking system. Weighting for the rankings was based on many factors including priority areas, proximity to pedestrian attractors, vehicle volume, presence of "informal" walking areas off-street, and availability of space for a sidewalk. The rankings are divided into three priority categories: high, medium, and low. The Sidewalk Master Plan makes it clear that although sidewalks are recommended in locations according to this ranking system, individual circumstances may arise where construction of pedestrian facilities is not recommended due to the land use in that particular neighborhood. The Community Character Report addresses pedestrian connectivity in each of the city's neighborhoods and notes where vertical curbs are typically lacking. If sidewalks are not desirable in specific portions of the City, Menlo Park can explore other ways to accommodate pedestrians safely on residential streets under the Complete Streets framework and policy.

PEDESTRIAN SAFETY

Pedestrian collisions in Menlo Park between 2007 and 2012 are shown in Figure 7. Though there were no fatal pedestrian collisions in this 5-year period, there were a total of 50 injury collisions. Just over half (27) of these injury collisions were at intersections. An analysis of the map shows some trends in the locations of these collisions. There are two high collision concentration areas: in Menlo Park's Downtown central business district, and in the Belle Haven neighborhood north of US 101 along Willow Road, Ivy Drive, and Newbridge Street. The concentration of pedestrian collisions in the Downtown core is most likely due to a high rate of walking as well as a high level of auto traffic. Vehicle speeds in this district are relatively low, so collisions may be a result of other reasons such as unsignalized crossings, poor visibility, etc. The concentration of collisions in Belle Haven may be a result of high vehicle speeds and unmarked crosswalks at uncontrolled intersections. These concentrations in collisions also highlight the need for infrastructure improvements in their respective areas. Although statistics for 2013 are not available yet, two pedestrians were fatally struck by a vehicle on Chilco Street in October 2013.

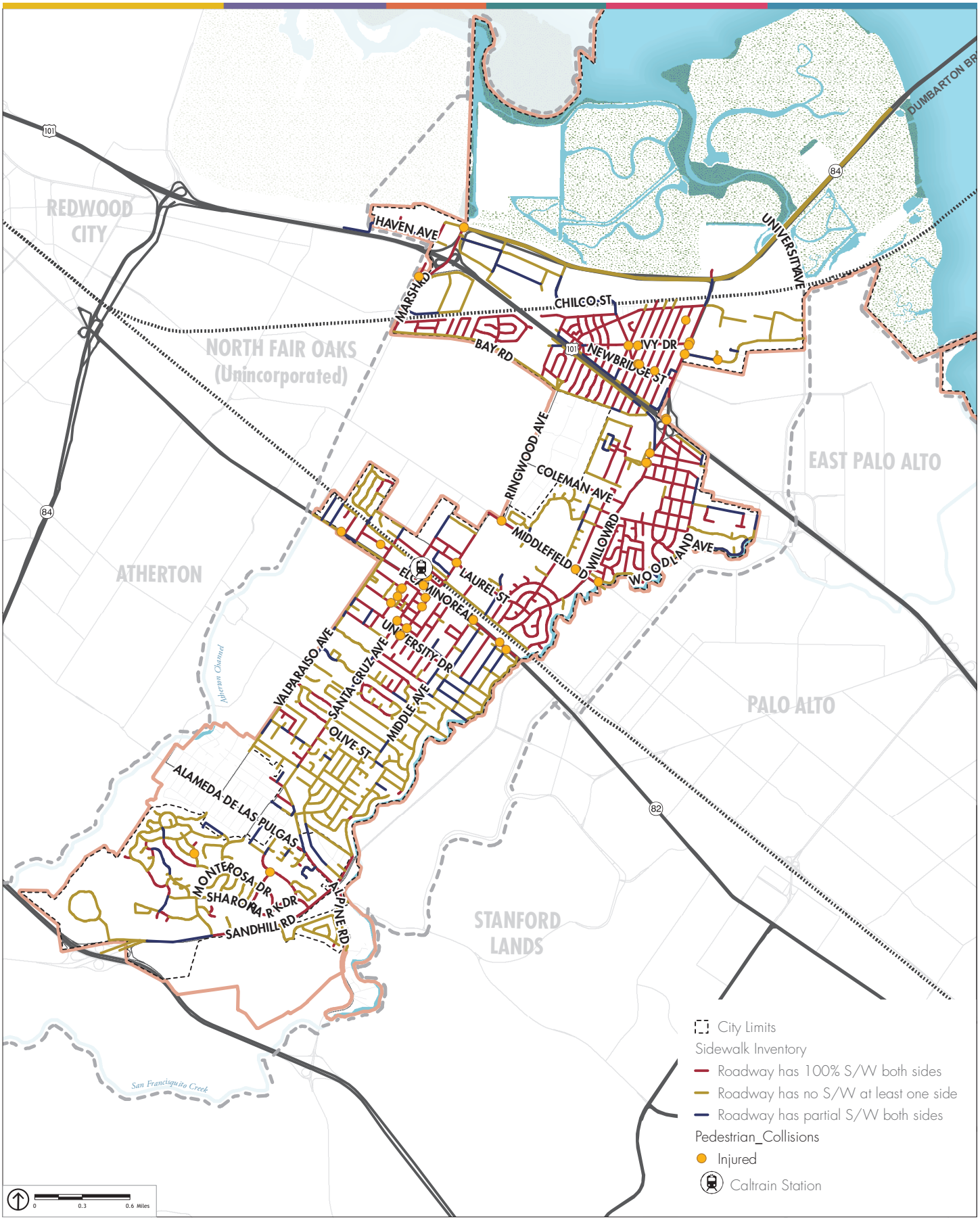

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FIGURE 7: SIDEWALK INVENTORY AND PEDESTRIAN COLLISIONS

BICYCLE NETWORK

This section of the existing conditions analysis describes the existing and planned bicycle facilities. Menlo Park has an existing bicycle route network with connections to neighboring city facilities. The bicycle network contains a variety of facilities and is labeled according to California's system of classification of bikeways:

- Class I Bikeway – bike paths within exclusive right-of-way, sometimes shared with pedestrians
- Class II Bikeway – bike lanes for bicycle use only that are striped within the paved area of roadways
- Class III Bikeway – bike routes are shared with motor vehicles on the street. Class III bikeways may be defined by a wide curb lane and/or use of a shared use arrow stencil marking on the pavement known as a "sharrow"
- Class IV Bikeway – cycle tracks or separated bikeways that contain dedicated right of way with physical separation, such as grade separation, flexible posts, or on-street parking

EXISTING FACILITIES

Menlo Park has several different types of bicycle infrastructure that both provide a network for transportation within the city as well as important connections to neighboring communities. Figure 8 shows the existing bicycle infrastructure in and adjacent to Menlo Park, planned infrastructure, and the 5-year bicycle collision history. Several Class I off-street bike paths exist both as major routes and bridges or undercrossings. The San Francisco Bay Trail runs through Menlo Park along the Bayfront Expressway and crosses the Dumbarton Bridge. The Trail generally follows the north side of the Bayfront Expressway, except for at Willow Road, where the Trail switches to the south side of the Expressway. A gap exists at University Avenue, where there is no trail connection east to where it begins again in the Ravenswood Open Space Preserve. A small network of mixed-use paths for bicycles and pedestrians exist in Burgess Park. There are also three trail crossings across the San Francisquito Creek with connections to Palo Alto or the Stanford University campus, located at San Mateo Drive, Alma Street, and Willow Place.

Major Class II marked on-street bicycle lanes include Willow Road, Sand Hill Road, Santa Cruz Avenue, Valparaiso Avenue, Alma Street, Middlefield Road, and Bay Road, and Ringwood Avenue. In Summer 2014, Willow Road was upgraded with the City's first installation of green paint treatment. The Class II facility on Ringwood Avenue between Middlefield Road and Bay Road is not within the jurisdiction of Menlo Park, but is used by residents. This Class II facility resumes further north and crosses US-101 with a combined bicycle and pedestrian bridge. This route also offers connections to the Belle Haven neighborhood and the San Francisco Bay Trail.

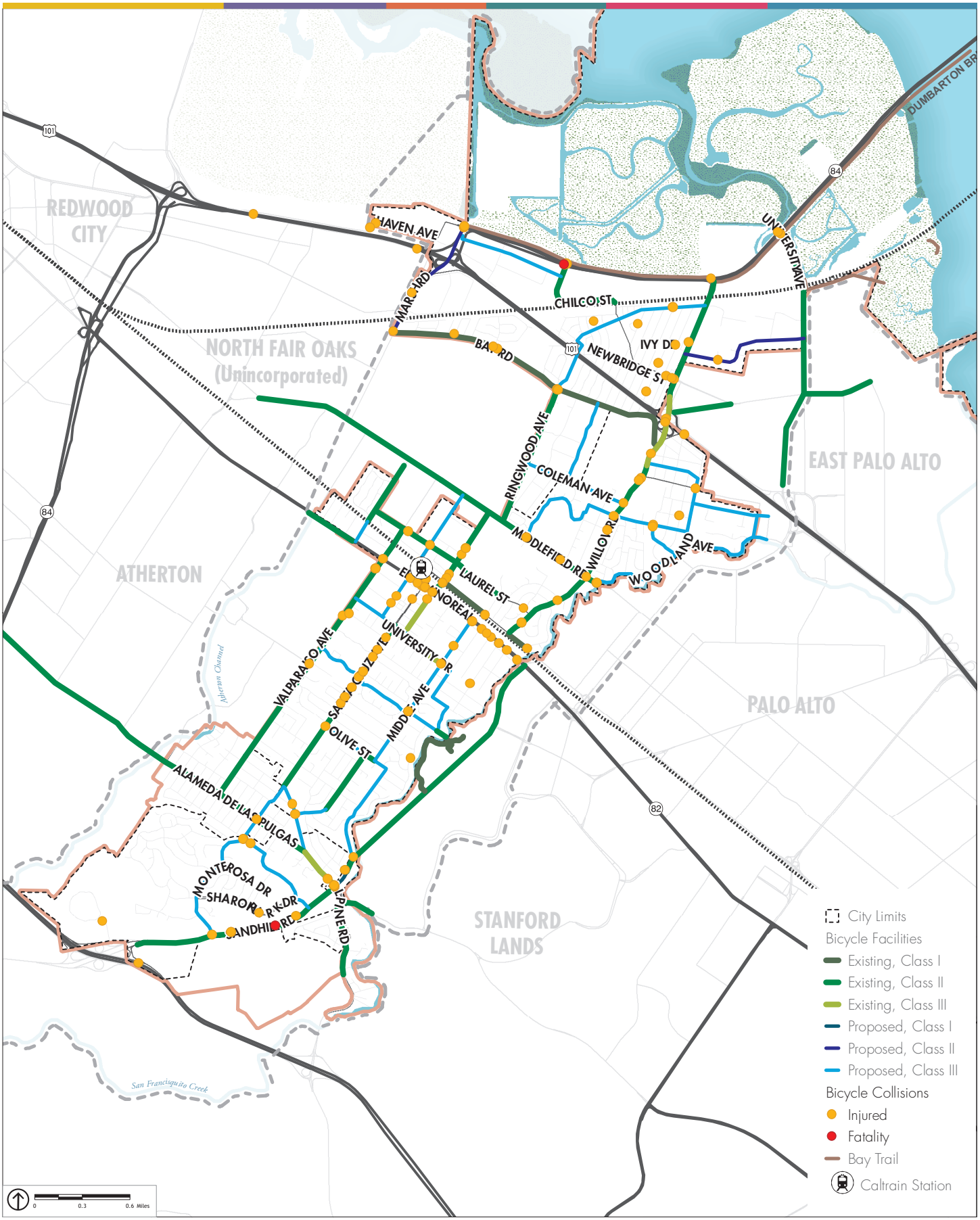

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FIGURE 8: CITYWIDE BICYCLE NETWORK AND COLLISION HISTORY

Some Class III bicycle routes exist in Menlo Park that connect neighborhoods and Class II facilities. These routes include Laurel Street south of Burgess Drive, Menlo Avenue, Willow Drive, and University Drive. Some of these facilities are painted with shared lane "sharrow" pavement markings.

Gaps in the network exist at several locations where Class II bicycle lanes end without any connections. In some cases, these facilities begin again further downstream. Willow Road is one of the most prominent locations where this occurs, for example a Class II bike lane ends at Durham Street and no bike infrastructure exists through the US-101overpass. Menlo Park also lacks an adequate number of east-west route connections, especially in the neighborhoods south of downtown.

EXISTING BRIDGE VOLUMES

The existing pedestrian / bicycle volumes for the pedestrian/ bicycle only bridges were received from the City of Menlo Park. Table 12 summarizes existing volumes for pedestrians and bikes. Appendix D includes the data sheets for the bridge counts.

TABLE 12 EXISTING BRIDGE VOLUMES

	Pedestrians				Bicycles				Total Per Bridge
Bridge	EB	WB	NB	SB	EB	WB	NB	SB	
Pierce Rd. & Ringwood Overcrossing	215	42	-	-	164	171	-	-	**592**
Willow Pl. Bike Bridge	-	-	207	182	-	-	381	403	**1,173**
San Mateo Bike Bridge	-	-	13	16	-	-	82	77	**188**
Alma St. Bike Bridge	-	-	188	220	-	-	329	281	**1,018**
Pedestrian & Bicyclist Subtotals	**215**	**42**	**408**	**418**	**164**	**171**	**792**	**761**	
Totals			**1,083**				**1,888**		**2,971**

PLANNED AND PROPOSED FACILITIES

A number of planned bicycle improvements are identified in City documents. A major source is the 2005 Menlo Park Comprehensive Bicycle Development Plan. This document details the potential expansion of the bicycle network with a variety of proposed projects as well as city-wide infrastructure improvements.

Figure 8 shows a number of planned bicycle facilities in Menlo Park. These facilities range from Class I bike paths, Class II striped lanes, and Class III routes. The proposed bicycle facilities seek to close gaps, improve connections to community centers, schools, parks, libraries, employment centers, commercial and retail centers, and provide regional connections. The proposed improvements are prioritized in the Development Plan as short, medium, or long term. Implementation strategies and potential funding sources are also identified. Other bicycle infrastructure improvements recommended in the 2005 Bicycle Development Plan focus on several items including bicycle parking within the City. Bike parking should be focused towards public destinations, including park-and-ride lots, major bus stops, community centers, parks, and schools. Improvements also include upgrades to the Caltrain shelter as well as developing a unique citywide wayfinding system and signing all proposed Class III bikeways. Transportation Development Act funding is currently being used to install green paint on the street in bicycle facilities in transitional zones approaching intersections throughout Menlo Park.

Menlo Park's Downtown Specific Plan also includes refined bike routes and recommendations within the plan area that are not part of the Bicycle Development Plan. Some of these plans include upgrading University Avenue and Menlo Avenue to Class II bicycle facilities and a new Class II bicycle lane on Oak Grove Avenue by the removal of on-street parking. The Downtown Specific Plan also calls for bicycle facilities on El Camino Real from Encinal Avenue to the Palo Alto border.

Another major capital project in Menlo Park scheduled for 2016-2018 is the reconstruction of US 101/Willow. This project proposes a Class I path and Class II bike lanes in addition to ramp alignment more conducive to pedestrian and bicycle safety.

BICYCLE SAFETY

Figure 8 also shows the 2007-2012 bicycle collisions in Menlo Park, along with the existing bicycle network. These collisions are any collision involving a bicycle, whether it is with an automobile, pedestrian, or a single vehicle collision. There were two fatal bicycle collisions in this 5-year period, and 133 injury collisions. Over half (79) of these injury collisions were at intersections, while the rest were at mid-block locations. One of the fatal collisions was at the intersection of State Route 84 (Bayfront Expressway) and Chilco Street, and the other was on Sand Hill Road near Branner Drive. While 2013 data is still being compiled, it should be noted that there was one bicycle fatality in 2013 at the intersection of Marsh Road and Bayfront Expressway.

Patterns in bicycle collisions show a concentration of injury collisions on El Camino Real, Santa Cruz Avenue, the Downtown core, and Willow Road north of where Class II striped bike lane ends. El Camino Real is a four- to six-lane divided arterial under Caltrans jurisdiction with no existing bicycle infrastructure.

The street is a major automobile and transit route that runs through downtown Menlo Park and connects to many other cities in San Mateo and Santa Clara Counties. At the time of this report, the ongoing El Camino Real Corridor Study is exploring alternatives that will possibly add bicycle infrastructure and safety improvements on this arterial. Willow Road north of the end of the Class II bicycle lane is also an area of higher bicycle collisions where there is limited bicycle infrastructure, with only Class III shared lane markings on the street. The reason for larger numbers of bicycle collisions in the Downtown core may be similar to that of the concentration of pedestrian collisions: higher bicycle volumes, a high level of auto traffic, and many conflict points. There may be a variety of reasons for more bicycle collisions on Santa Cruz Avenue, including higher vehicle speeds, greater number of conflict points with driveways and side streets, and lack of separation between vehicles and bicycles.

PUBLIC TRANSIT

Transit service is a vital component of the transportation system in Menlo Park, particularly for regional access to employment centers and residential areas, local access to schools, and for those residents in low vehicle ownership areas. This section presents an overview of existing service (see Table 13) and system characteristics, as well as planned and proposed transit service.

EXISTING TRANSIT SERVICE AND FREQUENCY

Caltrain operates through the Menlo Park Caltrain Station with three types of service: Local, Limited Stop, and Baby Bullet. During peak hours, Caltrain runs Local and Limited Stop service every six minutes to 54 minutes, with an average interval of 32 minutes. For northbound service, three Baby Bullet trains operate in the evening peak, and southbound trains have Baby Bullet service in the morning peak. Caltrain allows residents to connect with job centers around the Silicon Valley, as well as San Francisco and San Jose. In addition to Caltrain service, multiple SamTrans bus routes operate within city limits. These routes fall under three categories: routes connecting to Caltrain stations, routes connecting to Caltrain and BART stations, and school-day only routes. In 2014, SamTrans underwent service changes by eliminating some lower-ridership routes in Sharon Heights (formerly Route 295) and increased the frequency on other routes, including ECR and Route 281.

Routes connecting to Caltrain Stations:

- **Route 270:** Serves the M-2 area near Marsh/Haven, and Bayfront Expressway; Travels to Redwood City Transit Center

- **Route 276:** Travels to Redwood City Transit Center, Kaiser Hospital, and Redwood City Hall via Marsh/Haven/ Bayfront Expressway.
- **Route 281:** Serves the Palo Alto Transit Center at Downtown Palo Alto Caltrain station, University Village Shopping Center, and Onetta Harris Community Center
- **Route 286:** Connects to Menlo-Atherton High School, Menlo Park Caltrain Station, and La Entrada Middle School
- **Route 296:** Serves Menlo Park Caltrain Station, VA Medical Center, Redwood City Caltrain Station, Sequoia High School, and East Palo Alto
- **Route 297:** Connects to University Village Shopping Center, VA Medical Center, Palo Alto Transit Center, and Redwood City Transit Center

Routes connecting to Caltrain and BART:

- **Route ECR:** Primarily serves stations from Daly City BART to Milbrae BART and Hillsdale Caltrain to Palo Alto Caltrain
- **Route 397:** Connects to Downtown San Francisco and Milbrae BART

School-Day Only:

- **Route 80:** Accesses Hillview Middle School and Oak Knoll School via Santa Cruz/Elder
- **Route 82:** Serves Hillview Middle School, VA Hospital, Menlo Park Caltrain, and Flood Park
- **Route 83:** Connects VA Hospital, City Hall, Menlo Park Caltrain, and Hillview Middle School
- **Route 84:** Accesses Encinal School, Hillview Middle School, and Menlo Park Caltrain
- **Route 85:** Travels from Tripp/Woodside to Portola Valley, Ormondale Elementary, and Corte Madera School
- **Route 86:** Connects to Menlo Atherton High School, Menlo Park Caltrain, Sharon Park, and Portola Valley
- **Route 87:** Serves Woodside High School, Ormondale Elementary School, and Portola Valley
- **Route 88:** Access to Encinal Elementary School, Menlo Park Library and City Hall, VA Hospital, and Flood Park
- **Route 89:** Travels to Encinal Elementary School via Santa Monica/San Andreas

TABLE 13 EXISTING TRANSIT SERVICE

Service Provider	Peak Headways	Service Hours
Caltrain	32 minutes (average)	5:04am to 12:56am (weekdays) 7:34am to 1:02am (weekends)
SamTrans 80	No peak service	1:40pm to 3:30pm (weekdays)
SamTrans 82	1 run (morning) 60 minutes (afternoon)	7:47am to 3:47pm (weekdays)
SamTrans 83	5 minutes (morning)	7:38am to 3:52pm (weekdays)
SamTrans 84	1 run (morning)	7:52am to 3:45pm (weekdays)
SamTrans 85	1 run (morning)	7:09am to 3:45pm (weekdays)
SamTrans 86	40 minutes	7:04am to 4:05pm (weekdays)
SamTrans 87	55 minutes	7:10am to 4:01pm (weekdays)
SamTrans 88	1 run (morning) 2 runs (afternoon)	7:27am to 3:41pm (weekdays)
SamTrans 89	1 run (afternoon)	1:33pm to 3:39pm (weekdays)
SamTrans 270	60 minutes	6:30am to 7:12pm (weekdays) 7:30am to 7:08pm (weekends)
SamTrans 276	60 minutes	6:00am to 6:46pm (weekdays)
SamTrans 281	15 minutes	6:00am to 10:32pm (weekdays) 8:03am to 7:58pm (weekends)
SamTrans 286	65 - 74 minutes	7:16am to 5:59pm (weekdays only)
SamTrans 296	15 minutes	5:18am to 11:00pm (weekdays) 8:45am to 7:59pm (weekends)
SamTrans 297	60 minutes	12:43pm to 12:22am (weekdays) 12:43pm to 12:22am (weekends)
SamTrans 397	60 minutes	12:48pm to 6:22pm (weekdays only)
SamTrans ECR	11 – 13 minutes	3:56am to 2:09am (weekdays) 4:47am to 2:21am (weekends)
AC Transit DB	16 – 34 minutes	5:22am to 8:51pm (weekdays)
AC Transit DB1* Limited stop	15 – 26 minutes	5:26am to 7:39pm (weekdays)

In addition to SamTrans buses, AC Transit has two Transbay bus routes that serve Menlo Park from Union City (Route DB and DB1), which have mirror routes, with different operational hours. Both Route DB and DB1 serve the VA Administration Medical Center and continue on to Union City BART and Stanford University, depending on the direction.

In addition to regional transportation agency services, the City provides shuttle service, catering to commuters and seniors (see Table 14). The city first initiated shuttle service in 1989 and has expanded to

TABLE 14 SHUTTLE SERVICE DETAILS

Shuttle	Peak Headways	Service Hours
Caltrain Shuttle	60 mins	6:39am to 6:28pm (weekdays)
Midday Shuttle	No peak hour service	9:30am to 3:30pm (weekdays)
Shoppers Shuttle	No peak hour service	9:30am to 1:00pm (Tuesday/Wednesday/Saturday)

provide three types of services, funded by San Mateo City/County Association of Governments, Bay Area Air Quality Management District, Peninsula Joint Powers Board, Metropolitan Transportation Commission, and city funds.

- **Caltrain Shuttle** serves the Menlo Park Caltrain station and travels to businesses in Menlo Park along Marsh Road and Willow Road.
- **Midday Shuttle** serves seniors and stops at many destinations including Menlo Park and Palo Alto Caltrain stations, Downtown Menlo Park and Downtown Palo Alto, Menlo Medical Clinic, Menlo Park Library, Menlo Park Senior Center, Safeway, and Stanford Shopping Center.
- **Shoppers Shuttle** is specifically designed to accommodate seniors, operating three days per week to Sharon Heights Safeway, downtown Menlo Park, and Stanford Shopping Center. The bus can accommodate two wheelchairs and multiple walkers, with operator assistance available for passengers with packages.
- **Marguerite Shuttle** is Stanford University's free public shuttle service, which travels around campus and connects to nearby transit including Caltrain, VTA, SamTrans, and the Dumbarton Express, as well as shopping, dining, and entertainment locations, including Stanford Shopping Center, Downtown Palo Alto, California Avenue, Town & Country Village, the Bookstore, Visitor Center, and Bohannon Drive.

Lastly, there are several private shuttles that operate in Menlo Park to various employment centers. Facebook operates a private shuttle for employees from Menlo Park Caltrain Station with hourly service to directly to its campus. There are also private shuttles operating for Menlo School, Menlo Business Park, and the VA Hospital.

PLANNED AND PROPOSED TRANSIT SERVICE

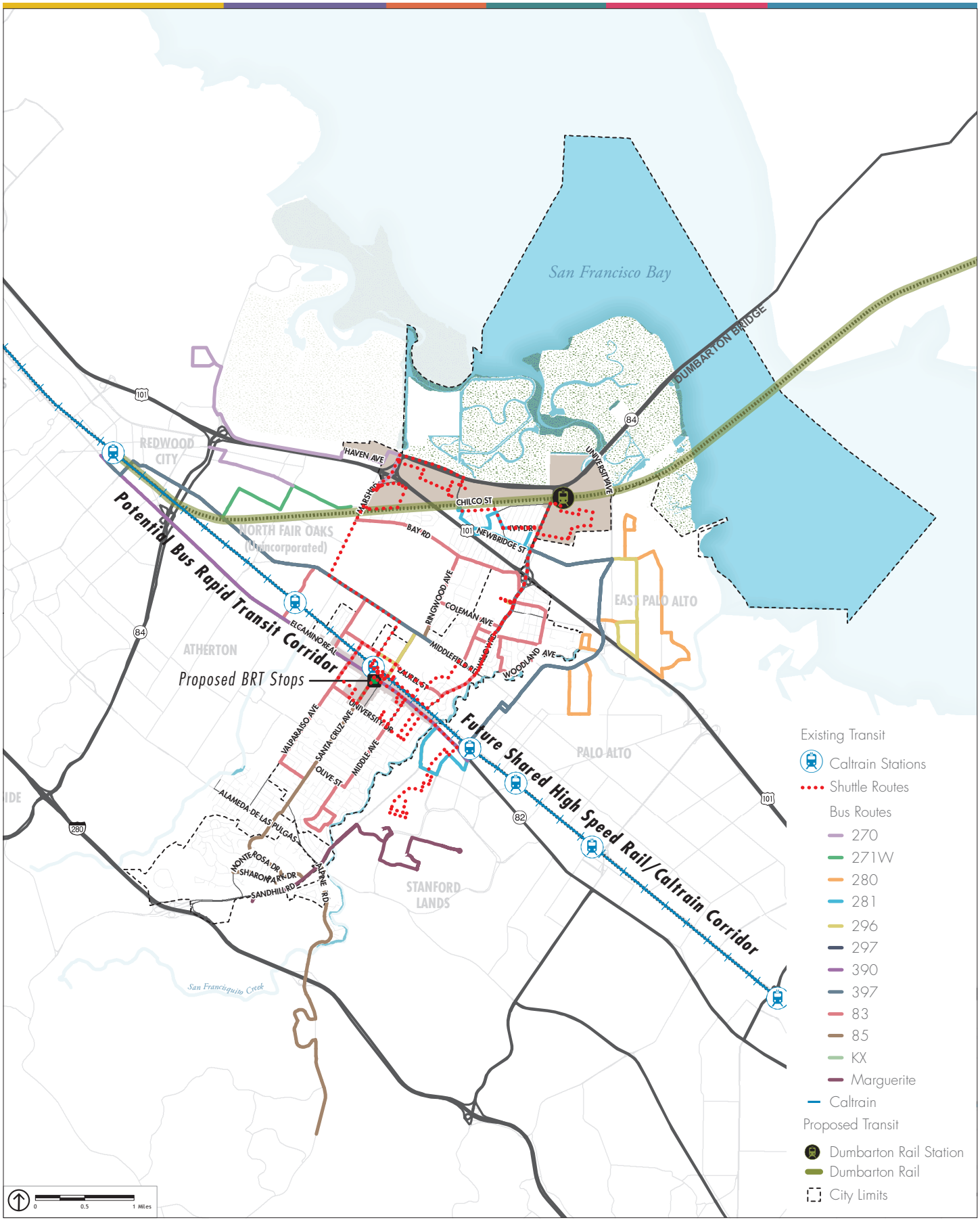
The most significant planned high-capacity transit service in Menlo Park is the proposed Dumbarton Rail service, which would connect Menlo Park to Union City across San Francisco Bay. The Dumbarton Rail service would operate on a currently partially abandoned rail corridor and would require reconstructing the

Dumbarton Rail Bridge to extend commuter service across the Bay, rather than around the Bay. The service would connect to Caltrain, Altamont Commuter Express, Amtrak Capitol Corridor, and BART to increase regional transportation system connectivity. There would be a station in Menlo Park. Should funding fall short to complete this project, alternatives discussed include a bus rapid transit service serving the same corridor. In addition, an alternative option would be to utilize the railway between Menlo Park and Redwood City to promote local transit. Figure 9 shows the proposed transit improvements with the existing network in Menlo Park.

In addition to Dumbarton Rail, electrification of Caltrain between San Jose and San Francisco would improve travel times in the Caltrain corridor, and would provide the infrastructure needed for High Speed Rail through the corridor. Electrified rail service would permit faster speeds, shorter travel times, reduced headways, and overall connectivity with regional transit systems. An increase in the number of trains would also result in increased number of trains stopping at Menlo Park. Caltrain certified the Peninsula Corridor Electrification Project Final Environmental Impact Report (FEIR) in January, 2015. With electrification and subsequently High Speed Rail, the Peninsula would be connected to Southern California, the Central Valley, and San Francisco. The City of Menlo Park has formed a Rail Council Subcommittee to advocate for ways to reduce the negative impacts and enhance the benefits of High Speed Rail in Menlo Park. The Subcommittee has also established principles that are based on the City Council's position on High Speed Rail. The High Speed Rail Authority is still reviewing passing track options in the proposed blended system with Caltrain. One of these options includes a third track through Menlo Park, which is currently not desired by the community.

Another potential key transit improvement involves Bus Rapid Transit (BRT). SamTrans was awarded a grant by the California Department of Transportation in 2012 to conduct a feasibility study of the potential for BRT service along the El Camino Real corridor between Daly City and Palo Alto. This corridor carries the highest ridership in the SamTrans bus system, with over 13,000 daily weekday boardings. SamTrans is currently completing a BRT Phasing Plan Study that identifies a plan for the phased implementation of BRT in the El Camino Real corridor over an extended time period. In the early phases of the project, a limited-stop service with current vehicles is proposed. A longer-term scenario involves capital-intensive transit priority through new vehicles, facilities, and signal-priority. A bus-only lane is not currently proposed by SamTrans in Menlo Park as part of this study.

While these long-term investments are among the high-capacity, high-visibility transit service improvements discussed for the region, local scale improvements are also planned, including public and private shuttle improvements. The El Camino Real/Downtown Specific Plan recommends improved shuttle headways with an increase of service hours to include morning and evening hours, and weekends. The Specific Plan also calls for increased service to the eastern and western parts of the city, and to downtown Menlo Park.



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menlo park land use & mobility update

FIGURE 9: EXISTING AND PROPOSED TRANSIT INFRASTRUCTURE

Furthermore, opportunities to improve connectivity from Redwood City Caltrain to Belle Haven and the M-2 Area are being explored as part of the General Plan community outreach process.

M-2 AREA

The transit network in the M-2 Area is very limited. AC Transit's DB and DB1 Dumbarton Express routes cross the Dumbarton Bridge and stop on the edge of the M-2 Area on Willow Road at Hamilton Avenue and Ivy Drive. The major public bus routes serving the M-2 Area are SamTrans Route 270, Route 276, and a few City-provided and private shuttle routes. Route 270 loops through the western end of the M-2 Area using Marsh Road and Haven Avenue and serves a connection to the Redwood City Transit Center and Caltrain. Route 276 terminates at the western edge of the M-2 Area at Marsh Road and also serves the Redwood City Caltrain Station. The Marsh Road Shuttle and Willow Road Shuttle, operated by the City of Menlo Park, each connect several offices in the M-2 Area with the Menlo Park Caltrain Station via Marsh Road and Willow Road, respectively. The City of Menlo Park Midday Shuttle serves the Menlo Park Senior Center located just outside of the M-2 Area south of the Dumbarton rail corridor and travels to several retail areas in downtown Menlo Park. SamTrans Route 281 does not serve the M-2 Area specifically, but terminates at the Onetta Harris Community Center located just south of the Dumbarton rail corridor. The route connects to Downtown Palo Alto and Stanford Shopping Center. Private Facebook shuttles travel to and from the Facebook Campus on Willow Road and the Bayfront Expressway to the Menlo Park Caltrain Station using Willow Road. Other private shuttle services, such as the Menlo Business Park shuttle, also provide service to the M-2 Area; it is publically accessible. The existing, limited transit service does not make short trips within the M-2 Area and to adjacent neighborhoods attractive or feasible.

The lack of adequate transit is an issue for this area, and more residential and commercial development is being planned or already under construction. The western area of M-2, which already has new higher density residential construction, only has transit access via SamTrans to the Redwood City Caltrain Station. No transit access exists to retail areas in Downtown Menlo Park and the City shuttles' operating times and frequency are limited. The shuttle routes primarily serve work trips, with only the Midday Shuttle servicing the Menlo Park retail centers. Housing in this area and Belle Haven also creates a need for transit that serves both work and non-work trips. Limited-stop service in both SamTrans' El Camino Real corridor and along potential privately operated shuttle routes could also boost transit ridership.

Bicycle facilities are also limited in the M-2 Area, with only marked bike lanes on Willow Road, University Avenue, and Chilco Street. The San Francisco Bay Trail is also located in the M-2 Area. The only bicycle and pedestrian connection south towards Caltrain and the retail center of Menlo Park is via a bridge crossing US 101 at Ringwood Avenue between the Belle Haven and Flood Park neighborhoods. The Marsh Road, Willow Road, and University Avenue interchanges contain no bicycle facilities, and the lack of connections can

discourage future residents of this area from riding their bicycle for short trips to either Caltrain or downtown Menlo Park. There is also a lack of connectivity between the M-2 Area communities and the San Francisco Bay Trail. At the time of this report, Facebook is constructing an undercrossing for bicycle and pedestrians at the Bayfront Expressway that will create better connectivity in this area. Safe connections should be in place for future residents to make recreational trips to the Trail and neighboring Parks.

Pedestrian facilities are also lacking, with many streets having partial or no sidewalks. Some notable street segments with sidewalks on both sides of the street are the Marsh Road and Willow Road overpasses at US 101. The Dumbarton rail corridor and US 101, on the other hand, limit pedestrian access and isolate M-2 and Belle Haven areas from the rest of the community. A robust and complete pedestrian network is needed in the M-2 Area to promote walking where residents live and employees work. Better connections are also needed that provide safe and convenient access to the rest of Menlo Park and adjacent cities.

SUMMARY OF KEY FINDINGS

- **Traffic.** Menlo Park faces regional traffic impacts due primarily to the cluster of technology firms on the Peninsula, the volume of residents traveling through the city to San Jose and San Francisco, and commuters passing through the city heading to employers in nearby Redwood City, Palo Alto, Mountain View, and other mid-peninsula cities. With many critical regional transportation routes running through Menlo Park, planning efforts must be made in collaboration with Atherton, Redwood City, unincorporated San Mateo County, Palo Alto, East Palo Alto, Caltrans, and transit operators to better develop the regional transportation network. A Transportation Management Association (TMA) to manage travel options in the city could focus on the M-2 Area and the emerging housing and office space there, and additionally could provide resources and information on choices to the Belle Haven community. The goal of the TMA would be to reduce vehicle trips to the existing and planned developments in the area, including sites on Willow Road, Hamilton Avenue, and Haven Avenue.
- **Transit.** Menlo Park lacks frequent transit service, aside from Caltrain, that connects commuters, visitors, and residents to destinations throughout the day. The frequency of service in off-peak hours is limited, as well as the hours of service. Menlo Park's ability to connect regionally is expected to increase with the planned and proposed transit services. Caltrain electrification would improve frequency and reliability for connections to San Jose, San Francisco, and points along the rail line. In addition, the Dumbarton Rail Corridor would allow future connections to Redwood City Caltrain Station and across the Bay in the future. The proposed transit service improvements will benefit the city by enhancing regional connections and increasing the amount of reliable, fast service through bus rapid transit.
- **Pedestrian and Bicycle Connectivity Gaps.** Basic infrastructure for the bicycle and pedestrian networks in many areas of the city is in place. However, gaps at several critical locations discourage

many from walking or biking for transportation purposes. For example, many streets lack sidewalks on one or both sides of the street; the bicycle network is spotty, with discontinuous facilities and physical barriers that create separation between neighborhoods. These obstacles include US 101, railroad tracks, Bayfront Expressway, and El Camino Real. A number of bicycle and pedestrian infrastructure improvements are identified in both the Menlo Park Comprehensive Bicycle Plan (2005) and the Sidewalk Master Plan (2009). Sidewalks on Santa Cruz Avenue south of the Downtown core are incomplete south of Johnson Street, where neither valley gutter nor sidewalks exist. Santa Cruz Avenue is a major north-south walking route used by children walking to school and has several school crosswalks along it. However, in some cases the school crossings do not connect to any pedestrian infrastructure. The El Camino Real/Downtown Specific Plan does not address this gap, unfortunately. Also, the interchange of US 101 at Willow Road is slated for Caltrans improvements with construction occurring in 2016-2019. The improvements at this location will result in improved bicycle and pedestrian connections, as well as signal and lane configuration upgrades at the interchange.

- **Performance Metrics.** The City's performance metrics used to evaluate the transportation network under the current General Plan focus on vehicular travel –for example, automobile delay and vehicular travel speeds. Under the City's Complete Streets Policy, there is a need to measure and quantify the overall performance of the network to better include all users and modes of travel. Such analysis should allow for the evaluation of trade-offs between improvements for different travel modes–for example, if a roadway is widened to include additional travel or turn lanes, how does this affect pedestrian and bicycle safety? Additionally, refined metrics might include an assessment of user-comfort, safety, amenities (e.g., street lighting, type of crosswalk, bicycle facility, or transit shelter), the surrounding environment (e.g., whether a person feels safe walking or riding a bicycle), and/or the extent of the facilities (e.g., citywide bikeway length, sidewalk coverage, or total bus ridership). The metrics can also be even broader in scope, taking into account vehicle miles traveled per capita, greenhouse gas emissions, economic impacts, tree canopy coverage, and socio-economic benefits of Complete Streets.
- **Parking Requirements.** Existing parking requirements exceed minimums recommended by industry standards for many land uses. Higher parking minimums can increase the cost of development and reduce the footprint for productive space such as offices, retail, restaurants, and open space. In addition, excessive parking creates an environment where driving is more attractive, and can result in additional vehicular demand and traffic congestion, thus detracting from the pedestrian environment.

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