NELSON
NYGAARD

CALIFORNIA / ESCUELA / SHORELINE COMPLETE STREETS FEASIBILITY STUDY

FINAL REPORT

DECEMBER 2015

PIN 8299

CITY OF MOUNTAIN VIEW

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ACKNOWLEDGEMENTS

PROJECT MANAGER

REY RODRIGUEZ, City of Mountain View

CONSULTANT TEAM

RIA HUTABARAT LO, Nelson\Nygaard
MICHAEL RIEBE, Nelson\Nygaard
JOHN HYKES, PlaceWorks
SARAH CHRISTENSEN, Mark Thomas & Company
RUTA JARIWALA, TJKM
GREGORY TUNG, Freedman Tung + Sasaki
KENDALL FLINT, Flint Strategies

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INTRODUCTION

The California / Escuela / South Shoreline Complete Streets Feasibility Study was commissioned by the City of Mountain View in response to community interest in redesigning the transportation and mobility facilities as Complete Streets.

STUDY AREA

The study area includes California Street between Showers Drive and Bryant Street, Escuela Avenue between Latham Street and Crisanto Avenue, and South Shoreline Boulevard between El Camino Real and Montecito Avenue. This study area is displayed in Figure 1 below:

CALIFORNIA STREET

California Street is an important 2 ¼–mile corridor within the City Mountain View. It is parallel to and midway between two heavily travelled corridors, Central Expressway, which is owned by Santa Clara County, and El Camino Real, which is owned by Caltrans. California Street provides a direct local connection between Castro Street in the historic downtown and San Antonio shopping center to the west. The City's 2030 General Plan envisions California Street as a residential collector street that prioritizes walking and bicycling while also accommodating vehicle traffic. Under the San Antonio Precise Plan, the area may be redeveloped to include approximately 1,200 new housing units and 600,000 square feet of net new office space, in addition to new retail-commercial space. This new development is likely to increase travel demand along California Street as an alternate route to travel between the San Antonio area and other parts of Mountain View. California Street is also a transit corridor for Valley Transportation Authority (VTA) bus services (34, 35 and 40) and the Mountain View Community Shuttle. The street is intersected by major cross-town linkages like Shoreline Boulevard and Rengstorff Avenue.

The stretch of California Street under consideration in this study connects diverse Mountain View neighborhoods from historic Old Mountain View and Shoreline West, to Castro City, which is located northwest of California and Rengstorff. At the heart of the California Street corridor lie two residential areas with no official name, from Escuela to Rengstorff and from Rengstorff to Showers. These areas are the most densely inhabited and affordable neighborhoods within Mountain View, and are home to many Spanish-speaking families.

ESCUELA AVENUE

Escuela Avenue is at the social heart of these communities, with a buzz of neighborhood pedestrian activity including many children and seniors. Various community centers are located along Escuela Avenue including a senior center, a teen center, two churches that serve Spanish-speaking communities, a day worker center, a public elementary school and a preschool. Under the El Camino Real Precise Plan and VTA proposals, the area around Escuela Avenue and El Camino Real is slated to become a new village center and potential bus rapid transit stop.

SOUTH SHORELINE BOULEVARD

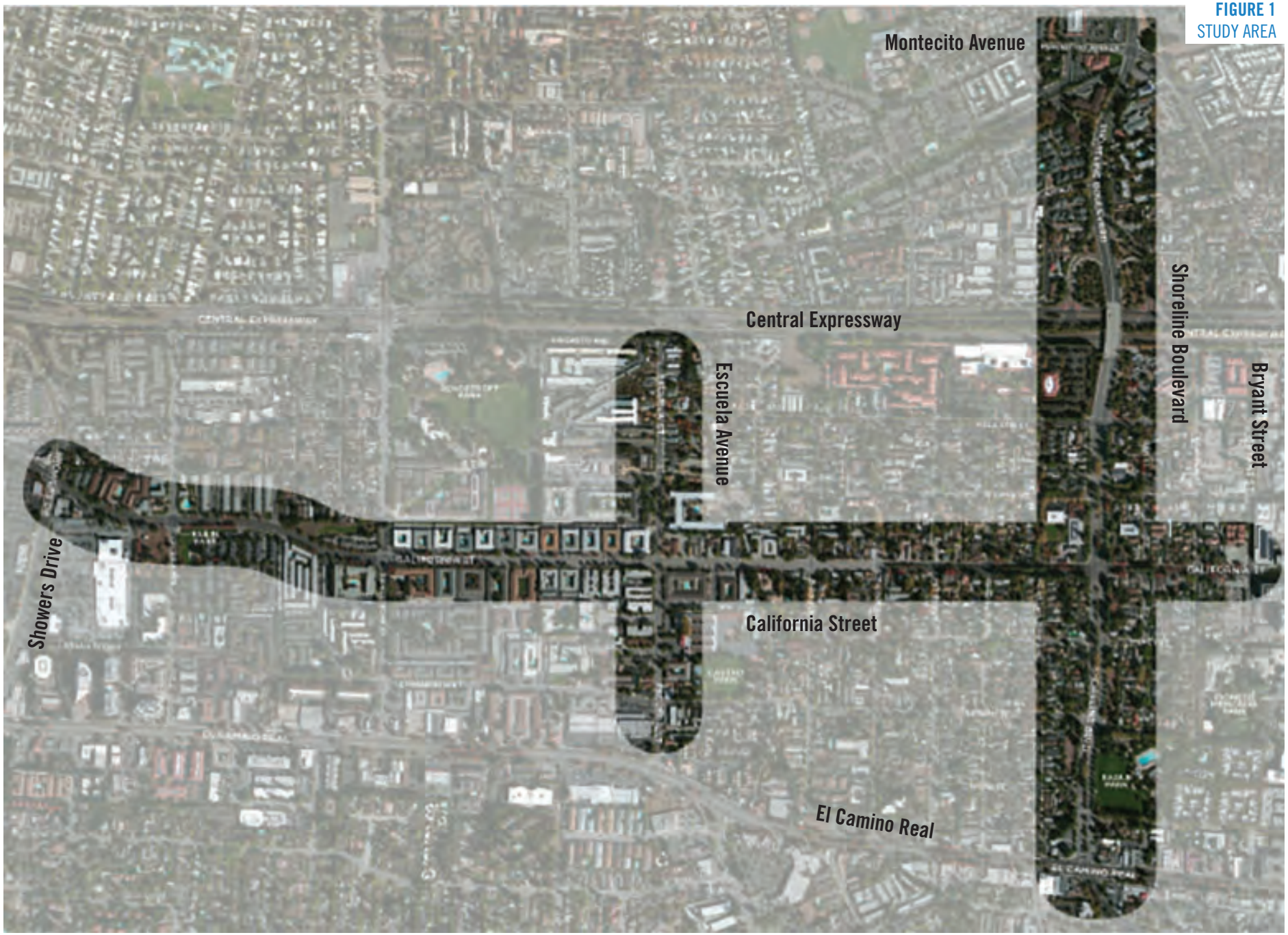
Shoreline Boulevard is a 3-mile road that provides the main north-south access to connect the communities of Central Mountain View with regional destinations via US-101 to the north, and El Camino Real and I-280 to the south. In the 1-mile stretch of road between Wright (just south of Montecito) and El Camino, Shoreline Boulevard is a 6-lane facility with bicycle lanes in the old standard on either side. This stretch includes a grade-separated crossing over the Central Expressway and Caltrain railway tracks, which makes the corridor particularly attractive for motorists moving through the city in a north-south direction. A lack of complete streets design across the Central Expressway, however, means that these benefits to motorists translate directly into challenging conditions for cyclists and pedestrians. South Shoreline Boulevard also provides important transit connections in the form of the MVgo West Bayshore and East Bayshore commuter shuttle services that are operated by the Mountain View Transportation Management Association (TMA).

North of Montecito, future facilities supported by the Council as part of the Shoreline Boulevard Corridor Study include protected bike lanes (aka cycle tracks), protected intersection treatments, and enhanced transit service between North Bayshore, Mountain View Transit Center, and El Camino Real.

COMMUNITY CONCERNS

Along all three streets within the study area, there have been several pedestrian-vehicle and bicycle-vehicle collisions within the last five years, including a number of fatalities. Community members have expressed concerns regarding the safety of crossings, quality of bicycle facilities, level of accessibility, and multimodal connectivity across the study area. As a result of these incidents and concerns, community members requested that the City assess the feasibility of redesigning the routes as Complete Streets.

FIGURE 1
STUDY AREA



COMPLETE STREETS

Complete streets are designed to be safe, comfortable and convenient for travel by automobile, foot, bicycle and transit. For California Street, a complete street redesign would preserve local motorized access, while encouraging slower speeds and creating a walkable, bikable community connection along the entire length. For Shoreline Boulevard, a complete street redesign would help to knit together communities on either side of the road while increasing mobility for residents who wish to access destinations in the Downtown, Rex Manor and North Bayshore areas.

In this way, a complete street redesign would help to unify the central portion of Mountain View, from Old Mountain View to the San Antonio Shopping Center and from El Camino Real across the Central Expressway to Montecito Avenue. It would also improve non-vehicle access to schools and parks. Complete street redesign would therefore transform the streets to include a space for high quality non-motorized facilities, traffic calming elements, transit improvements and green street features.

California Street represents a unique opportunity for the City of Mountain View, because the City has full planning control and the ability to offer pedestrian and bicycle access as a key feature. The same cannot be said for the parallel routes of El Camino Real, or Central Expressway, which are owned and operated by Caltrans and Santa Clara County respectively, and offer only limited non-motorized access.

GREEN STREETS

In some cases, Complete Streets are also designed as Green Streets. Green Streets are streets where pervious areas are increased and green infrastructure is used to reduce storm water flow, improve water quality, enhance pedestrian safety, encourage slower traffic, and create a unifying and aesthetically-pleasing landscape theme. Green street facilities manage storm water runoff as a resource by keeping pollutants out of the stormwater system and local streams. Features may include rain gardens in street curb extensions, permeable paving in parking lanes, and bioswales which capture, retain, and filter runoff collected by the streets.


CALIFORNIA / ESCUELA / SHORELINE
COMPLETE STREETS PROJECT
PEDESTRIAN NETWORK
Tell us about walking along the project.
Share your routes and opinions with us by marking on the map.
Which streets do you walk on?
Identify major barriers/network gaps/challenges.
Where should pedestrian improvements be prioritized?
RED DE PEATONES
Habla con nosotros sobre caminando en el proyecto.
Comparte sus rutas y opiniones con nosotros por marcando el mapa.
¿En qué calles caminas?
Identifica las principales barreras/brechas en la red/los desafíos.
¿Dónde se deben priorizar mejoramientos peatonales?
¿Qué tipo de mejoramientes para peatones le gustaría ver?
ORTEGA AVE
ESCUELA AVE
CALIFORNIA ST
VILLA ST
CENTRAL EXPY
SHORELINE BLVD
LATHAM ST
EL CAMINO REAL
SAN ANTONIO SHOPPING CENTER
02
POLICY CONTEXT

The following section reviews the City of Mountain View's recent policies and plans that are relevant to the context of this study. The recommendations presented with the Complete Streets Study will be consistent with these existing plans. It is integral to keep the existing policies outlined here in mind while evaluating the strengths and opportunities along the California/Escuela/Shoreline corridors.

2030 GENERAL PLAN

The 2030 General Plan[1], adopted in July 2012, is a comprehensive update to the City's 1992 General Plan. The Plan provides a series of goals, policies and actions that will help guide development and planning efforts over the next 20 years.

The 2030 General Plan emphasizes the importance of improving access for all modes and increasing the non-auto mode share through mobility-related goals. The General Plan emphasizes the need to maintain existing infrastructure and provide safe, efficient, and equitable uses of streets for pedestrians and cyclists through good roadway design. The multimodal goals in the plan also relate to sustainability, health and wellness, quality of life, and economic prosperity. Specifically, Mountain View seeks to reduce the risk of obesity by encouraging active transportation and improvements to pedestrian and bicycling infrastructure. The General Plan also highlights the role of active transportation in creating sustainable, commercial development.

This study area falls within three of the City's seven planning areas: San Antonio, Central Neighborhoods/Downtown, and Monta Loma/Farley/Rock, as shown in Figure 2.

1 City of Mountain View, "Mountain View General Plan," 2012, http://www.mountainview.gov/civicax/filebank/blobdload.aspx?blobid=10702

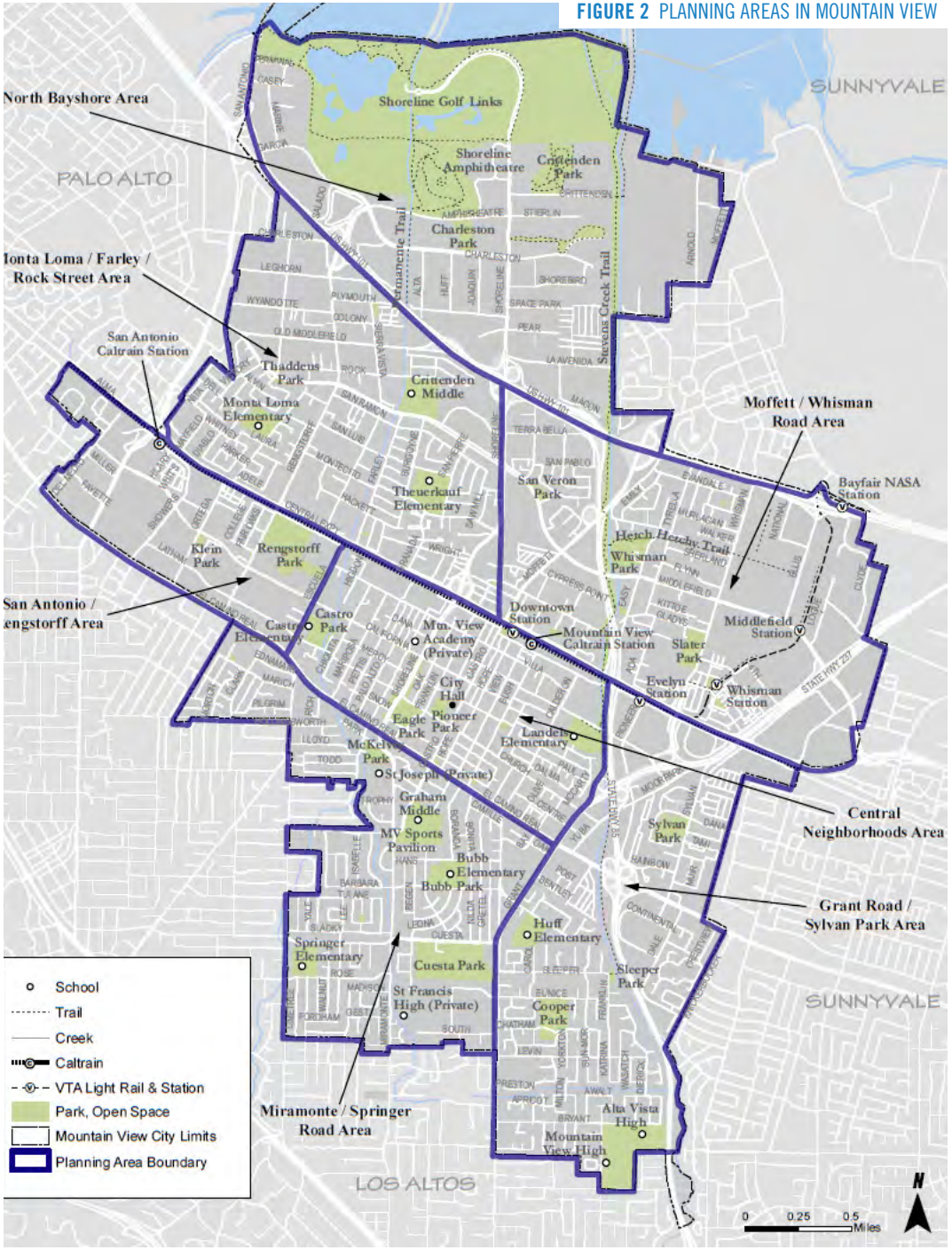
SAN ANTONIO PRECISE PLAN, 2014

In December 2014, the City of Mountain View released the San Antonio Precise Plan (SAPP).[2] The San Antonio Precise Plan covers an area of 123 acres, from San Antonio Road to Ortega Avenue, between El Camino Real and the Caltrain corridor. The study area includes California Street as the main corridor, but focuses on the San Antonio Shopping Center.

The SAPP goals include several issues relating to pedestrian access, pedestrian-oriented design and improved bicycle facilities. In particular, California Street was identified as both a primary pedestrian route and a primary bicycle route. Relevant recommendations within the Plan include:

- Improved pedestrian facilities including wider sidewalks and new planting/amenity zones on California Street
- Shorter, walkable blocks including a new cross street from what is now Target and a minimization of driveway curb cuts and other potential conflict points between vehicles, pedestrians and bicycles
- Improved bicycle facilities including buffered Class II bike lanes on California Street and the southern portion of Showers Drive
- Improved connections to transit including sharrow markings on the northern portion of Showers Drive which connects to San Antonio Caltrain station
- Intersection improvements including redesign of California Street / Showers Drive to increase pedestrian visibility, shorten crossing distances, and potentially remove or alter existing right hand "slip lanes" to improve bicycle and pedestrian conditions, and planning coordination on California Street / Ortega Avenue to improve crossing conditions

FIGURE 2 PLANNING AREAS IN MOUNTAIN VIEW



Source: City of Mountain View,"Pedestrian Master Plan," 2013

2 City of Mountain View, "Draft San Antonio Precise Plan,"2014, http://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=13948

The Plan provides typical street design standards for public streets and new internal connections. The Plan also provides a table of potential pedestrian and bicycle improvements, as shown below in Figure 3, to be implemented on a location-specific basis.[3]

Based on objectives to improve bicycling and walking conditions while maintaining traffic flow, the SAPP suggests that a typical street section for California Street would be 102-feet wide from property line to property line. The typical cross section (shown below in Figure 4) would require dedication of easements on existing private property to expand the right-of-way, unless a future feasibility study demonstrates that other alternatives (such as lane reduction) are feasible while maintaining neces-

3 City of Mountain View, Draft San Antonio Precise Plan," 2014, 3-24 – 3-30

FIGURE 3 EXAMPLES OF TYPICAL PEDESTRAIN AND BICYCLE IMPROVEMENTS FOR THE SAN ANTONIO PRECISE PLAN

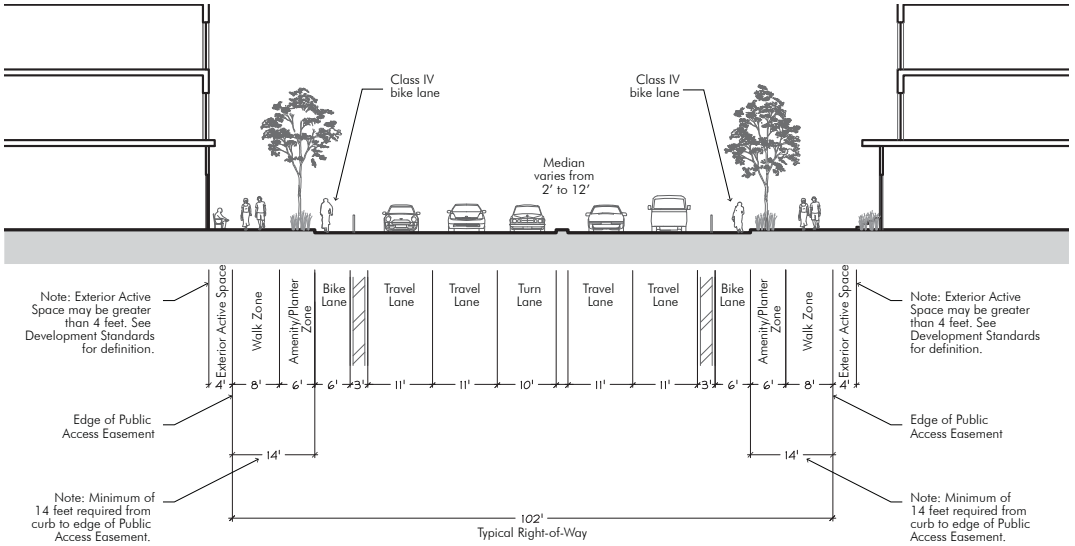
FOCUS	TARGET OF IMPROVEMENT	TYPICAL IMPROVEMENTS
Pedestrian	Reduce the amount of time pedestrians are exposed to traffic Shorten crossing distances or provide median improvements to shorten exposed time by stages	Curb bulbouts; Median refuge islands/median improvements; "Pork chop" corner refuge islands; Multi-stage crossings
Pedestrian	Reduce the number of conflicts between pedestrians and vehicles by separating people from cars or "channelizing" movements	Separate vehicles from pedestrians using barriers; Eliminate crosswalks from particularly hazardous conflict points; Implement signal phasing to limit or restrict movements (e.g. scramble phase)
Pedestrian	Provide additional independence to travel for the disabled.	Curb ramps and minimum sidewalk dimensions (e.g. Close gap on Showers Drive north of California Street); Audible signals; Tactile feedback pedestrian pushbuttons and pavement texture; Pedestrian countdown signal heads; Sufficient time to cross entire crossing width for slower pedestrians (Note: Required by Caltrans)
Pedestrian / Bicycle	Reduce the speed at which vehicles travel through intersections	Reduce curb return radii; Eliminate or reconfigure high speed channelized right turns ("slip lanes"); Implement traffic calming measures
Pedestrian / Bicycle	Improve visibility approaching and within intersections	Appropriate sight distance triangles; Curb bulbouts; Intersection safety lighting; Proper street tree pruning; Devices that force people to look in the direction of conflicts (e.g. Z crossing); Special signage with lighting such as high frequency flashers or in-road flashers
Pedestrian / Bicycle	Provide information for decision-making by all travelers.	Advanced lane configuration signs; Advanced warning signs of all types; Pedestrian countdown signal heads; Wayfinding and parking guidance systems; Real time transit arrival signs
Bicycle	Provide enhanced options for bicycle facilities	Buffered bike lanes for inexperienced or slower riders; Bike lane painting with new green bike lane treatment to improve visibility; Caltrans MUTCD approved "Shared Lane Marking" for locations where dedicated Type I or Type II facilities are not feasible; Bicycle Detector Pavement Markings at all locations of new dedicated bicycle facilities and bicycle priority routes; If bicycle detection is difficult to implement, install bike push buttons to assist with the activation of intersection signals, especially during low volume vehicular periods; Intersection pavement striping for bicycles traversing large intersections where conflicting movements may cause a hazard for bicycles; On bicycle priority routes implement bicycle timing options at signalized intersections, specifically bicycle green time extension (Note: Required by Caltrans.); Signage so users new to the area can follow safe routes

Source: City of Mountain View, "Draft San Antonio Precise Plan," 2014

sary vehicle access. The location of this typical cross section is on California Street, near the intersection of Pacchetti Way. While this location is outside the present study area, it applies to segments of California Street (within the SAPP) that overlap with the present study area.

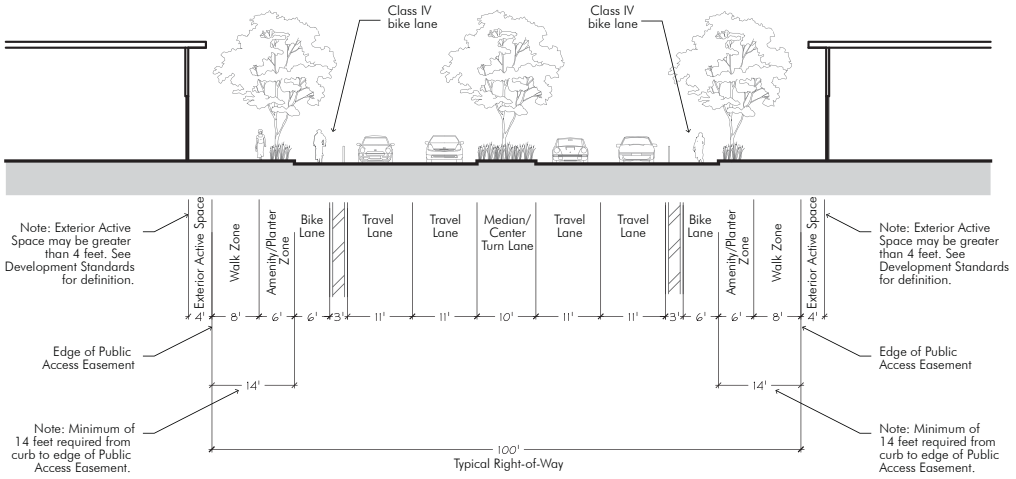
A similar cross section for Showers Drive north of Latham Street is illustrated below in Figure 5. These two cross-sections would likely intersect at the western edge of the present study area.

FIGURE 4 TYPICAL CROSS SECTION FOR CALIFORNIA STREET FROM THE SAN ANTONIO PRECISE PLAN (WEST OF PACCHETTI WAY)



Source: City of Mountain View, "Draft San Antonio Precise Plan," 2014

FIGURE 5 TYPICAL CROSS SECTION FOR SHOWERS DRIVE FROM THE SAN ANTONIO PRECISE PLAN (NORTH OF LATHAM STREET)



Source: City of Mountain View, "Draft San Antonio Precise Plan," 2014

EL CAMINO REAL PRECISE PLAN

The City of Mountain View adopted the El Camino Real Precise Plan in November 2014.[4] This plan outlines goals of improved pedestrian, bicyclist, and transit conditions along the El Camino Real area, which intersects the present study area at the end of South Shoreline Boulevard. The broad goals of the plan include widening sidewalks along the corridor, increasing tree coverage, adding crosswalks for pedestrians, creating bicycle connectivity into Palo Alto and Sunnyvale, and street improvements near bus stops. The plan also expresses a park-once-and-walk approach to improve parking efficiency, activate the pedestrian realm, allow for bike facilities, and improve development feasibility on small parcels.

In relation to this study area, the El Camino Real/Escuela Avenue area will become a major intersection as a Village Center. Higher intensity development, mixed-uses, and transit will be focused in this area, and may increase pedestrian and bicyclist movement along Escuela Avenue. Village Centers will focus on creating pedestrian-scaled environments with amenities including mid-block cut-throughs, lighting, wider sidewalks, crossing enhancements, and bus stop improvements.

The Precise Plan also includes plans for new crossings that eliminate gaps in crosswalks over 2,000 feet. There are currently three blocks with over 2,000 feet without signalized crossings, one of which is from Shoreline Boulevard to El Monte Avenue, which runs parallel to our study area.

PEDESTRIAN MASTER PLAN

In January 2013 the City of Mountain View adopted the City's first Pedestrian Master Plan (PMP).[5] The PMP is a city-wide policy document that expands upon the 2030 General Plan mobility goals to provide specific tools and implementation strategies to achieve these goals and address the pedestrian-related needs of the community. In particular the PMP focuses on programs and infrastructure improvements that will help the City achieve its mobility goals identified in the 2030 General Plan.

According to the Pedestrian Master Plan, the City of Mountain View has about 140 miles of streets, with approximately 135 miles equipped with pedestrian sidewalks. The 5-mile gap in sidewalks includes land south of El Camino Real and west of San Antonio Road that was previously owned by Santa Clara County as well as areas alongside the Caltrain tracks, Central Expressway, US-101, and parts of El Camino Real. Within the study area, these gaps can be seen in relation to the poor quality pedestrian connections at the interchange of Shoreline and Central Expressway, as well as the connection between Escuela Avenue and areas to the north including Crisanto Avenue and areas north of the Caltrain and Central Expressway. These gaps in the pedestrian network impede pedestrian flow by presenting uncomfortable walking conditions, requiring circuitous routing, and adding significant distance and time to walking trips.

Separated facilities for shared pedestrian/bike access include Stevens Creek Trail, Hetch Hetchy Trail, and the Permanente Creek Trail. Recommendations identified in the PMP that apply to the study area include the following:

- Streetscape and pedestrian environment enhancements along Shoreline Boulevard and California Street, such as public greenways for pedestrians, grade separation improvements to reduce conflicts between modes, smaller blocks, pedestrian-scale lighting, ADA accessibility, and sustainable streetscaping
- Assessment and potential implementation of lane reduction on California Street
- Intersection improvements aimed at improving pedestrian conditions at:
  - S. Shoreline Boulevard and Villa Street
  - S. Shoreline Boulevard and California Street
  - California Street and Escuela Avenue

4 City of Mountain View, "Draft El Camino Real Precise Plan," 2014, http://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=13877

5 City of Mountain View, "Pedestrian Master Plan," 2013, http://www.ci.mtnview.ca.us/civicax/filebank/blobdload.aspx?blobid=10728

BICYCLE PLANS

BICYCLE TRANSPORTATION PLAN, 2008

In May 2008 the City of Mountain View completed the Bicycle Transportation Plan.[6] The Plan aims to make it easier and safer for people to travel by bicycle in Mountain View, by identifying existing bikeways and facilities as well as planned improvements to the City's bicycle infrastructure.

The Plan identifies key facilities within the City's bicycle network including:

- designated Class II bike lanes on California Street
- designated Class II bike lanes on Shoreline Boulevard
- recommended bike lanes on Escuela Avenue between California Street and El Camino Real, connecting to recommended bike lanes on El Monte Road south of El Camino Real

The Plan notes that all three of the above are high-speed corridors with limited space for cyclists, and a high volume of turning movements that cross into the bicycle lanes.

BICYCLE TRANSPORTATION PLAN, 2016

The City is currently updating its Bicycle Transportation Plan and a public draft plan was presented to City Council on July 7, 2015. The update was adopted in November 2015. Public input on the California / Escuela / Shoreline Complete Streets Study was provided for the Bicycle Transportation Plan and aspects of the draft plan are also reflected in this study.

The Draft Bicycle Transportation Plan Update identified issues in the existing bicycle network relative to the previous (2008) Plan. These gaps in quality and connections include the following:

- Missing Class III bike boulevard connection along Latham Street
- Quality gap in Class II bike lanes along California Street
- Quality gap in Class II bike lanes along Showers Drive
- Quality gap in Class II bike lanes along Rengstorff Avenue
- Quality gap in Class II bike lanes along Shoreline Boulevard.

To address bicycle transportation needs, the draft Plan recommends proposed improvements at the locations listed in Figure 7 and illustrated in Figure 8.

The Updated Plan also provides policy guidance on priority locations for installation of buffered Class II or protected Class IV bike lanes. This guidance is as follows:

"As the City plans new or improved bike facilities on, or major improvements to, city streets with vehicle speeds at or above 30 miles per hour the City should give priority consideration to the installation of Class IV protected or separated bike lanes. The City traffic engineer should be responsible for determining the applicability, design and implementation of either Class IV bikeways or Class II buffered bike lanes."

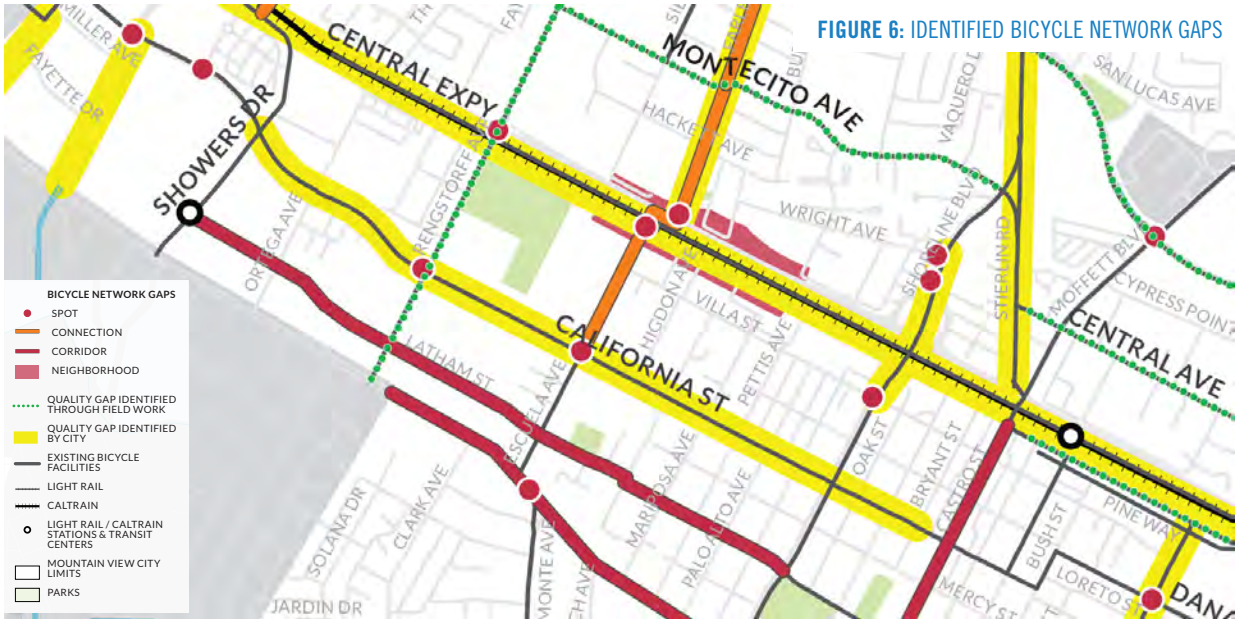


FIGURE 6: IDENTIFIED BICYCLE NETWORK GAPS

6 City of Mountain View, Bicycle Transportation Plan, 2008, http://www.mountainview.gov/civicax/filebank/blobdload.aspx?blobid=4639

FIGURE 7: BICYCLE TRANSPORTATION PLAN PROPOSED IMPROVEMENTS THAT FALL WITHIN OR ADJACENT TO THE STUDY AREA

NO.	LOCATION	PROPOSED IMPROVEMENT
N-2	Shoreline Boulevard between Villa Street and Wright Avenue	Class I multiuse trail
N-3	Permanente Creek Trail between Crisanto/Escuela Avenue and Los Altos border	Class I multiuse trail
N-7	Montecito Avenue between Shoreline Boulevard and Rengstorff	Class III bike boulevard
N-8	Rengstorff Avenue between El Camino Real and Amphitheatre Parkway	Class IV cycle track
N-12	Permanente Creek Trail between Rock Street and Crisanto/Escuela Avenue	Class I multiuse trail
N-23, 24	Latham Street between Showers Drive and Shoreline Boulevard	Class III bike boulevard
N-28, 84	Stierlin Road between Central Expressway and Shoreline Boulevard	Buffered bike lanes
N-46	Villa Street between Escuela Avenue and Shoreline Boulevard	Class III bike boulevard
N-49	California Street between San Antonio Road and Ortega Avenue	Class IV cycle tracks
N-50	Showers Drive between El Camino Real and California Street	Class IV cycle track
N-52	Shoreline Boulevard between Stierlin/Montecito and Amphitheater	Class IV cycle track
N-56	Caltrain ROW between Palo Alto and Sunnyvale borders	Class I multiuse trail
N-58	Ortega Avenue between Latham Street and California Street	Class III bicycle route
N-59	Shoreline Boulevard between Stierlin Road and Terra Bella	Class IV cycle track
S-10	Shoreline Boulevard and Villa Street	Bike marking
S-49	El Camino Real and Escuela Ave / El Monte Ave	Crossing and turning changes, bike marking
S-54	Shoreline Boulevard and Stierlin Road/Montecito Avenue	Protected intersection

SHORELINE BOULEVARD STUDIES

SHORELINE TRANSPORTATION STUDY, 2013

In 2013, the City of Mountain View completed the Shoreline Transportation Study to further a number of goals outlined in the City's General Plan including changes in the North Bayshore area.[7] The study area for this effort was North Bayshore (north of US-101). The study included an extensive existing conditions analysis of the transportation network and examined travel by all modes in the context of significant new development planned for the North Bayshore area. Guided by future mode share goals adopted as part of the General Plan, a series of transportation strategies were identified across all modes and travel markets.

To improve access in the Shoreline Boulevard corridor, the study proposed various multimodal improvements along Shoreline Boulevard including a cycle track, substantial expansion and consolidation of the shuttle system connecting transit stations to the North Bayshore, and establishment of a Transportation Management Association to help increase the use of commute alternatives.

7 City of Mountain View, "Shoreline Transportation Study-Final Report," 2013

SHORELINE BOULEVARD CORRIDOR STUDY, 2014

In 2014, the City engaged with Nelson\Nygaard on a further study of the Shoreline Boulevard Corridor, with a focus on multimodal mobility improvements between the Mountain View Transit Center and North Bayshore. This study proposed various multimodal transportation improvements that are designed to dramatically increase the proportion of non-SOV trips to and from the North Bayshore area.

In particular, the study developed conceptual designs for protected bicycle lanes along Shoreline Boulevard north of Montecito Avenue, in conjunction with protected intersection treatments at locations that include Shoreline Boulevard/Montecito Avenue. At this location, new Class II bicycle lanes on Stierlin Road are also proposed along with intersection realignment as shown in the section view images below in Figure 9, Figure 10, and Figure 11.

FIGURE 8: RECOMMENDED BIKEWAY IMPROVEMENTS IN THE VICINITY OF THE STUDY AREA

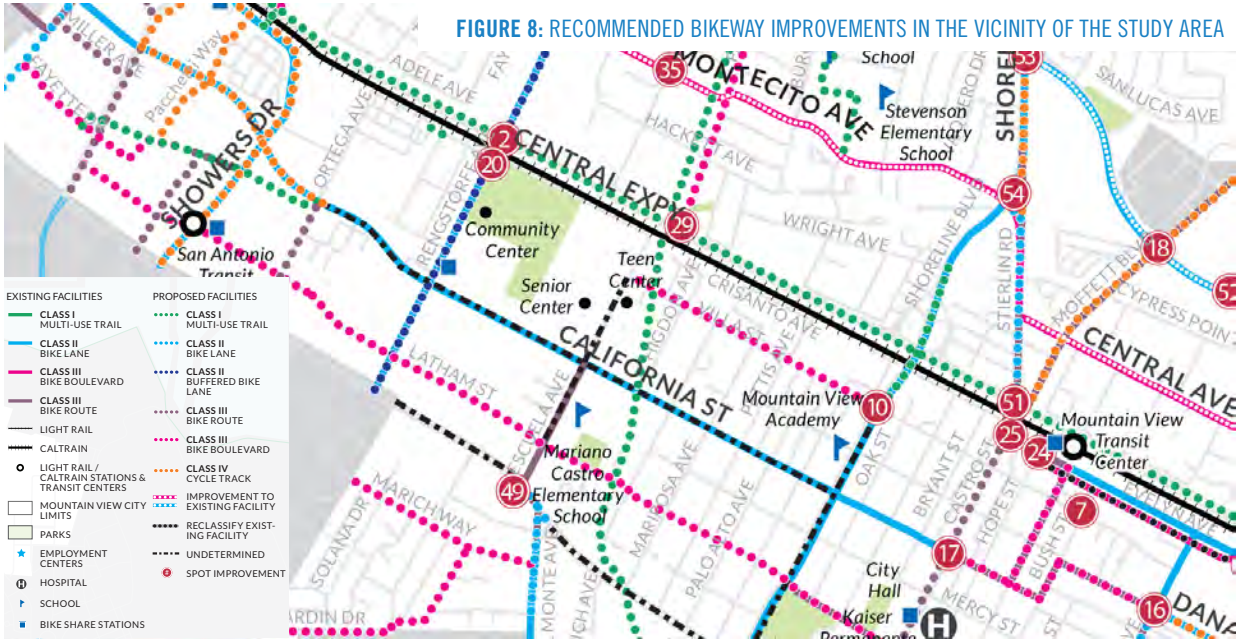
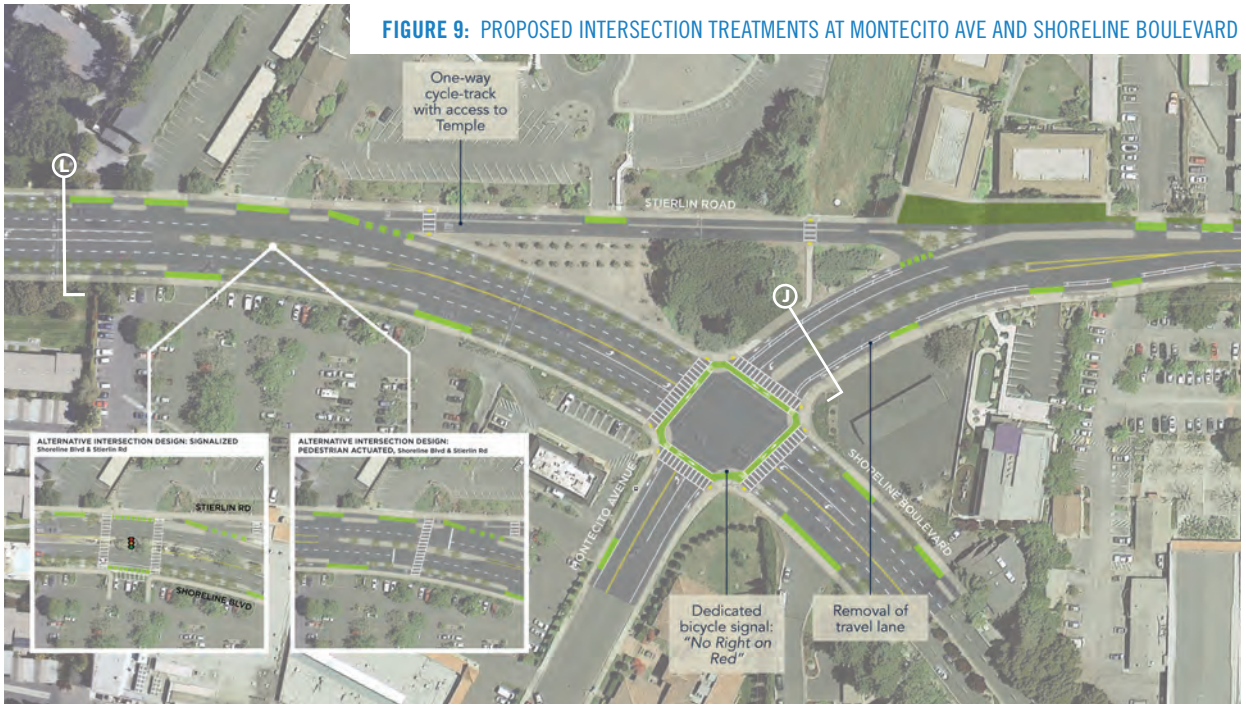
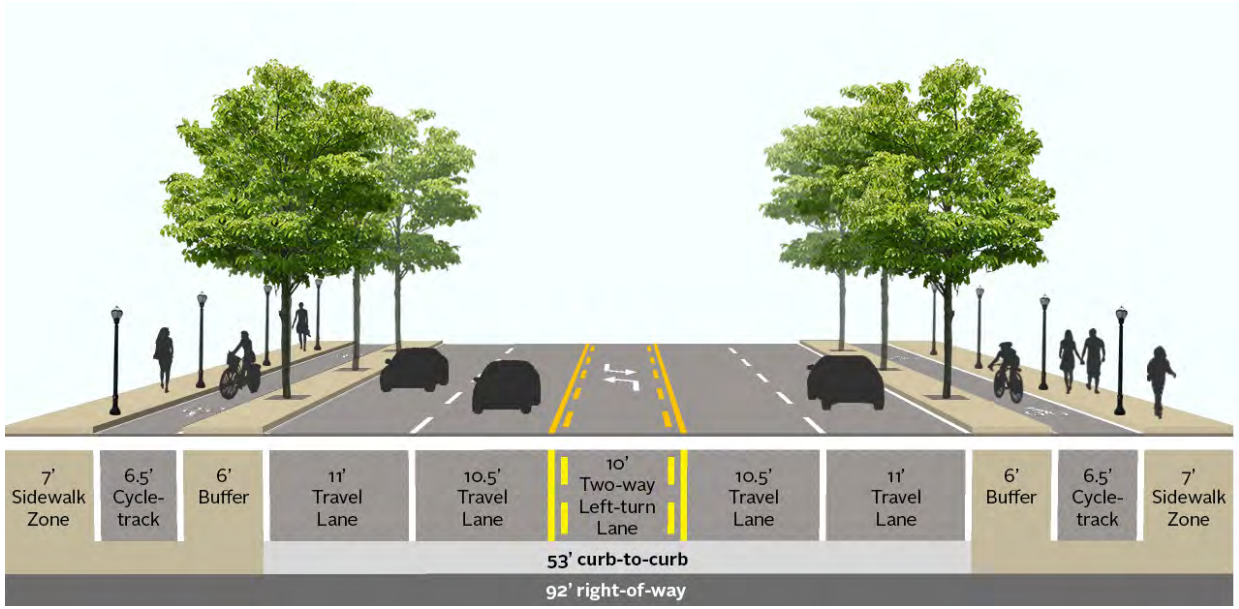


FIGURE 9: PROPOSED INTERSECTION TREATMENTS AT MONTECITO AVE AND SHORELINE BOULEVARD



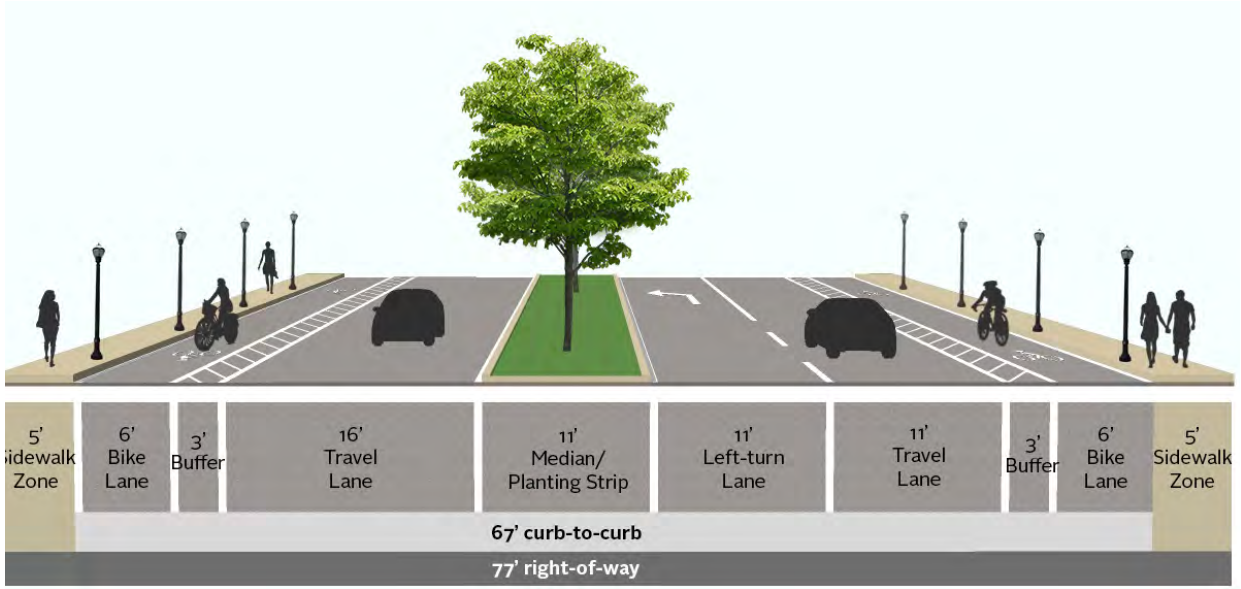
Source: City of Mountain View, "Shoreline Boulevard Corridor Study," 2014

FIGURE 10: PROPOSED STREET CROSS SECTION ON SHORELINE BOULEVARD NORTH OF MONTECITY AVE (L-L)



Source: City of Mountain View, "Shoreline Boulevard Corridor Study," 2014

FIGURE 11: PROPOSED STREET CROSS SECTION ON STIERLIN ROAD JUST SOUTH OF SHORELINE (J-J)



Source: City of Mountain View, "Shoreline Boulevard Corridor Study," 2014

In addition to bicycle improvements, new transit service is also proposed along Shoreline Boulevard including a full-day clockwise service that travels along Shoreline Boulevard between Central Expressway and Middlefield in a northbound direction, and a trunk line service along Shoreline that connects the Mountain View Transit Center with a proposed future BRT station on El Camino Real. A route map of this proposed service is provided in Figure 12 below.

This study will be coordinated with the results of the Shoreline Boulevard Corridor study to ensure that there are seamless multimodal connections between the two study areas, particularly at the intersection of Shoreline Boulevard and Montecito Avenue.

VTA EL CAMINO REAL BUS RAPID TRANSIT

Santa Clara Valley Transportation Authority (VTA) is in the process of completing an Environmental Impact Report (EIR) for the El Camino Bus Rapid Transit[8] to provide faster and more reliable transit service along El Camino Real between San Jose and Palo Alto. The plan has been recognized by the Grand Boulevard Initiative as consistent with its goals of place making and revitalization of El Camino Real. According to the VTA, proposed BRT stops would be located along El Camino Real at Showers Drive and Castro Street. A possible stop may also be placed at El Camino Real and Escuela Avenue.

According to the Draft EIR, the VTA is considering seven alternatives for of the BRT project which range from "rapid bus" service in mixed traffic flow lanes to full BRT along dedicated bus lanes. Depending on the alternative selected, there may be some spillover traffic to routes that are parallel to El Camino Real such as California Street. The potential for these types of impacts suggest the need to consider the role of adjacent streets, such as California Street, in terms of accommodating traffic spillovers or encouraging mode shift.

8 Santa Clara Valley Transportation Authority, "Draft EIR/EA: El Camino Real Bus Rapid Transit Project, 2014, http://www.vta.org/sfc/servlet.shepherd/document/download/069A0000001fFdAIAU

FIGURE 12: PROPOSED TRANSIT NETWORK

Source: City of Mountain View, "Shoreline Boulevard Corridor Study," 2014

CALTRAIN ELECTRIFICATION

As a component of Caltrain Modernization[9], the electrification of the Caltrain corridor would be implemented from San Francisco's 4th and King Station to Tamien Station in San Jose. The electrification would allow for increased service—up to six trains per peak hour, per direction, by 2019. The enhancement would improve system performance, long-term environmental impacts related to noise, air quality, and GHG emissions, and accommodate California High Speed Rail. The electrification program is likely to result in increased transit trips from Caltrain stations including those that are not express or baby bullet stops, such as San Antonio. This will likely result in increased "first mile / last mile" activity at both ends of the study area, with Showers Drive designated as a primary transit access route for San Antonio station, and Shoreline Boulevard as a potential route to and from Mountain View station.

VEHICLE EMISSIONS REDUCTION BASED AT SCHOOLS (VERBS)

The City of Mountain View is engaged with 13 local schools for its school-based vehicle emissions reduction program. In 2011, the city was awarded a $500,000 Vehicle Emissions Reduction Based at Schools (VERBS) grant to promote safe walking and bicycling to schools.[10] At the end of the 2011 calendar year, the city began tracking school enrollment and number of students educated in Safe Routes to School program goals. In the months that followed that school year, some schools conducted baseline surveys on the number of students walking and bicycling walking or bicycling to school. By January 2014, with program education implementation occurring, all participating schools reported increases in students walking and bicycling, with the exception of Mountain View Academy and St. Francis School, which did not survey their student population. At Castro Elementary, a majority of students are now using alternative modes of transportation to travel to school. Figure 13 outlines the school commute data for 2011-2012 and 2013-2014 school years.

FIGURE 13: COMMUTE MODE SPLIT FOR SCHOOLS WITHIN THE STUDY AREA, 2011 - 2014

School Name	2011-2012		2012-2013		2013-2014	
	% Walking	% Bicycling	% Walking	% Bicycling	% Walking	% Bicycling
Castro Elementary School	23%	2%	57%	6%	54%	5%
Mountain View Academy*	N/A	N/A	1%	3%	N/A	N/A

Notes: *0% of students have been educated in SR2S

As can be seen above, walking and bicycling to Castro Elementary School on Escuela Avenue has increased dramatically from 25% to 59% within the past two years. This increased demand for walking and bicycle access suggests the need for special attention to non-motorized access that are tailored to young children in the vicinity of Castro Elementary School.

So far, the VERBS program has focused on the education component only and has experienced dramatic increases in the number of students using alternative modes of transportation to travel to school. As outlined in the section on pedestrian safety, the program will need to be combined with design changes to make walking and bicycling safer because higher rates of walking and bicycling result in higher rates of exposure to traffic.

Within the California/Escuela/Shoreline study area, a concentration of pedestrian-vehicle collisions in close proximity to Castro Elementary School may suggest both high demand for walking within this area and difficult crossing conditions for pedestrians. Conditions in the vicinity of Mountain View Academy (on South Shoreline Boulevard) should also be considered in relation to the needs of young pedestrians and cyclists in order to complement future VERBS efforts to encourage lower emissions commuting options.

9

10 City of Mountain View, "Suggested Routes to School (VERBS)," 2014, http://www.mountainview.gov/depts/pw/transport/gettingaround/suggested_routes_to_schools_(verbs).asp

03

COMMUNITY OUTREACH AND INPUT

The California/Escuela/Shoreline Complete Streets Feasibility Study was initiated in response to community concerns in the area. The study process involved a considerable community engagement process which is described below:

COMMUNITY OUTREACH

The outreach effort for the California / Escuela / Shoreline Complete Streets Feasibility Study was designed to engage a representative number of residents who live and/or access services in the study area in a meaningful way. This effort included targeted outreach to Hispanic/non-English speakers, seniors and youth. It also included multiple channels of traditional efforts, such as mail, email blasts, and workshops, as well as grass roots engagement activities including on-site interviews and walking/biking tours of the area. The project team worked collaboratively with the City's Public Information team to ensure that the City's social media, website and other outreach efforts were used to promote this multi-pronged process. The various elements of community outreach are described in the following sections.

POSTCARDS

Using graphics developed by the Consultant, the City sent two postcards to residents and businesses in the study area in order to inform them about the study and encourage their attendance at the walking/biking tour and the community workshop. Both postcards were bilingual with text in English and Spanish. They also included Chinese and Russian text offering to make meeting materials available in those languages upon request.

The first mailing was sent to 8,435 addresses to promote the walking/biking tour held on September 27, 2014. An example is below in Figure 14.

A second similar mailing to 8,275 addresses was sent to promote the Community Workshop held on October 30, 2014. The mailing list was based on the City's updated list of residents.

WALKING/BIKING TOUR

As a public kickoff and outreach activity, a walking/biking tour was conducted on September 27, 2014. In this event, three groups walked or biked to identify issues and concerns within the study area.

FIGURE 14: POSTCARD FOR THE WALKING/BIKING TOUR

Participants were asked to identify conditions, issues and concerns that should be considered as part of the planning effort. In particular, these issues related to the following topics and questions:

- Connectivity: Human scale? Short blocks?
- Continuity and Clarity: No gaps? Well maintained? Clearly marked?
- Multimodal Conditions: Good access to buses and Caltrain? Bus signal priority?
- Crossings: Easy to cross? Signals for pedestrians?
- Safety: Feel safe? Slow, buffered traffic? Pedestrians visible?
- Accessibility: Designed for all? Accessible crossings?
- Aesthetics and Landscaping: Appropriate amenities? Good landscaping?
- Environment: Drainage issues? Utilities?

The study area was broken into six distinct segments, each with its own challenges and opportunities for improvement. The segments included:

- Shoreline Boulevard from Montecito Avenue to Villa Street
- Shoreline Boulevard from Villa Street to El Camino Real
- California Street from Bryant Street to Mariposa Avenue
- California Street from Mariposa Avenue to Rengstorff Avenue
- California Street from Rengstorff Avenue to Showers Drive
- Escuela Avenue from Crisanto Avenue to Latham Street

Participants were able to share their concerns, ideas and comments using printed materials or by accessing an online version of the survey using smart phones. All materials were produced in English and Spanish and bilingual facilitation were also provided.

FIGURE 15: WALKING/BIKING TOUR PARTICIPANTS

FIGURE 16: PARTICIPANTS PROVIDING FEEDBACK

In total, approximately 50 people participated in the walking/biking tour. Attendees included families with children, bicycle enthusiasts, City Council members, City staff, and local residents. In addition to tour participants, several local residents who noticed the participants also provided information on conditions and issues in their immediate area.

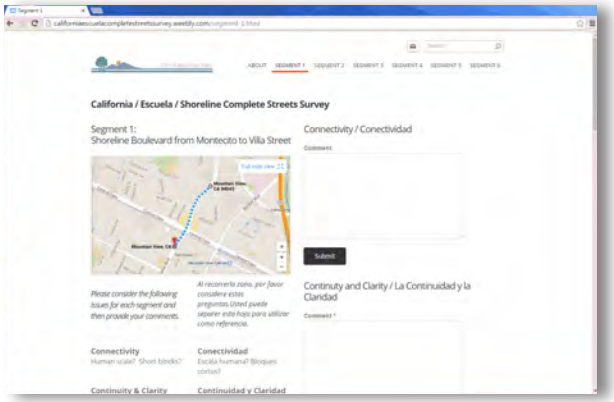
Following the walking and biking tours, participants gathered at the Mountain View Senior Center to share what they experienced with the whole group. This highly interactive and engaging workshop generated excellent feedback on conditions, key issues and community concerns, as well as a number of innovative ideas on potential street design changes. Input from the workshop was compared to the survey input to ensure that all issues were represented in the input summary. In addition, the input was also used to obtain a more location-specific understanding of the key issues (as presented in the sections on Pedestrian Transportation Conditions and Bicycle Transportation Conditions).

COMPLETE STREETS ONLINE SURVEY

In addition to the walking/biking tour, the project team created an online version of the walking/biking tour survey to provide more opportunities for the public to share their issues and concerns (see Figure 17). The bilingual site for the Complete Streets Online Survey was launched on September 27, 2014 and remained open until October 31, 2014. Links were posted on the City's project website, promoted via the City's social media channels and were also sent via eBlasts to the project email list.

During that time, the site had more than 500 unique visits and generated a total of 464 individual comments at the segment level. These comments are included in Appendix A of this report and key input is presented in subsequent sections on Pedestrian Transportation Conditions and Bicycle Transportation Conditions.

FIGURE 17: COMPLETE STREET ONLINE SURVEY



MINI-WORKSHOPS AND COMMUNITY OUTREACH

Given the diverse communities and transportation needs within the study area, the project team hosted smaller, more intimate presentations in the study area, coupled with targeted outreach to homeowners and residents of apartment complexes.

The bilingual team spent several days and evenings conducting interviews with local residents from October 6, 2014 to October 17, 2014. This included a substantial number of Hispanic community members, parents with school age children, and seniors. Comments and interview summaries were entered into the Complete Streets Online Survey.

The team was able to connect with over 200 people at the following locations:

- Mountain View Senior Center (266 Escuela Avenue)
- Day Worker Center of Mountain View (113 Escuela Avenue)
- Mariano Castro Elementary School (505 Escuela Avenue)
- Regency Apartments (333 Escuela Avenue)
- California Court Garden Homes (1721 California Street)
- Iglesia Ni Cristo (1880 California Street)
- Iglesia de Dios (586 Escuela Avenue)
- Parkview West Condominiums (255 S Rengstorff Avenue)
- El Portal Apartments (2065 California Street)

COMMUNITY WORKSHOP

The City held a second workshop at the Mountain View Senior Center on October 30, 2014.

Attendees were presented with a summary of the issues and concerns ide ntified in the walking/biking tour as well as the online survey. They were also given an opportunity to comment on the values and issues identified in the earlier outreach efforts. The consultant team then conducted a charrette-style workshop to solicit feedback on potential conceptual alternatives that would help to address these issues for each portion of the study area. All materials were made available in English and Spanish and bilingual meeting facilitation was available.

This event was attended by approximately 45-50 people.

FIGURE 18: GRASSROOTS OUTREACH TO LOCAL COMMUNITY MEMBERS

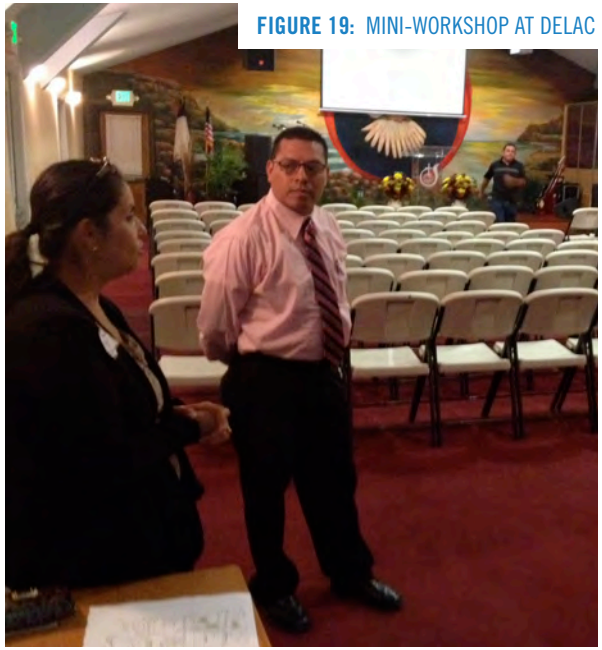


FIGURE 19: MINI-WORKSHOP AT DELAC

FIGURE 20: COMMUNITY WORKSHOP

SOCIAL MEDIA, WEBSITE AND EBLASTS

Meetings, workshops and opportunities for engagement were promoted via the City's website and social media channels including Facebook. Information about the study was cross promoted via multiple Facebook and social media pages including Great Streets, Roundtown, Mountain View Coalition for Sustainable Planning, and Peninsula Transportation. This resulted in several thousand impressions across all channels.

The project team created an eNews distribution list that included representatives from the Community Action Team, local neighborhood associations (Shoreline West Association of Neighbors (SWAN), Rex Manor Neighborhood Association, and Old Mountain View Association), Great Streets Mountain View, bicycle advocates, seniors, local churches and news media. This list was updated throughout the process via online sign-ups and workshop sign-in sheets.

A total of eight eBlasts were created and distributed the list promoting the workshops and online workshop.

MEDIA RELATIONS

The project team submitted two news releases, which were distributed by the City. News coverage included an article on the study that was published in the Peninsula Press, as seen in Figure 21.

BICYCLE AND PEDESTRIAN ADVISORY COMMITTEE (B/PAC)

On August 26, 2015, the project team met with the Mountain View Bicycle and Pedestrian Advisory Committee (B/PAC) to report on planning efforts to date, outline past outreach, and present initial concept alternatives for consideration. The meeting was well attended by the public, and many public comments were received.

FIGURE 21: NEWS ARTICLE FROM THE PENINSULA PRESS


peninsula press

A project of Stanford Journalism

NEWS SPORTS CULTURE DATA HUB SPECIAL REPORTS ON-AIR ABOUT

After pedestrian deaths, Mountain View asks residents to suggest traffic fixes

Tracy Chu, Mountain View resident and member of Great Streets, a group working toward people-friendly Mountain View streets, joins the City's biking-walking community meeting in Mountain View, Calif., on Saturday, Sept. 27, 2014. The City's Public Works Department welcomed the community to give input regarding ways to improve the neighborhood for bikers, pedestrians and drivers as part of the California/Escuela/Shoreline

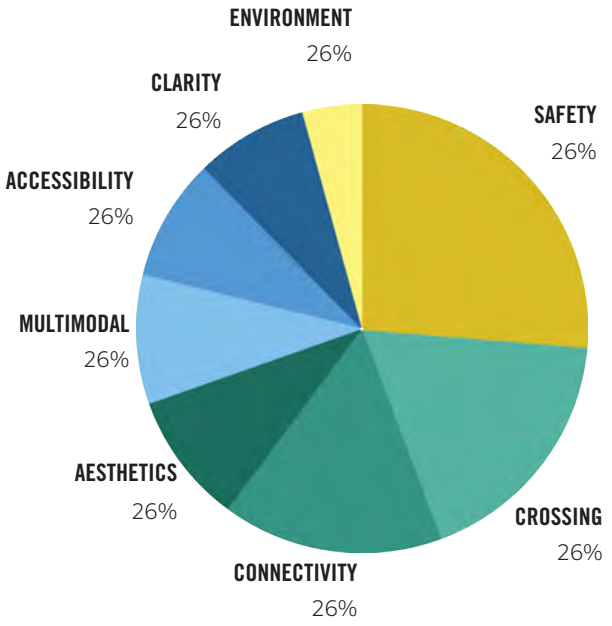
COMMUNITY INPUT

ISSUES IDENTIFIED BY COMMUNITY MEMBERS

In order to better understand community concerns and issues within the study area, more than 500 community comments were distilled into key issues and locations that are presented in the following section.

Key issues identified during the outreach processes and surveys include bicycle and pedestrian safety (representing 26% of all comments), crossings issues (18%), and connectivity (16%). Figure 22 summarizes feedback by topic area.

FIGURE 22: KEY CONCERNS IDENTIFIED IN THE WALKING/BIKING TOUR AND SURVEY



PEDESTRIAN CONCERNS RAISED BY COMMUNITY MEMBERS

Community members raised concerns about difficult crossing conditions at signalized intersections along Shoreline Boulevard and California Street, specifically including Wright-Shoreline and Villa-Shoreline.

Along Shoreline Boulevard, community members perceived that vehicles were traveling faster than the posted speed limit, and they felt threatened by fast vehicles, long crossing distances, and multiple threat conditions at midblock locations. Many community members discussed the Central Expressway crossing including concerns about the circuitous path, steep slopes, debris, and darkness along the pedestrian path across the expressway and under the on-and off-ramps.

Along California Street, community members also expressed concerns regarding widely spaced crossings, a lack of marked crosswalks at intersections, and perceptions of fast traffic speeds in the western end of the street. Several community members mentioned that people occasionally drag race along the road and they expressed concern that the street design in the western portion of California Street may facilitate this sort of behavior. In relation to accessibility, community members mentioned uneven sidewalks along the length of California, as well as narrow sidewalks, and encroachment of tree trunks and vegetation into the sidewalk east of Shoreline Boulevard.

Finally, in relation to Escuela Avenue, community members raised concerns about the quality and visibility of crossings, particularly near Castro Elementary School.

BICYCLE CONCERNS RAISED BY COMMUNITY MEMBERS

Community members expressed concern about the width of bicycle facilities in the context of fast moving motor vehicles and "dooring" risks. Community members also raised concerns about the lack of protection for cyclists through intersections as well as on- and off-ramp merge zones for Central Expressway.

In addition to these issues, community members expressed concern regarding cyclist safety at intersections. They identified several locations that are particularly challenging for cyclists making left turns. These locations include California Street at Pettis and Chiquita Avenues, and Shoreline Boulevard at High School Way, Snow Street, Latham Street, Mercy Street, California Street, Dana Street and Villa Street. Many cyclists did not feel comfortable entering the left turn lane striped for vehicles, and as a result, use the crosswalks for making two-stage left turns with pedestrians.

Community members also highlighted the difficulty faced by bicyclists at intersections with right-in right-out channelization due to motorists not yielding to cyclists in the crossing or bike lane. Community members also indicated that drivers often do not yield for cyclists at slip lanes including those at Shoreline Blvd/Villa and California St/Showers Drive.

SUMMARY OF INPUT ON ISSUES AND CONCERNS

Key issues raised during the walking/biking tour and community survey are summarized below:

- Challenging pedestrian crossing conditions at all intersections within the study area
- Challenging pedestrian crossing conditions at midblock locations on Shoreline Boulevard
- Long crossing distances on Shoreline Boulevard
- Limited midblock crossing opportunities in the western portion of California Street
- Fast motor vehicle traffic on California Street and Shoreline Boulevard
- Challenging and circuitous pedestrian access on Shoreline Boulevard over Central Expressway
- Accessibility and maintenance issues in certain locations along California Street and Shoreline Boulevard
- Limited tree canopy and landscaping in portions of the study area
- Narrow bike lanes that are partially located in door zones and gutters
- Challenging bicycle conditions for ordinary cyclists and children on Shoreline Blvd and California St
- Limited connections between bike facilities in the study area and the wider bike network

- Maintenance issues on bike lanes such as debris, faded paint, and broken pavement
- Challenging left turn conditions for bicycles on all streets
- Challenging bicycle access on Shoreline Boulevard across Central Expressway

Community members also provided a wealth of comments on their values, issues and concerns as they relate to the study area. A full list of comments is provided in Appendix A. A sample of quotes by community members are provided below:

- "I don't ever feel safe walking through this segment of Shoreline. It's like I'm the frog in the game, Frogger, especially at mid-block crossings along Shoreline... My [spouse] and I have been VERY close to being hit at least a dozen times [in the last 3 years], especially when cars in one lane stop closest to you, but the other cars in the other two lanes ignore the stopped cars and just blow right by."
- "The scale of Shoreline Blvd in this segment is designed for cars and peds and bikes are a sad afterthought. This roadway acts as a freeway which physically divides the communities west of Shoreline with the wonderful downtown. The population of the Shoreline West community is large, but many are too scared to cross Shoreline on foot or by bike."
- "I think California between Bryant and Oak is lovely. I think California between Shoreline and Mariposa is nice. The landscaped median in both of these segments does wonders for the aesthetics of this street. Please don't remove the landscaped median!"
- "For the entire length [of California Street], crosswalks are lacking in the east/west directions at intersections, and midblock crosswalks are also lacking, which forces pedestrians to walk for unreasonable distances to get to crossing points (which they do not and will not do). While pedestrians must behave responsibly, nonetheless, the infrastructure must well serve their expected needs."

SUMMARY OF B/PAC DISCUSSION

Input from the B/PAC meeting on August 26, 2015 was highly supportive of the study and measures to improve the multimodal performance of intersections and facilities within the study area. In general, input was supportive of lane reduction along both California Street and Shoreline Boulevard in order to create a welcoming environment for all modes of transportation.

B/PAC members also recommended that early alternatives be refined to function as phasing options for the final build out under Alternative 3. This is reflected in the final design.

B/PAC members and several members of the committee questioned the usefulness of chicanes along Escuela due to concerns regarding motorists drifting into bike lanes and oncoming traffic. In response to this concern, the design has been refined and chicanes are not part of the final design for Escuela Avenue. Community members expressed general support for bike lanes along Escuela Avenue.

The Committee also made suggestions for moving forward with spot improvements at key intersections in early phases of implementation. Key intersections include Shoreline Boulevard and Wright Street as well as Shoreline Boulevard and Villa Street. These priorities are reflected in phasing recommendations.

Members of the public requested further integration with other plans such as the Draft Bicycle Transportation Plan that was released in July 2015. This has been done in the refined designs. For example, a midblock crossing is proposed at the drainage easement for Permanente Creek across California to allow excellent connections to a future trail along this easement.

04

EXISTING CONDITIONS

STREET GEOMETRY

Within the study area, relevant street geometries are described below:

ESCUELA AVENUE

Escuela Avenue is a two-lane, north-south residential collector with parking on both sides of the road in many areas and left turn pockets at California Street. The street is 40 feet wide from curb-to-curb, while the right-of-way from property line to property line is 60 feet, with 5-foot concrete sidewalks and 20-foot lanes in each direction. The street extends from Crisanto Avenue, which is adjacent to the Caltrain railroad and Central Expressway, in the north to El Camino Real in the south. The posted speed limit is 25 mph within the study area.

Within the study area, the Hetch Hetchy right-of-way jogs across Central Expressway to Escuela Avenue at Crisanto Avenue and continues along a path that is currently used as a senior garden. As a major water transmission line, land uses and development of any structures is constrained within this Hetch Hetchy right-of-way.

Escuela Avenue currently has no bicycle lanes.

CALIFORNIA STREET

California Street is a wide east-west residential collector with two travel lanes in each direction between Rengstorff Avenue and Oak Street and one travel lane in each direction between Oak Street and Bryant Street. The right-of-way from property line to property line is measured at 90 feet throughout California Street. Street width from Showers Drive to Escuela Avenue is 68-feet curb-to-curb with 10-foot sidewalks (with 3 feet 2 inches provided for tree wells adjacent to the curb plus 6 feet 4 inches of concrete sidewalk, and a 6 inch curb). Street width from Escuela Avenue to Bryant Street is 70 feet curb-to-curb with 5-foot wide concrete sidewalks. The posted speed limit is 35 mph throughout the study area.

In addition to travel lanes, on-street parking is provided on both sides of the street throughout the study area, with the exception of the blocks between Oak Street and Mountain View Avenue, near intersections with left turn pockets, and at bus stop locations (on the far-side Franklin Street, Shoreline Boulevard, Palo Alto Avenue, Mariposa Avenue, Escuela Street, Rengstorff Avenue, Ortega Avenue and Showers Drive).

Wide landscaped medians with large canopy trees are provided along block faces with only one travel lane in each direction or with no on-street parking (i.e. between Bryant Street and Mountain View Avenue). More narrow landscaped medians continue from Mountain View Avenue west to Mariposa Street. West of Mariposa Street, there is no median and fewer crossing points.

As a designated bike route, California Street has bike lanes which are located between the parking and travel lanes between Bryant Street and Mountain View Avenue. To the west of Mountain View Avenue, bike lanes are either located partially within the gutter zone, or partially within the door zone of the parking lane.

Left turn pockets are provided at the following intersections along California Street: Bryant Street, Franklin Street, Shoreline Boulevard, Escuela Street, Rengstorff Avenue, Ortega Avenue and Showers Drive. Between Ortega Avenue and Showers Drive, a two-way left turn lane is provided along the centerline of California Street.

SHORELINE BOULEVARD

Shoreline Boulevard is a major north-south arterial providing access to the US 101 and the North Bayshore area, a major office-retail center with extensive development plans. Right-of-way along Shoreline Boulevard is measured at 134 feet from El Camino Real to Villa Street, 90 feet from Wright Avenue to Stierlin Road/Montecito Avenue, and varies along the Central Expressway overpass. Street width along Shoreline Boulevard is 114 feet curb-to-curb from El Camino Real to Villa Street - narrowing to 102 feet curb-to-curb at the intersections, 110 feet curb-to-curb from Villa Street to Wright Avenue, and 70 feet curb-to-curb from Wright Avenue to Stierlin Road/Montecito Avenue. 12-foot wide sidewalks are present along Shoreline Boulevard from El Camino Real to Villa Street and from Wright Avenue to Stierlin Road/Montecito Avenue. There are no sidewalks on the west side (southbound) of the Shoreline Boulevard overpass, from Wright Avenue to Villa Street. There is a 10-foot wide asphalt pedestrian pathway on the east side (northbound) of the Shoreline Boulevard overpass that starts from Villa Street, connects to the concrete pathway at the overpass, across the Shoreline Boulevard-Central Expressway on- and off-ramps, then connects to the back to the concrete sidewalk at Wright Avenue. There are two travel lanes in each direction between Wright and Montecito Avenue (and further north toward the North Bayshore area) and three travel lanes in each direction

between Wright Avenue and El Camino Real. The posted speed limit is 35 mph near the study area.

Mixed parking and bike lanes are provided along road segments between Villa Street and El Camino Real with bulbouts which eliminate parking near intersections. Shoreline Boulevard has a landscaped median between Montecito and Wright Avenues, and between Villa Street and El Camino Real. It also has left turn pockets at Montecito Avenue, Wright Avenue, Villa Street, California Street, Church/ Latham Street, and El Camino Real. Shoreline Boulevard has recently installed LED-enhanced multi-lane pedestrian crossings at Dana Street, Mercy Street, and High School Way. These pedestrian crossings flash when they are activated by push buttons.

OTHER STREETS

Other key routes just outside of the study area include Central Expressway, Latham Street, Villa Street and El Camino Real.

Central Expressway is a four-lane, east-west Expressway that extends southeast towards Sunnyvale and Santa Clara and northwest towards Palo Alto. The expressway connects to Alma Street northwest of the San Antonio Road interchange. Within Mountain View, the Central Expressway has a wide, landscaped median, and a posted speed limit is 45 mph. Rudimentary facilities for non-motorized transportation include a newly constructed sidewalk on the north side of Central Expressway and largely unmarked bicycle lanes in the shoulder (with no bicycle treatment through intersections or interchanges). High vehicle speeds, heavy traffic, long blocks, and large turning radii create unappealing conditions and crossing delays for non-motorized transportation.

Latham Street is a two-lane, east-west Residential Collector that extends from Showers Drive in the northwest to Shoreline Boulevard in the southeast. Latham Street's northwestern terminus at Showers Drive provides direct access to the San Antonio Transit Center. Near the study area, Latham Street provides free on-street parking in both directions. The posted speed limit is 25 mph near the study area. As a low-volume, residential street parallel to El Camino Real, Latham has been identified as a potential Class III bicycle route within the City of Mountain View. The street has sidewalks on both sides, but no landscaped buffer between the sidewalk and the relatively wide street right-of-way.

El Camino Real is a six-lane, east-west Boulevard within Mountain View, designated as State Route (SR) 82, that extends southeast towards Sunnyvale. El Camino Real provides access to local and regional commercial areas and access to the study area. Near the study area, El Camino Real has a raised, landscaped median, and unevenly-spaced street trees on both sides of the road. There is on-street parking on both sides of the road, but no accommodation for bicycle transportation. The facility also has relatively narrow sidewalks on both sides of the streets and connects directly to local parallel streets with longer blocks in the western portion of the street segment (between Mariposa and Showers). The posted speed limit is 35 mph near the study area.

PEDESTRIAN TRANSPORTATION CONDITIONS

Within the study area, streetscape conditions can be described as largely automobile-oriented. Pedestrian conditions were surveyed by the Consultant team during an existing conditions audit as well as through subsequent data collection efforts. Key challenges in relation to pedestrian transportation within the study area include difficult crossing conditions, insufficient crossing opportunities, fast traffic (addressed in a later section), ADA-related concerns, and connectivity issues. These issues are illustrated in Figure 23.

Difficult crossing conditions at signalized intersections along Shoreline Boulevard and California Street arise partly as a result of the large size of the intersections. Travel lanes are 12-feet wide, and Shoreline Boulevard has a six travel lanes, in addition to turning pockets at intersections. This street profile results in high speed conditions (even for turning movements), long crossing distances, and the potential for multiple threat collisions at midblock locations. Travel lanes on California Street are also wide for a residential street, and a lack of landscaped median in the area west of Mariposa results in long crossing distances.

Community members identified the intersections of Wright-Shoreline and Villa-Shoreline as particularly problematic. At these locations, complex turning movements, a large number of potential conflict points, and unusual angles (on Wright) reduce the visibility of pedestrians and highlight the risk of collision.[11] In addition, the wide crossing profiles mean

11 See: Hutton, Barry. Planning Sustainable Transportation. Routledge, 2013, p. 120.

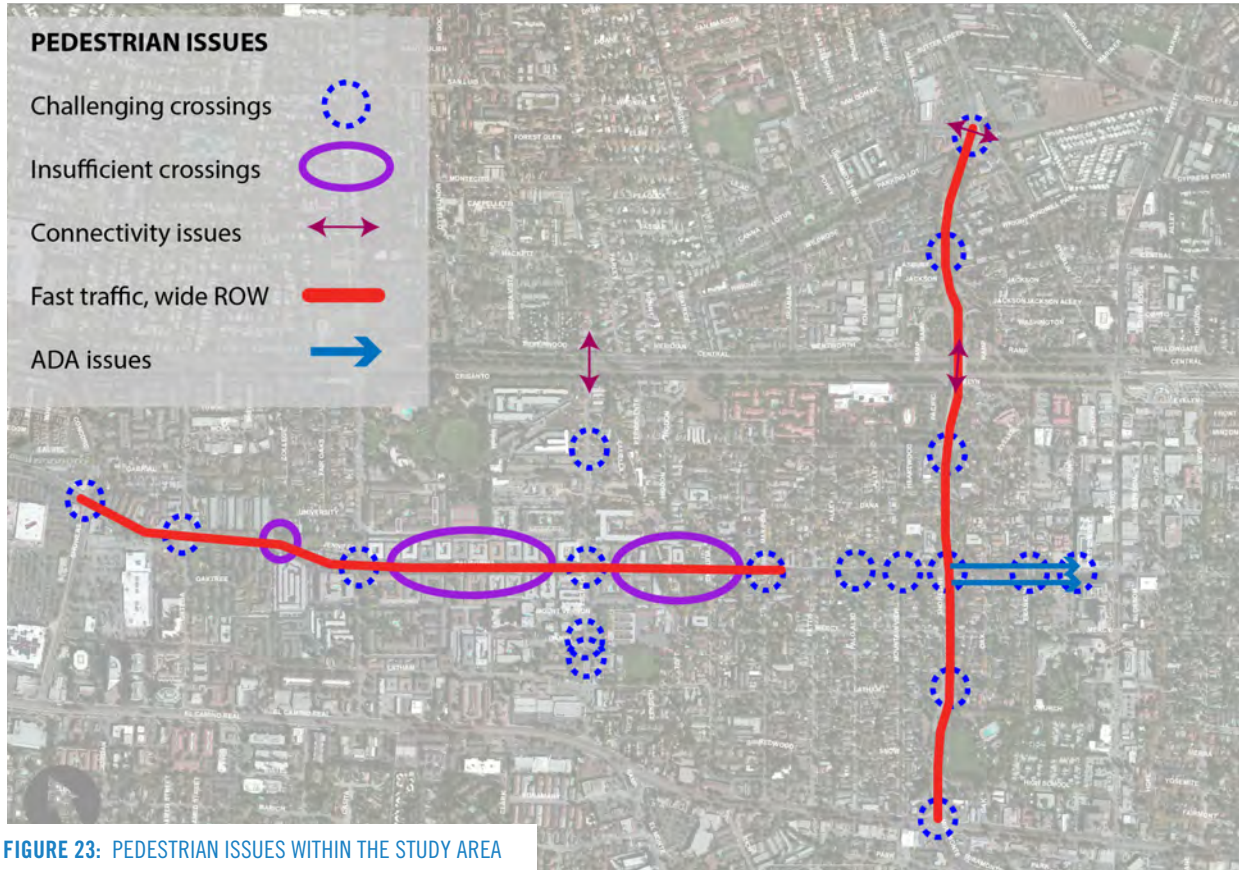


FIGURE 23: PEDESTRIAN ISSUES WITHIN THE STUDY AREA

that turning vehicles are able to move at a relatively high speed through conflict zones with pedestrians. With a right-of-way, the use of unsignalized crosswalks along Shoreline presents risks in terms of multiple threat collisions. In response to this concern, the City installed pedestrian activated beacons and LED signage at these locations.[12]

Along California Street, site observations revealed several intersections with wide crossing distances and no marked crosswalks. These intersections include California Street at Mountain View, Palo Alto, Pettis, and Chiquita Avenues. In the western end of California Street, block lengths of 800 to 1,800 feet create impediments to pedestrian movements because pedestrians are expected to travel long distances to cross the road and there is lower path connectivity (or directness). For example, residents parked on the opposite side of the road would need to walk for up to 10 minutes (0.4 miles) in order to legally cross the road to get to their home. In reality, pedestrians cross the road at various midblock locations, and are exposed to fast moving traffic and a long crossing profile.

On Escuela Avenue, a narrower right-of-way presents easier crossing conditions, however, there are no crosswalks at intersections to the north of the school, and site observations revealed that the crosswalk to the south of the school is not very visible to motorists.

PEDESTRIAN SAFETY

As indicated above, existing conditions present various safety-related challenges for pedestrians within the study area. The pedestrian challenges include high vehicle speeds, infrequent crossings, long crossing distances, and absent or low-visibility crosswalks.

Between 2007 and 2012 there were four fatal pedestrian collisions in the study corridors, and a total of 22 injury collisions involving pedestrians, based on the most recent collision data available in SWITRS[13]. SWITRS collision data on the fatalities is provided below:

The other collisions occurred near many intersections throughout the study area, including California/Showers, California/Ortega, California/Rengstorff, California/Escuela, California/Mariposa, Escuela/Gamel Way, Escuela/Latham, Shoreline/Montecito, Shoreline/Villa, and Shoreline/High School. The geographic diversity of these injury collision locations shows that there is an even distribution of these pedestrian-vehicle crashes throughout the study area. Reporting of crashes involving pedestri-

12 CIP14-53

13 California Highway Patrol, "Statewide Integrated Traffic Records System," 2007-2012

ans is associated with a range of crash contributing factors:[14]

- Pedestrian contributing factors such as running onto the road
- Roadway/environment factors such as visual obstruction
- Driver contributing factors such as failure to yield right-of-way and speed
- Vehicle factors

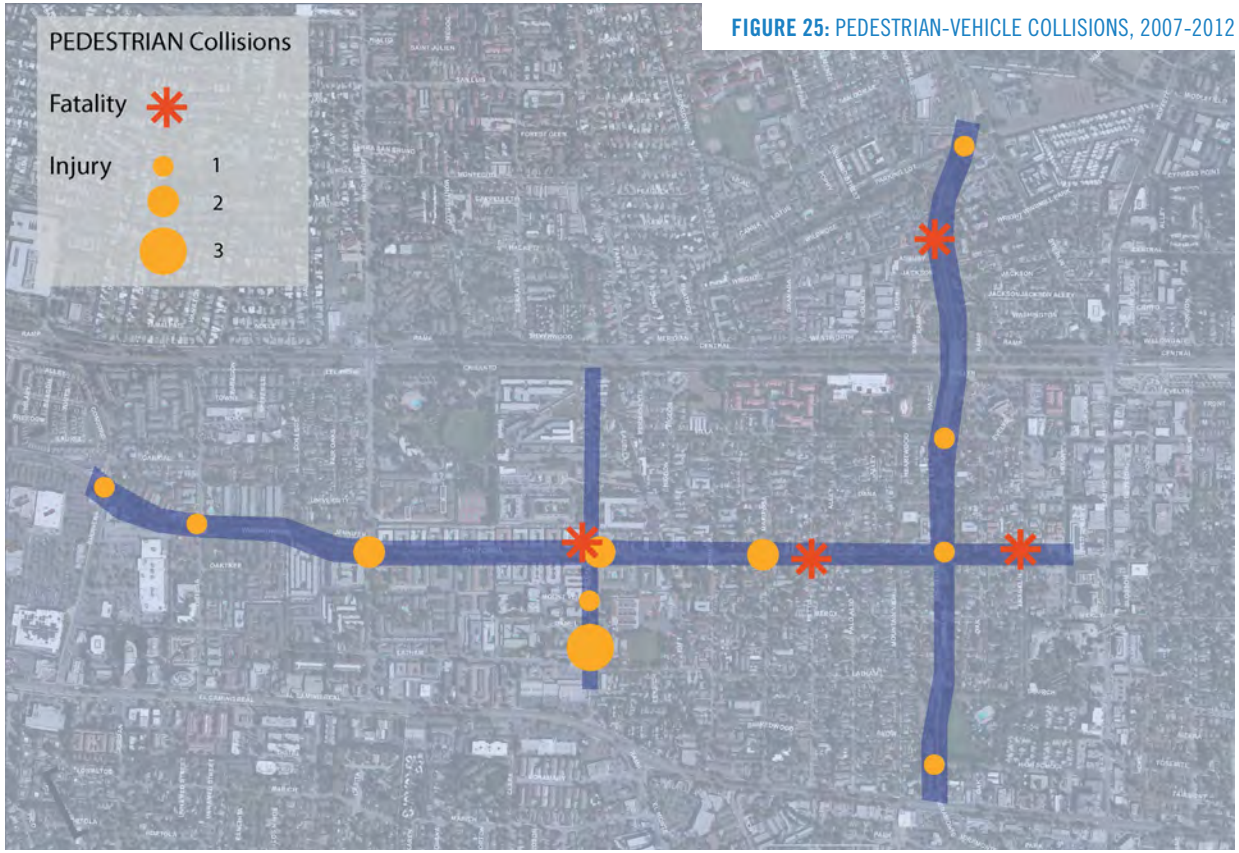
The even distribution of pedestrian-vehicle crashes may therefore indicate that there are there are corridor wide issues that exacerbate these concerns. Clustering of collisions at intersections and school locations may also highlight areas with high pedestrian demand (such as near Castro Elementary School) and therefore higher rates of pedestrian exposure to traffic. Pedestrian-vehicle collisions are shown in Figure 25.

14 Campbell, B.J., Charles V. Zegeer, Herman H. Huang, and Michael J. Cynecki. A Review of Pedestrian Safety Research in the United States and Abroad, Publication No. FHWA-RD-03-042, Federal Highway Administration, McLean, VA, January 2004

FIGURE 24: COLLISION DATA FOR FATAL COLLISIONS INVOLVING PEDESTRIANS, 2007-2012

COLLISION LOCATION	TIME	PRIMARY COLLISION FACTOR
California Street / Pettis Avenue	10:20 am 09/15/2012	Primary collision factor: unknown. Alcohol was a factor
Shoreline Boulevard / Wright Avenue	8:57 pm am 4/09/2012	Unknown. Alcohol not a factor
California Street / Escuela Avenue	9:29 am 6/21/2012	CVC 23104 Reckless Driving with Bodily Injury. Alcohol not a factor
California Street / Franklin Street	7:42 pm 07/16/2010	CVC 21950, violation of pedestrian right of way at crosswalk. Hit and run, felony.

FIGURE 25: PEDESTRIAN-VEHICLE COLLISIONS, 2007-2012



Source: California Highway Patrol, "Statewide Integrated Traffic Records System," 2007-2012

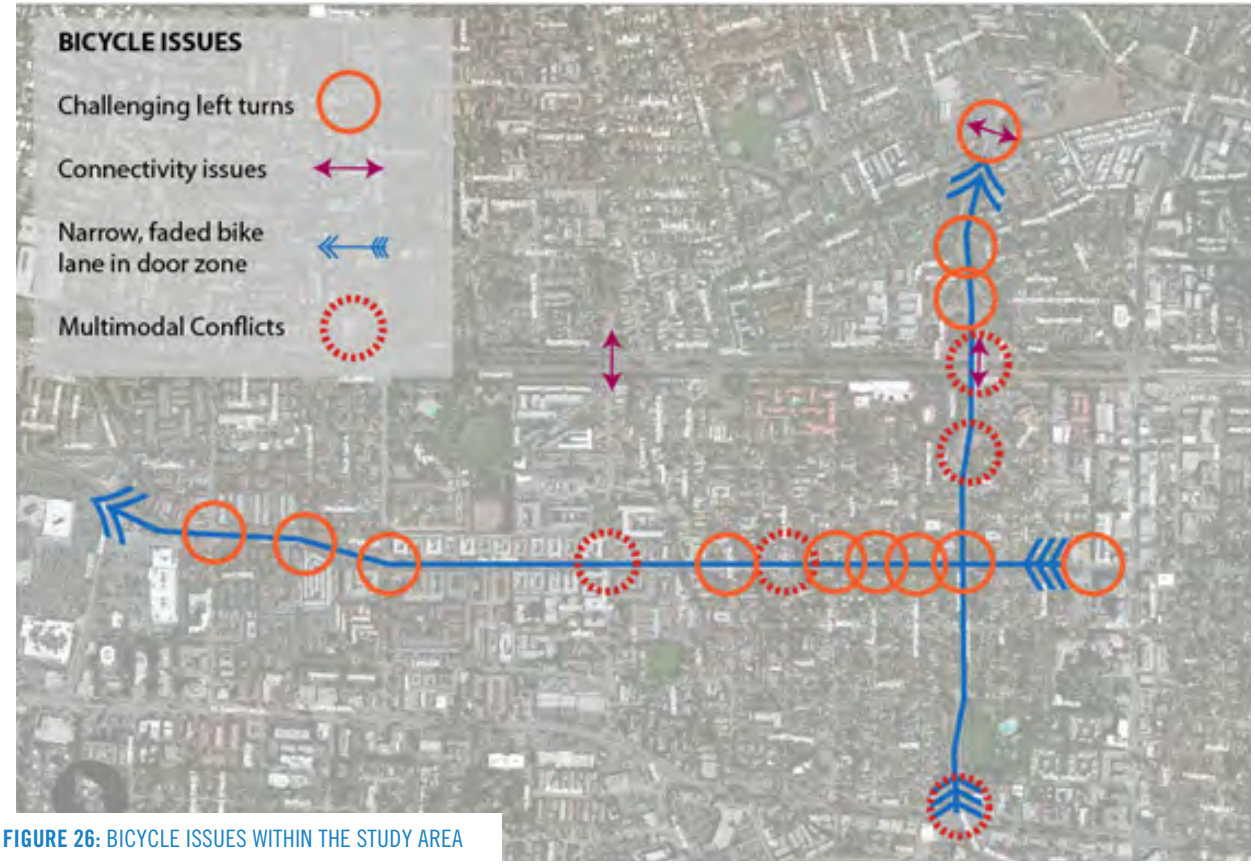


FIGURE 26: BICYCLE ISSUES WITHIN THE STUDY AREA

BICYCLE TRANSPORTATION CONDITIONS

Conditions for cyclists within the study area are varied. Bike lanes have been striped along much of Shoreline Boulevard and California Street, however the bike lane facilities are often narrow and located in the door zone of parked cars. Additionally, there is no specific provision for cyclists through merge zones for expressway on- and off-ramps or through intersections. These issues are illustrated in Figure 26.

Currently, both California Street and Shoreline Boulevard have Class II bike lanes within the study area. In some locations, the bicycle lanes show clear signs of wear, with faded or damaged pavement markings. Bike lane dimensions vary based on the presence of intersections and on-street parking, but are generally five (5) feet wide. Where the bike lane is not adjacent parking, the 5-foot width includes the 18-inch gutter zone. Where the bike lane is adjacent to parking, the lack of a buffer places bicyclists in the door zone (a zone that extends approximately 3′ when a car door is opened). As a result, bicyclists risk traveling uncomfortably close to moving vehicles or being hit by motorists exiting their vehicles. The challenges are exacerbated for inexperienced and young bicyclists who may ride less defensively and may not notice motorists within parked cars.

Left-turn movements were examined throughout the study area. On California Street and Shoreline Boulevard, left turns are made more difficult by wide crossing profiles which require cyclists to cross multiple lanes of moving traffic. At unsignalized intersections on Shoreline Boulevard, the landscaped median prevents cyclist turning movements, and pedestrian median openings are not designed to serve cyclists as a refuge island. At signalized intersections, a lack of protected facilities and the need to merge across travel lanes introduces risks of conflicts and presents conditions that may discourage less experienced cyclists from riding in the expected manner. Given that bicyclists and pedestrians use somatic (human) energy, it is important to be able to make left turn movements as conveniently as possible since requiring more circuitous trips, u-turn movements, and two-stage left turns adds significant effort and time to trips and reduces the likelihood that people will choose to walk or cycle.

At intersections with slip lanes or right-in right-out channelization, motorists often pull forward into the intersection, and block the crosswalks or bike path with their vehicles. The result is that pedestrians and cyclists enter a motorist's blind spot, and are forced to cross behind the vehicle.

Finally, the very large turning radii for on- and off-ramps for Central Expressway facilitate high speed transitions between the ramps and the vehicle lanes on Shoreline Boulevard. At these locations, cyclists are in motorists' blind spots when vehicles exit the expressway and vehicles are able travel at a relatively fast speed through these conflict points.

BICYCLIST SAFETY

Challenging bicycle conditions are reflected in the rates of vehicle-bicycle collisions within the study area. Between 2007 and 2012, there were 47 injury collisions involving cyclists within the study area. Details are provided below.

Bicycle-related collisions were distributed throughout the study area, with a major concentration of bicycle-vehicle collisions at the intersection of Shoreline Boulevard/Villa Street (which had seven bike-vehicle collisions in five years) and additional pockets of collisions on California Street/Ortega Avenue (where a protected left turn lane was recently added for left turning vehicles), and California Street/Rengstorff Avenue. The locations of these collisions may reflect the important role of Shoreline Boulevard, California Street and Escuela Avenue as part of the wider bicycle network. It may also reflect challenging physical conditions including high speed vehicle movements, narrow, unprotected bicycle facilities, and poor accommodation of bicycles through intersections in the study area.

At the intersection of Shoreline Boulevard and Villa Street, challenges include high vehicle speeds, wide road right-of-way, vehicle slip lanes, and an intersection profile that facilitates fast turning movements (both to the right and the left) as well as blind spots for vehicles that are only required to yield, not stop. These conditions suggest the need for potential solutions including the "3Es" of engineering (intersection improvements), education, and enforcement. Bicycle-vehicle collisions are shown in Figure 27.

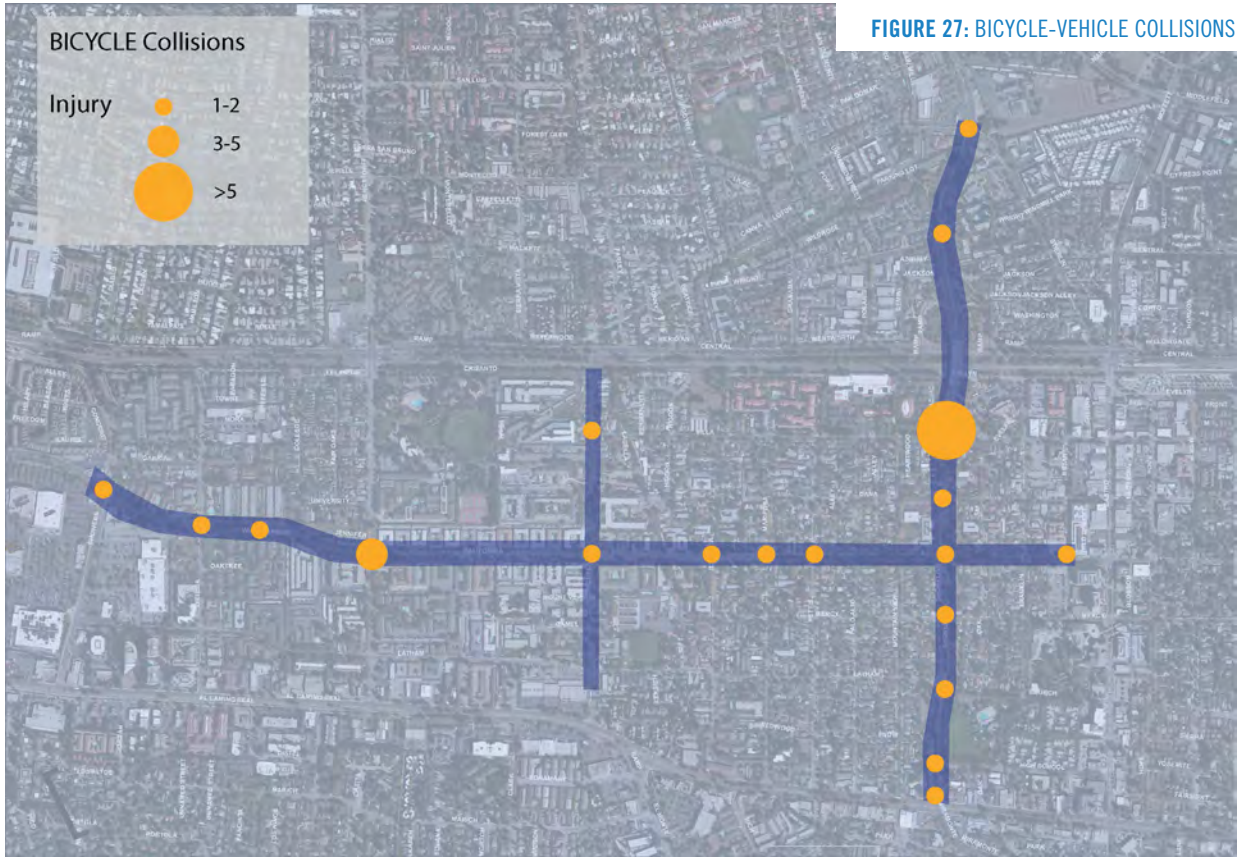


FIGURE 27: BICYCLE-VEHICLE COLLISIONS

Source: California Highway Patrol, "Statewide Integrated Traffic Records System," 2007-2012

TRAFFIC CONDITIONS

TRAFFIC DATA COLLECTION LOCATIONS

Traffic conditions were analyzed for intersections and street segments within the study area. This analysis encompassed twenty (20) intersections, eleven (11) street segments, one (1) left-turn count, and three (3) mid-block crossings, which were selected in consultation with City staff. Traffic conditions were then measured during the morning (7:00 to 10:00 AM) and evening (4:00 to 7:30 PM) peak periods.

The study intersections and segments are as follows:

- Intersections along California Street:
  - California St / Showers Dr (Signalized)
  - California St / Ortega Ave (Signalized)
  - California St /S Rengstorff Ave (Signalized)
  - California St / Escuela Ave (Signalized)
  - California St / Chiquita Ave (Unsignalized)
  - California St / Mariposa Ave (Signalized)
  - California St / Pettis Ave (Unsignalized)
  - California St / Palo Alto Ave (Unsignalized)
  - California St / S. Shoreline Blvd (Signalized)
  - California St / Franklin St (Unsignalized)
  - California St / Bryant St (Signalized)
- Intersections along Escuela Avenue:
  - Escuela Ave / Latham St (Unsignalized)
  - Escuela Ave / Villa St (Unsignalized)
- Intersections along Shoreline Blvd:
  - Shoreline Blvd / Montecito Ave (Signalized)
  - Shoreline Blvd / Wright Ave (Signalized)
  - Shoreline Blvd / Villa St (Signalized)
  - Shoreline Blvd / W. Dana St/ Oak St (Lighted crosswalk)
  - Shoreline Blvd / Latham St (Signalized)
  - Shoreline Blvd / High School Way (Lighted crosswalk)
  - Shoreline Blvd / W El Camino Real (Signalized)
- Street Segments:
  - California St segment between Showers Dr and Ortega Ave
  - California St segment between S Rengstorff Ave and Escuela Ave
  - Escuela Ave segment between Villa St and California St
  - Escuela Ave segment between Gamel Way and Latham St
  - California St segment between Chiquita Ave and Mariposa Ave
  - California St segment between Palo Alto Ave and Shoreline Blvd
  - Shoreline Blvd segment between Wright Ave and Central Expy
  - Shoreline Blvd segment between W Dana St and California St
  - Shoreline Blvd segment between Latham St and California St
  - Shoreline Blvd segment between Latham St and High School Way
  - California St segment between Oak St and Franklin St
- Left-turn Count:
  - Target between Ortega St and Showers Dr on California St
- Mid-Block Crossings:
  - Escuela Ave between Gamel Way and Latham St
  - Shoreline Blvd between W Dana St and California St
  - Shoreline Blvd between High School Way and Church Street

Figure 28 illustrates the location of the study area, study intersections, study segments and average daily traffic (ADT) volumes.

FIGURE 28: TRAFFIC STUDY DATA COLLECTION LOCATIONS

TRAFFIC SPEED

Along California Street and Shoreline Boulevard the posted speed limit is 35 miles per hour (mph), but residents perceive that motorists regularly travel in excess of these speeds.

Nelson\Nygaard with the City of Mountain View verified actual speeds along both corridors through a speed survey. Vehicle counts and speeds were collected for six street segments over a three weekday period in March 2015. This data was then used to calculate the 85 percentile speed, which is a common measure of vehicle speed that eliminates the effects of outliers. Speed survey street segments include the following:

- California Street between Oak Street and Franklin Street
- California Street between Escuela Avenue and Mariposa Avenue
- California Street between Rengstorff Avenue and Escuela Avenue
- California Street between Ortega Avenue and Rengstorff Avenue
- Shoreline Boulevard north of Villa Street
- Shoreline Boulevard south of Wright Avenue

This survey indicated that 85% of motorists are traveling in excess of the posted speed limit at all survey locations except California Street between Oak Street and Franklin Street, where the 85 percentile speed was 33 mph. This location features fewer travel lanes, shorter block lengths, more frequent and high visibility crosswalks, and a landscaped median. At the three speed survey locations in the western end of California Street, the 85 percentile speeds were between 38 mph and 39 mph. On Shoreline Boulevard between Villa Street and Wright Avenue, the 85 percentile speeds were between 39 mph and 42 mph. Figure 30 and Figure 31 provide information on the average daily traffic (ADT) and speeds for 85% of all vehicles (VPP 85) for six locations.

As indicated by the above data, actual speeds in the western end of California were 3 to 4 miles per hour faster than the posted speed limit. On Shoreline Boulevard, actual speeds were 4 to 7 miles faster than the posted speed limit. Given the concerns regarding

FIGURE 29: SHORELINE BOULEVARD AND CALIFORNIA STREET HAVE POSTED SPEED LIMITS OF 35 MPH

FIGURE 30: RESULTS OF 72 HOUR WEEKDAY SPEED SURVEY

LOCATION	EASTBOUND (OR NORTHBOUND)		WESTBOUND (OR SOUTHBOUND)		TOTAL	
	ADT	VPP 85	ADT	VPP 85	ADT	VPP 85
California St between Oak St & Franklin St	4,647	32.7	3,476	32.9	8,123	32.8
California St between Escuela Ave & Mariposa Ave	5,716	38.8	4,981	39.6	10,697	39.2
California St between Rengstorff Ave & Escuela Ave	7,109	38.0	5,687	39.6	12,796	38.7
California St between Ortega Ave & Rengstorff Ave	8,097	38.3	7,039	37.6	15,136	38.0
Shoreline Blvd north of Villa St	14,317	39.1	13,970	38.5	28,287	38.8
Shoreline Blvd south of Wright Ave	13,800	42.1	13,325	40.7	27,125	41.4

pedestrian and bicycle collisions, a difference of a few miles per hour can make a substantial difference in terms of the severity of collisions. This effect is indicated in the following illustration on the percentage chance of survival for pedestrians hit by a vehicle at different speeds.

FIGURE 31: 85 PERCENTILE SPEEDS (VPP85)

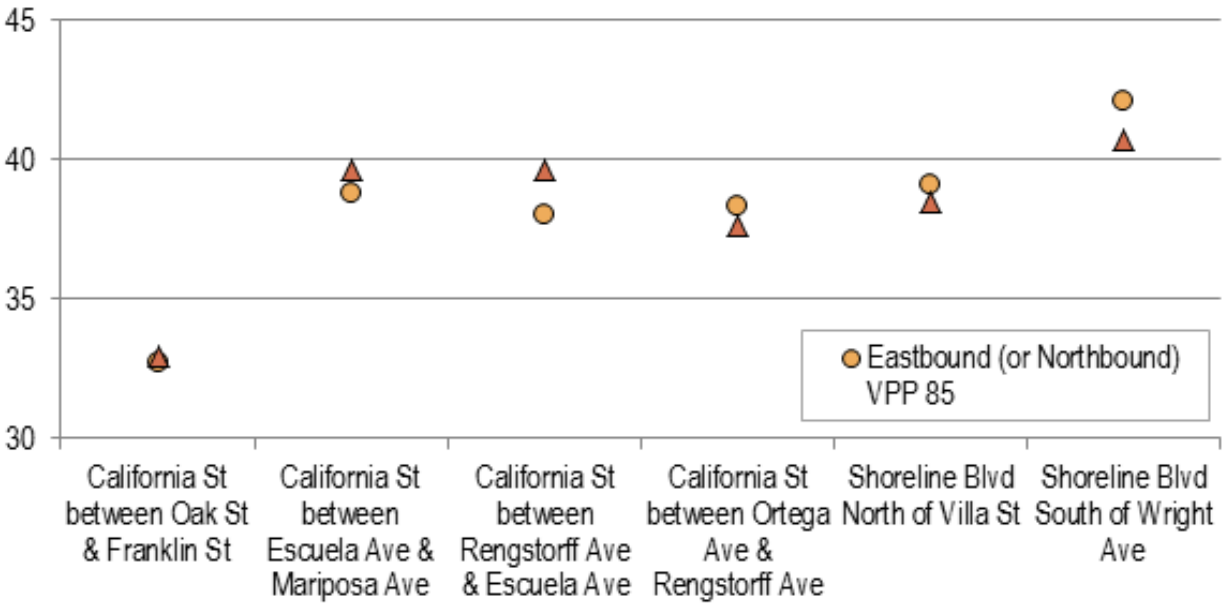
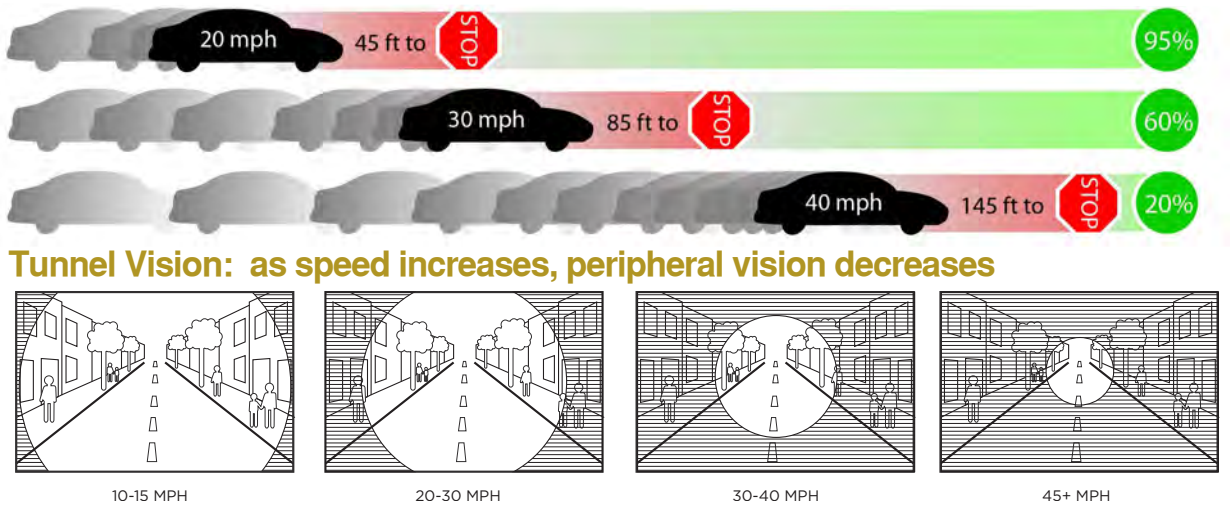


FIGURE 32: CHANCES OF SURVIVAL FOR A PERSON HIT BY A CAR TRAVELING AT DIFFERENT SPEEDS



METHODOLOGY FOR ANALYZING VEHICLE FLOW

The operations of roadway facilities for motor vehicles are described with the term level of service ("LOS", a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver). Six levels are defined from LOS A, which is the best operating conditions with respect to the free flow of motor vehicles, to LOS F, which is the worst operating condition from the perspective of the free flow of motor vehicles. LOS E is generally considered to represent "at-capacity" operations with respect to motorized vehicles. When motor vehicle traffic volumes exceed this designated intersection capacity, stop-and-go conditions result for motorized vehicles, and operations are designated as LOS F.

The LOS method for signalized intersections approved by the City of Mountain View intersection operations based on average control vehicular delay, as described in Chapter 16 of the 2000 Highway Capacity Manual (HCM) by the Transportation Research Board. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections is calculated using Synchro analysis software and is correlated to a LOS designation as shown in the table provided in the next section.

Within the State of California, it should be noted that the notion and importance of traffic level of service (LOS) is currently in flux. Since the 1950s, LOS has been used as the sole measure of traffic impacts including those that were later considered to be environmental impacts under the California Environmental Quality Act (CEQA). By contrast, the recently adopted SB-743 recognizes that traffic LOS needs to be balanced with the need to build infill housing and mixed use developments within walking distance of mass transit facilities, downtowns and town centers.[15] Furthermore, the law negates the use of automobile delay, as described by LOS, as a measure of significant impact on the environment. Instead, it requires the Office of Planning and Research to develop revised guidelines for criteria for determining the significance of transportation impacts of projects within transit priority areas. The new criteria for assessing traffic impacts need to promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. Metrics to replace traffic LOS in these situations could include vehicle miles traveled, vehicle miles traveled per capita, automobile trip generation rates, or automobile trips generated.[16] This means that while traffic LOS may still be considered as a measure of conditions relating to the flow of motorized vehicles, it is no longer a necessary or relevant consideration with regard to state requirements for assessing multimodal transportation performance or the environmental impact of projects. That being said, traffic level of service is still an important part of local traffic assessments, with techniques for assessing traffic impacts specified by the City of Mountain View General Plan and Santa Clara Valley Transportation Authority (VTA), the county's Congestion Management Agency (CMA).

15 SB-743, "Environmental quality: transit oriented infill projects, judicial review streamlining for environmental leadership development projects, and entertainment and sports center in the City of Sacramento," §4 (a) amending Section 65088.4 of the Government Code on Congestion Management

16 SB-743, "Environmental quality: transit oriented infill projects, judicial review streamlining for environmental leadership development projects, and entertainment and sports center in the City of Sacramento," §5 (b)(1) amending Division 13 of the Public Resources Code

SIGNALIZED INTERSECTIONS

The level of service method approved by the VTA and adopted by the City of Mountain View, for signalized intersections is the method described in Chapter 16 of the 2000 Highway Capacity Manual (HCM) (Special Report 209, Transportation Research Board). This method bases signalized intersection operations on the average control vehicular delay.

Control delay includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay. The average control delay for signalized intersections is calculated using Synchro analysis software and is correlated to a LOS designation as shown in Figure 33. City of Mountain View uses a LOS D standard for local street intersections and LOS E standard for Congestion Management Program (CMP) facilities and, for the City of Mountain View, intersections within the Downtown.

UNSIGNALIZED INTERSECTIONS

Operations of the unsignalized study intersections (e.g., stop-sign controlled) were evaluated using the methods contained in Chapter 17 of the 2000 HCM and calculated using the Traffix analysis software. LOS ratings for stop-sign controlled intersections are based on the average control delay expressed in seconds per vehicle. At two-way or side-street-stop controlled intersections, control delay is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, control delay is computed as the average of all movements in that lane. Figure 34 summarizes the relationship between delay and LOS for unsignalized intersections. The City does not have an adopted LOS policy

FIGURE 33: SIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS) DEFINITIONS

LEVEL OF SERVICE	DESCRIPTION	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0
B+	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 12.0
B		12.1 to 18.0
B-		18.1 to 20.0
C+	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear	20.1 to 23.0
C		23.1 to 32.0
C-		32.1 to 35.0
D+	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable	35.1 to 39.0
D		39.1 to 51.0
D-		51.1 to 55.0
E+	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	55.1 to 60.0
E		60.1 to 75.0
E-		75.1 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to oversaturation, poor progression, or very long cycle lengths.	> 80.0

Source: Valley Transportation Authority Congestion Management Program, "Traffic Level of Service Analysis Guidelines," ***Highway Capacity Manual***, June 2003, (Presented at Transportation Research Board, 2000)

FIGURE 34: UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE	DESCRIPTION	AVERAGE CONTROL DELAY PER VEHICLE (SECONDS)
A	Little or no delay.	≤ 10.0
B	Short traffic delays.	10.1 to 15.0
C	Average traffic delays.	15.1 to 25.0
D	Long traffic delays.	25.1 to 35.0
E	Very long traffic delays.	35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded.	> 50.0

Source: Valley Transportation Authority Congestion Management Program, "Traffic Level of Service Analysis Guidelines," ***Highway Capacity Manual***, June 2003, (Presented at Transportation Research Board, 2000)

for unsignalized intersections; however, LOS D is considered to be the minimum acceptable LOS and has been used for traffic studies within the City.

ARTERIAL STREETS

Synchro software was used to evaluate the coordinated and uncoordinated intersections on Shoreline Boulevard, California Street and Escuela Avenue. Detailed signal timings were coded into the Synchro software and the level of service calculations were performed using the 2000 HCM method. The Synchro software program was also used to report average travel speeds for the Shoreline Boulevard, California Street and Escuela Avenue corridors between signalized intersections. The arterial street level of service definitions are shown in Figure 35. An arterial segment is defined in the Highway Capacity Manual as the exit of an intersection to the exit of the next intersection; therefore the calculated LOS accounts not only for through movements, but also left and right turning movements into the study segment.

FIGURE 35: ARTERIAL LEVEL OF SERVICE DEFINITIONS

URBAN STREET CLASS	I	II	III	IV
Range of Free-Flowing Speeds	45 to 55 miles per hour	35 to 45 miles per hour	30 to 35 miles per hour	25 to 35 miles per hour
LEVEL OF SERVICE	**AVERAGE TRAVEL SPEED (MILES PER HOUR)**			
A	> 42	> 35	> 30	> 25
B	34 to 42	28 to 35	24 to 30	19 to 25
C	27 to 34	22 to 28	18 to 24	13 to 19
D	21 to 27	17 to 22	14 to 18	9 to 13
E	16 to 21	13 to 17	10 to 14	7 to 9
F	≤ 16	≤ 13	≤ 10	≤ 7

Source: Valley Transportation Authority Congestion Management Program, "Traffic Level of Service Analysis Guidelines," ***Highway Capacity Manual***, June 2003, (Presented at Transportation Research Board, 2000)

EXISTING INTERSECTION OPERATIONS FOR VEHICLE FLOW

Roadway traffic operations were evaluated during a typical mid-week day at the intersection level during the morning (7:00 to 10:00 AM) and evening (4:00 to 7:30 PM) peak periods at 20 study intersections. The vehicular, pedestrian and bicycle volumes for each intersection were taken from different sources including traffic counts conducted by TJKM consultants during October 2014, VTA BRT El Camino Real EIR, North Bayshore Precise Plan TIA and previous studies performed by TJKM consultants in the study area between the years 2012 and 2014. No data older than three years was used for this analysis. In addition, 24-hour bi-directional counts were also collected to quantify existing travel characteristics in month of October 2014.

Figure 36 and Figure 37 show the vehicular turning movement volumes and pedestrian and bicyclists volumes at each of the study intersections during both peak hours.

FIGURE 36: EXISTING PEAK HOUR TURNING MOVEMENT VOLUMES, LANE GEOMETRY AND CONTROLS

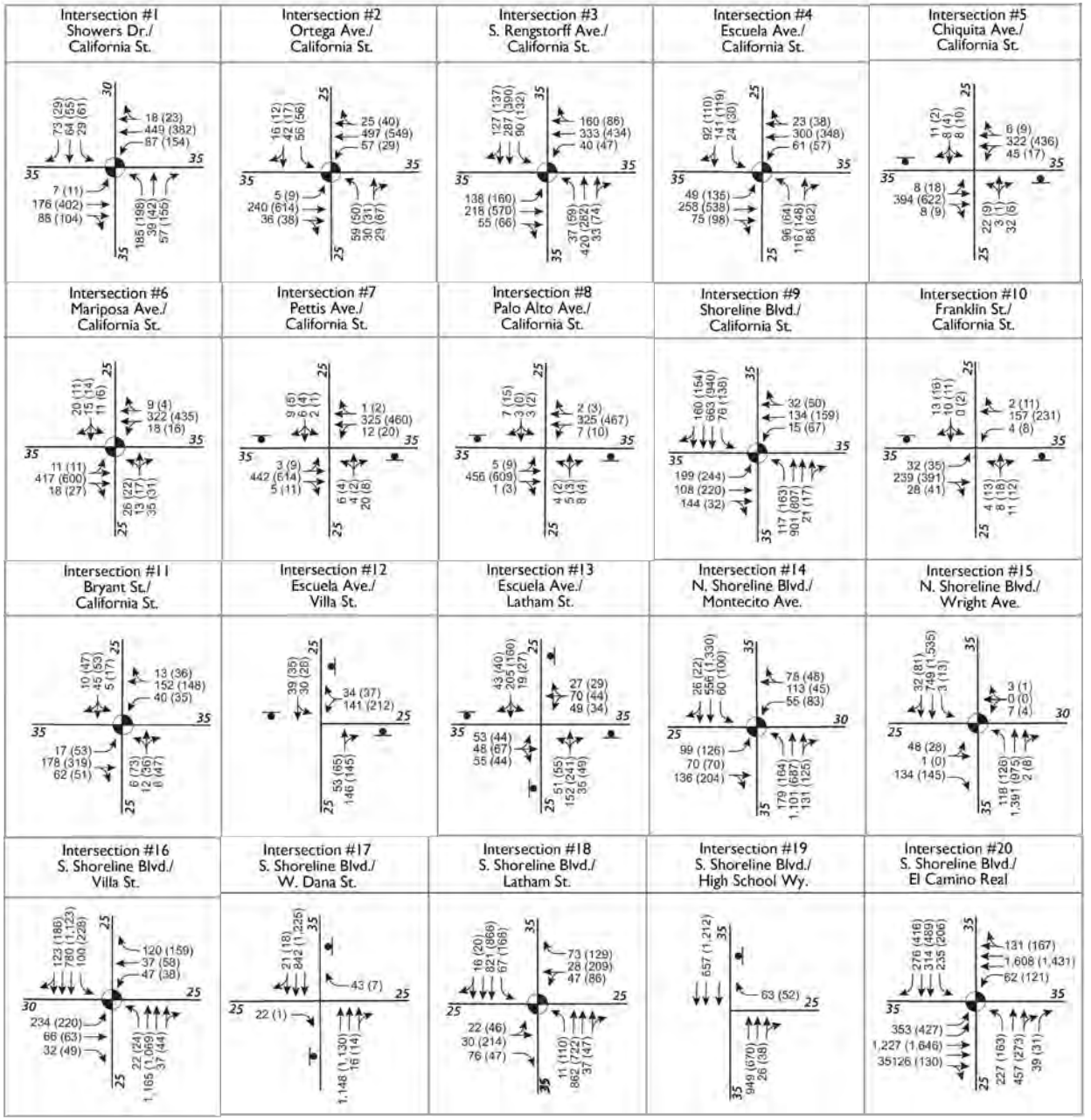


FIGURE 37: EXISTING PEDESTRIAN AND BICYCLE VOLUMES

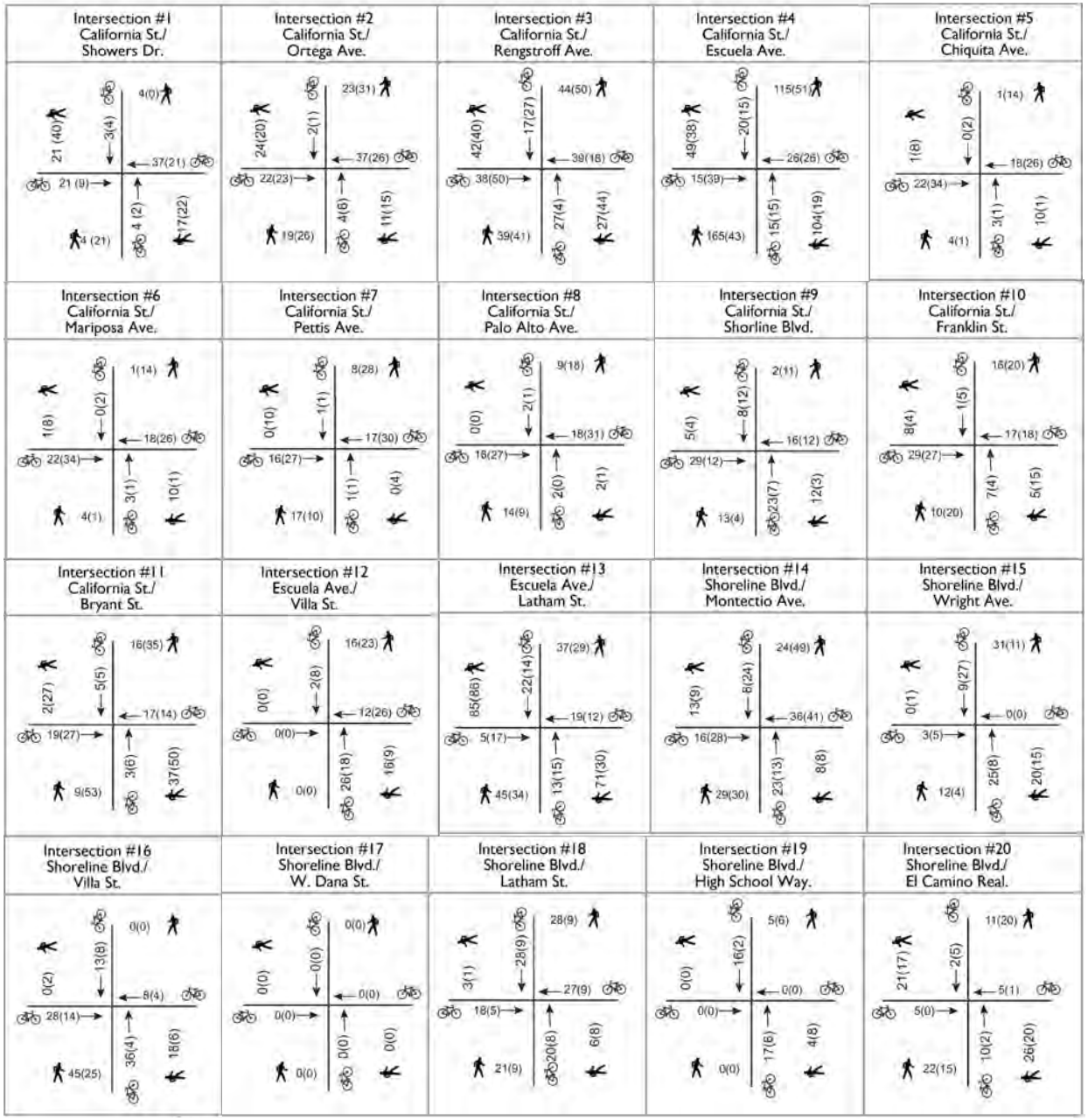


Figure 38 through Figure 40 show the existing intersection level of service at each study location.

The City of Mountain View uses a LOS D standard for local streets and LOS E standard for streets within the Downtown and CMP intersections. All the intersections are currently operating at or better than the City's LOS threshold.

FIGURE 38: EXISTING TRAFFIC LEVEL OF SERVICE FOR STUDY INTERSECTIONS

NO.	INTERSECTION	COUNT DATE	INTERSECTION CONTROL	PEAK HOUR	DELAY	LOS
1	California St/ Showers Dr	2013	Signal	AM	20.9	C+
				PM	28.1	C
2	California St/ Ortega Ave	2013	Signal	AM	15.0	B
				PM	18.3	B-
3	California St/ S Rengstorff Ave	2013	Signal	AM	31.5	C
				PM	36.9	D+
4	California St/ Escuela Ave	2013	Signal	AM	22.6	C+
				PM	21.2	C+
5	California St/ Chiquita Ave	2014	Side-Street Stop	AM	18.2	C
				PM	22.0	C
6	California St/ Mariposa Ave	2014	Signal	AM	5.8	A
				PM	5.7	A
7	California St/ Pettis Ave	2014	Side-Street Stop	AM	14.3	B
				PM	18.2	C
8	California St/ Palo Alto Ave	2014	Side-Street Stop	A M	15.3	C
				PM	19.8	C
9	California St/ Shoreline Blvd	2013	Signal	AM	26.1	C
				PM	46.4	D
10	California St/ Franklin St	2014	Side-Street Stop	AM	13.4	B
				PM	20.3	C
11	California St/ Bryant St	2014	Signal	AM	11.4	B+
				PM	17.8	B
12	Escuela Ave/ Villa St	2014	Three-Way Stop	AM	9.0	A
				PM	9.8	A
13	Escuela Ave/ Latham St	2014	All-Way Stop	AM	13.6	B
				PM	13.0	B
14	Shoreline Blvd/Montecito Ave/Stierlin Rd	2014	Signal	AM	28.6	C
				PM	30.4	C
15	Shoreline Blvd/ Wright Ave	2014	Signal	AM	18.0	B
				PM	15.8	B
16	Shoreline Blvd/ Villa St	2013	Signal	AM	19.4	B-
				PM	19.6	B-
17	Shoreline Blvd/ W Dana St	2013	Side-Street Stop (Right turn only)	AM	9.0	A
				PM	9.0	A
18	Shoreline Blvd/ Latham St/ Church St	2013	Signal	AM	13.3	B
				PM	41.5	D
19	Shoreline Blvd/ High School Way/ Snow St	2014	Side-Street Stop (Right turn only)	AM	9.2	A
				PM	10.2	B+
20	Shoreline Blvd/ El Camino Real	2013	Signal	AM	56.5	E+
				PM	44.6	D

Notes:
1. AM = morning peak hour, PM = evening peak hour.
2. Whole intersection weighted average control delay expressed in seconds per vehicle calculated using methods described in the 2000 ***Highway Capacity Manual.*** For Side-Street Stop-Controlled intersections total delay for the worst movement/approach is reported.
3. LOS = Level of Service. LOS calculations conducted using Synchro analysis software packages, which apply the methods described in the 2000 ***Highway Capacity Manual.***

EXISTING ARTERIAL STREET OPERATIONS FOR VEHICLE FLOW

An arterial level of service analysis was performed for the Shoreline Boulevard, California Street and Escuela Avenue corridors to evaluate operations while accounting for signal coordination, closely spaced intersections and congested conditions. Figure 30 shows the Average Daily Traffic (ADT) on the identified segments along the study corridors. The arterial level of service method can help determine how the operation of one intersection affects the adjacent intersections along the corridor. Figure 39 shows the existing arterial street level of service for Shoreline Boulevard, California Street and Escuela Avenue. Measured against the local jurisdiction's level of service standard, the following roadway segments currently operate below the applicable standard:

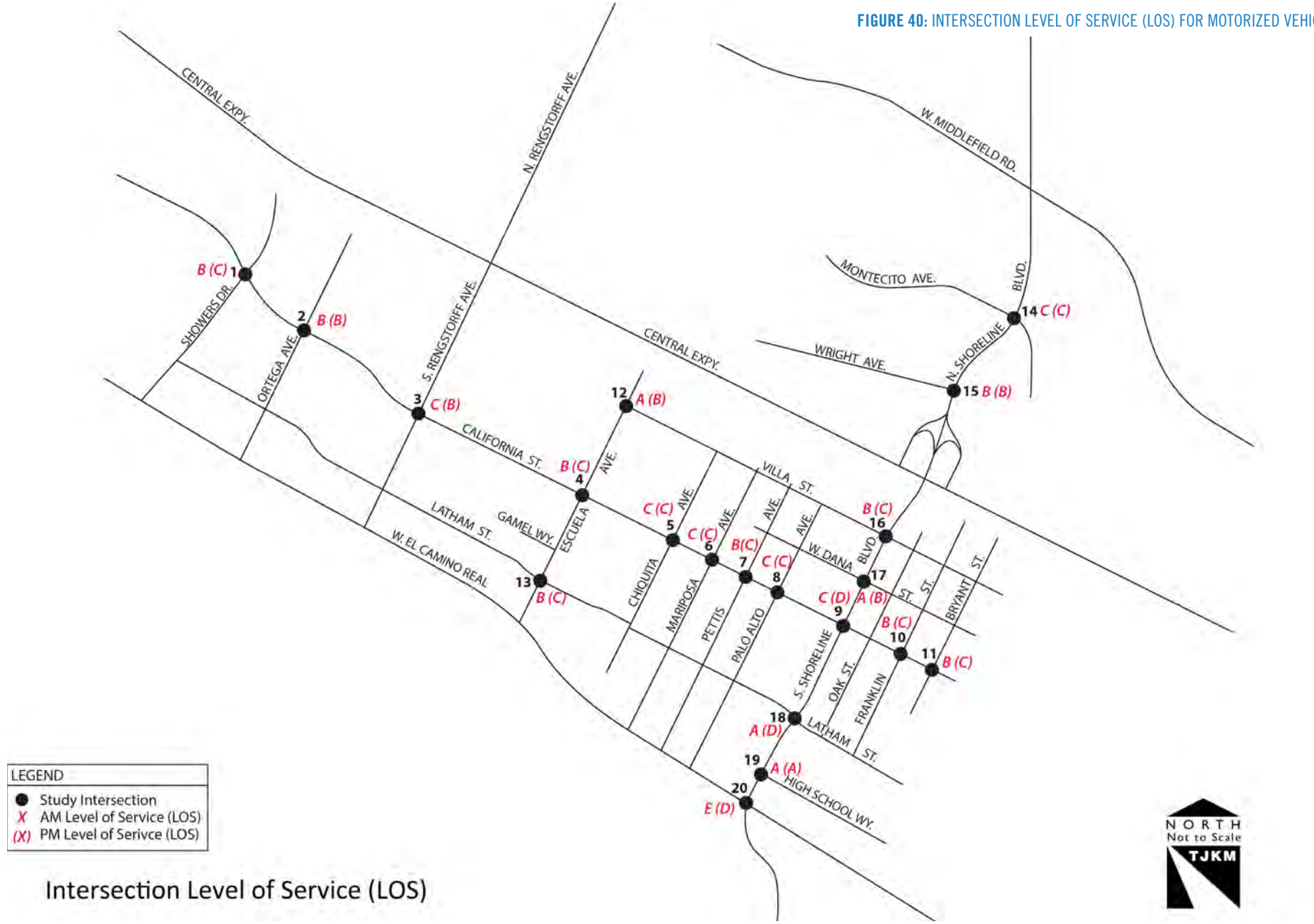
- California St between Bryant St and Shoreline Blvd.
- Shoreline Blvd between Latham St and California St.
- Shoreline Blvd between Villa St and California St.
- Shoreline Blvd between Latham St and El Camino Real.

FIGURE 39: EXISTING ARTERIAL STREET LEVEL OF SERVICE

SEGMENT	PEAK HOUR	CALCULATED SPEED	CALCULATED LEVEL OF SERVICE
CALIFORNIA STREET			
Eastbound California Street (Showers Drive to Bryant Street)			
Showers Dr to Ortega Ave	AM	15.0	D
	PM	15.8	D
Ortega Ave to S.Rengstorff Ave	AM	17.9	D
	PM	16.3	D
S. Rengstorff Ave to Escuela Ave	AM	21.3	C
	PM	19.7	C
Escuela Ave to Mariposa Ave	AM	25.3	B
	PM	25.2	B
Mariposa Ave to S.Shoreline Blvd	AM	21.2	C
	PM	16.5	D
S. Shoreline Blvd to Bryant St	AM	18.7	C
	PM	15.8	D
Westbound California Street (Bryant Street to Showers Drive)			
Bryant St to S. Shoreline Blvd	AM	10.6	E
	PM	13.3	E
S. Shoreline Blvd to Mariposa Ave	AM	25.3	B
	PM	25.4	B
Mariposa Ave to Escuela Ave	AM	19.2	C
	PM	18.5	C
Escuela Ave to S. Rengstorff Ave	AM	17.0	D
	PM	15.6	D
S. Rengstorff Ave to Ortega Ave	AM	20.0	C
	PM	20.4	C
Ortega Ave to Showers Dr	AM	14.7	D
	PM	14.8	D

SEGMENT	PEAK HOUR	CALCULATED SPEED	CALCULATED LEVEL OF SERVICE
SHORELINE BOULEVARD			
Northbound Shoreline Boulevard (El Camino Real to Montecito Avenue)			
El Camino Real to Latham St	AM	19.9	C
	PM	14.2	D
Latham Street to California St	AM	20.0	C
	PM	13.6	E
California St to Villa St	AM	21.7	C
	PM	18.9	C
Villa St to Wright Ave	AM	21.4	C
	PM	21.6	C
Wright Ave to Montecito Ave	AM	18.1	C
	PM	15.0	D
Westbound California Street (Bryant Street to Showers Drive)			
Montecito Ave to Wright Ave	AM	18.0	C
	PM	18.0	C
Wright Ave to Villa St	AM	21.9	C
	PM	20.9	C
Villa St to California St	AM	17.7	D
	PM	9.1	F
California St to Latham St	AM	25.4	B
	PM	12.4	E
Latham St to El Camino Real	AM	11.5	E
	PM	7.9	F
ESCUELA AVENUE			
Northbound Escuela Avenue (Latham Street to Villa Street)			
Latham St to California St	AM	14.4	C
	PM	14.1	D
Southbound Escuela Avenue (Villa Street to Latham Street)			
California St to Latham St	AM	12.6	D
	PM	14.1	C

FIGURE 40: INTERSECTION LEVEL OF SERVICE (LOS) FOR MOTORIZED VEHICLES



FUTURE TRAFFIC PREDICTIONS

Future year (2030) traffic demands at the study intersections were estimated from the City of Mountain view General Plan (2030). Based on the General Plan, approximately 4% growth per year was projected on California Avenue and Shoreline Boulevard, however there were no available data for Escuela Avenue in the General Plan. Therefore, approximately 2% growth per year was assumed at this corridor based on knowledge of the study area.

TRANSIT CONDITIONS

Transit service is a vital component of the transportation system in Mountain View, particularly for regional access to employment centers and residential areas, local access to schools, and for those residents in low vehicle ownership areas. Citywide the public transportation mode split is roughly 5.95%, which is higher than countywide and statewide averages[17]. This section presents an overview of existing service and system characteristics within the study area.

EXISTING TRANSIT SERVICE

Transit service in Mountain View relies heavily on local buses, with two regional transportation options: Caltrain and VTA light rail transit.

Within the study area, Santa Clara Valley Transportation Authority (VTA) operates three services. Route 34 is a community bus route that travels from San Antonio Shopping Center to Downtown Mountain View in a circuitous route that goes via California Street, the Mountain View Senior Center, Rengstorff Avenue, and Shoreline Boulevard. The remaining two routes in the study area are local bus routes. Route 35 travels from Downtown Mountain View to Stanford Shopping Center via California Street, San Antonio Shopping Center, and San Antonio Caltrain Station, and Middlefield Road. Route 40 operates from La Avenida and Inigo to Foothill College via California Street, Rengstorff Avenue, and Shoreline Boulevard.

In addition, Route 22 and 522 run on El Camino Real, providing service from Palo Alto to San Jose.

While frequency and service demand is high for both routes, trip duration exceeds one hour (for both the express 522 and regular 22 routes). Route 52 also runs from Foothill College to Downtown Mountain View along Castro Street and El Camino, adjacent the study area.

Each of the routes connects to broader, regional transit service at Mountain View Transit Center, which is home to Caltrain and VTA light rail service. Of these bus routes, Route 35 is the only bus that connects to San Antonio Caltrain Station. Additionally, VTA's Route 35 also connects to San Antonio Caltrain Station, but operates along San Antonio Road (outside the study area).

Caltrain operates through the Mountain View Caltrain Station with three types of service: local, limited stop, and baby bullet. During peak hours, Caltrain runs local and limited stop service every 8 minutes to 23 minutes, with an average interval of 18 minutes. For northbound service, three baby bullet trains operate in the morning peak and 5 operate in the evening peak, and southbound trains have baby bullet service in the 5 morning peak trains and 3 evening peak trains. Caltrain allows residents to connect with job centers around the Silicon Valley, as well as San Francisco and San Jose.

VTA light rail service provides connections to Santa Clara, San Jose, Campbell, and Winchester with service every 15 to 30 minutes during the peak weekday periods. However, there are no express trains from Mountain View to Winchester, and travel times are over one hour. Figure 41 outlines the existing transit service in the area

17 U.S. Census Bureau. 2013 American Community Survey, 1-Year Estimates.

FIGURE 41: EXISTING TRANSIT SERVICE IN STUDY AREA

ROUTE	DESCRIPTION	PEAK FREQUENCY	OFF-PEAK FREQUENCY	SERVICE SPAN
VTA- Route 22	Palo Alto to Eastridge via El Camino Real	12 minutes	12 minutes	24 hours, weekdays 24 hours, weekends
VTA-Route 522 (Rapid)	Palo Alto to Eastridge via El Camino Real	15 minutes	15 minutes	18 hours (5am to 11pm), weekdays 15 hours (8am to 11pm), weekends
VTA- Route 34	San Antonio Shopping Center to Downtown Mountain View	No peak service	60 minutes	5.5 hours (9:30am to 3pm), weekdays 0 hours, weekends
VTA- Route 35	Downtown Mountain View to Stanford Shopping Center	30 minutes	30 minutes	16 hours (6am to 10pm), weekdays 12 hours (8:30am to 8:30pm), weekends
VTA-Route 40	La Avenida and Inigo to Foothill College	30 minutes	30 minutes	15 hours (6:30am to 9:30pm), weekdays 10 hours (8am to 6pm), weekends
VTA-Route 52	Foothill College to Downtown Mountain View	30 minutes	30 minutes	14 hours (7am to 9pm), weekdays 0 hours, weekends
VTA-LRT 902	Mountain View to Winchester	15 minutes	30 minutes	19 hours (5am to 12am), weekdays 17 hours (7am to 12am), weekends
Caltrain	San Francisco to San Jose	20 minutes	60 minutes	18 hours (5am to 11am), weekdays 16 hours (7am to 11pm), weekends
Mountain View Community Shuttle	Two-way loop: Mountain View Transit Center –Senior/Teen Center – San Antonio Center – Shoreline / Pear – El Camino Hospital	N/A	30 minutes	7 hours (10am to 5pm), weekdays 1 hour (5:30pm to 6pm), weekends

TRANSIT PERFORMANCE

Based on the above service parameters, there are a number of transit services that provide frequent service just outside of the study area including VTA bus 522/22 along El Camino Real, and VTA light rail services from Mountain View station. Unfortunately, these high-frequency services are characterized by relatively long travel times due to circuitous routing or mixed traffic conditions.

More rapid regional transit services are provided by Caltrain during peak hours, however, this service is limited to peak commute times. Service headways (the time between services) and travel times are substantially longer during off-peak hours.

Other services that operate within the study area include VTA bus routes 34, 35 and 40 which have both low frequency services and long travel times to destinations.

While service improvements are planned for the 522/22 (in connection with the VTA BRT project) and Caltrain services (in connection with electrification), current transit quality of service is low within the study area, which means that it is difficult to use transit as a primary access mode.

URBAN DESIGN AND LANDSCAPING

CALIFORNIA STREET

California Street's public realm has been shaped by road widening and neighborhood evolution into several recognizable segments within the study area. Based on the City of Mountain View Street Tree list, the official street tree for the entire length of California Street is Red Maple. However, as described below the street tree species vary.

Storm drain inlets on California Street are typically located at the curb returns of side street intersections or midblock within the super blocks, and spaced approximately 500 lineal feet apart. The overland surface flow line of the long lengths of curb and gutter tend to result in isolated instances of standing water, as noted in the dry season, likely from private landscape irrigating. Private structures are located close to the existing back of sidewalk and many parcels drain storm water runoff into the street.

CALIFORNIA STREET FROM BRYANT STREET TO SHORELINE BOULEVARD

Historically, Bryant Street to Chiquita Avenue forms an eastern segment of California Street within Old Mountain View's and Shoreline West's historic grid of short blocks and older homes and small apartment buildings. Originally, this stretch was a 2 lane street with planter strip-buffered sidewalks similar to nearby Dana and Mercy Streets. The 1960s widening added arterial capacity but consumed front yards, removed the street tree canopy, rebuilt the sidewalks narrow and treeless, and left homes awkwardly close to sidewalks and speeding traffic.

The City later re-narrowed a portion of California Street by installing tree-lined center medians between Bryant Street and Mariposa Avenue, as well as infilling irregularly-spaced sidewalk trees (varying from about 27 feet to 112 feet) between Bryant Street and Shoreline Boulevard.[18] Two visible clusters of mature conifer trees mark center medians at the Oak Street and Mountain View Avenue intersections.

The section of California Street between Bryant and Shoreline Boulevard has the most urban forest canopy coverage with street trees on both sides of the street and in the center median. The narrow three to four foot median provides enough space for street trees, including crepe myrtles, pine trees and California pepper. Sidewalk trees planted in tree wells, which are approximately two by four foot, are spaced thirty to forty feet on center. Utility lines are located underground in this Downtown portion of California Street.

CALIFORNIA STREET FROM SHORELINE BOULEVARD TO MARIPOSA

The historic grid pattern of Downtown Mountain View continues along California between Shoreline and Chiquita Avenue. Likewise, evidence of the 1960s road widening can be seen in two vacant city-owned former home site lots that still flank Palo Alto Avenue at California Street, as well as at the southwest corner of Shoreline Blvd. Between Chiquita and Mariposa Avenue, a longer block length reflects the area's later developmental history.

Between Shoreline Boulevard and Mariposa Avenue, California Street's three to four foot median provides enough space for street trees: crepe myrtles, California pepper, and pine trees line the center of the roadway along this stretch. There are no street trees on the pedestrian sidewalks, and overhead utility lines are present on the north side of the street. Private property trees are planted at the back of sidewalk, adding shade to the sidewalk and increasing the urban forest canopy. Utility lines are located predominantly underground through this portion of California Street from Shoreline to Chiquita.

CALIFORNIA STREET FROM MARIPOSA TO ESCUELA

Historically, California Street's middle segment between Chiquita and South Rengstorff Avenues was built as a wide street and this segment is lined by a recognizable row of two-story 1960s apartment complexes. Many of the apartments on the north side of the street are fronted by parking lots.

In addition to having few shade trees along California Street between Shoreline Boulevard and Escuela Avenue, the street has no center median west of Mariposa. The result is a wide, auto-dominated feel along this segment of California Street. In this segment, only parked cars buffer pedestrians and homes from passing traffic, and only front yard trees create intermittent tree canopy. The widely-spaced cobrahead streetlights exacerbate the auto-dominated street design, as seen in Figure 42.

18 Old Mountain View Neighborhood Association, "About OMVNA," 2014, http://www.omvna.org/about-omvna/

There are few to no street trees in the public right-of-way along California Avenue from Mariposa to Escuela Avenue. Narrow sidewalks along this stretch of the corridor preclude the use of street trees. While there are no street trees within the perceived public right of way (assuming the property line is at the back of sidewalk), private property landscaping adds greenery and shading to the street and contributes to the urban forest canopy.

Overhead utility lines are present on the north side of California Avenue in this stretch, which may present a conflict with street trees. The City has identified this issue as the next priority for PG&E Rule 20A underground utility district. The PG&E design process is slated to begin in 2015. A drainage easement corridor for Permanente Creek, which runs underground in a box culvert at this location, crosses California Street midblock between Escuela Avenue and Chiquita Avenue. This structure conveys storm water runoff to the northeast and towards the Bay.

FIGURE 42: VIEW EAST ON CALIFORNIA STREET FROM ESCUELA AVENUE

CALIFORNIA STREET FROM ESCUELA TO RENGSTORFF

West of Escuela Avenue, street trees and a narrow planter strip (which is irregularly present on the south side) begin to shape a useful street tree canopy and provide some pedestrian buffering. The tree species are mostly Liquidambars and some trees are mature and tall (over 50 feet). With less than ideal planting conditions, however, tree losses have created significant breaks 200 to 350 long between mature trees.

In some cases, the tree strip between curb and sidewalk has been paved over and street trees are located in three by four tree wells. Trees on the adjacent private properties add to the overall urban tree canopy. However, there are several areas of the street corridor that completely lack any street trees. In this part of the corridor, the pedestrian sidewalks are shaded adequately by private property landscaping; however, the canopy is not sufficient to shade the large roadway. Understory plantings in the park strip are minimal, typically exposed dirt, lawn or occasionally evergreen shrubs or ivy.

From the pedestrian's perspective, the north side's hedges are surprisingly effective as traffic buffers though gaps are noticeable. As in the eastern segment, the cobrahead streetlights are less than compatible with the residential context of the street.

CALIFORNIA STREET FROM RENGSTORFF TO SHOWERS

The broad and curving western segment from Rengstorff Avenue to Showers Drive is lined by a mixture of later 20th century apartments, townhomes and auto-oriented retail sites as well as a public park and open space.

Street trees are fairly consistent along California Street between Rengstorff and Showers Drive. Typically planted in four to six foot planter strips, street trees are planted approximately 40 feet on center and consist of a myriad of species, including sycamore, london plane, liquidambar, sour gum, queen palms, red maples, and flowering plum. The wider sidewalks and planter strips display a more consistent palette and spacing of canopy street trees, however, the prevailing internal orientation of buildings projects more anonymity than other segments of California Street. The resulting character is not yet indicative of planned development changes to occur on the California Street corridor within the adjacent San Antonio Precise Plan area.

As with the other segments, cobrahead street lighting is not strongly supportive of a neighborhood-scale look and feel.

Utilities are located underground through this stretch of California Street, which provide an excellent opportunity for additional street trees to increase urban forestry coverage.

ESCUELA AVENUE

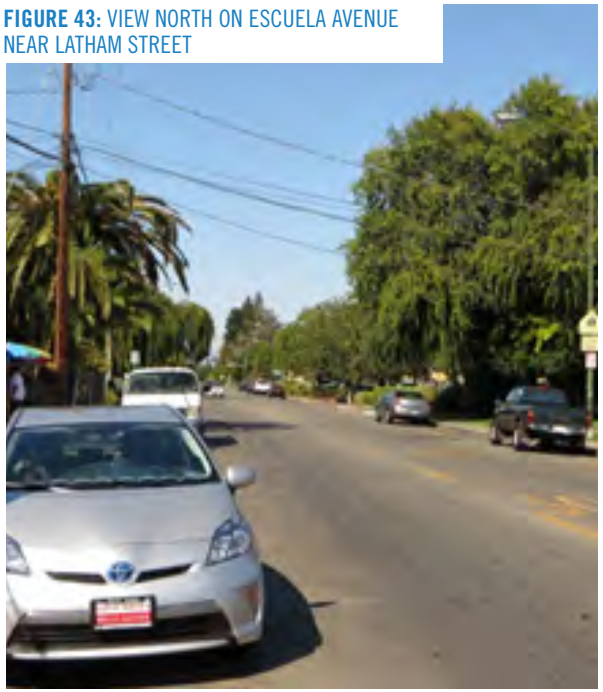
In 1948, Escuela Avenue was a small unpaved road running through orchards and farmsteads. Today it is still a relatively narrow two lane street crowded with curbside parked cars and very narrow sidewalks, lined by a dense mix of apartment complexes (ranging in size from a triplex to the 4 story, 142 unit Regency at Mountain View Apartments), single family homes, and community facilities.

As its 5 foot wide sidewalks are too narrow to host street tree wells, the intermittent tree canopy along Escuela Avenue is created only by front yard trees. According to the City of Mountain View Street Tree list, the official street tree for Escuela Avenue is Australian Willow. However, within the study area there are no street trees on Escuela Avenue. Private property improvements add to the urban forest canopy and dense plantings of redwood trees and oaks help to shade portions of the pedestrian right-of-way. A large community garden is located along the Hetch Hetchy right-of-way at the north end of the study area, adding to the urban greening opportunities on Escuela Avenue.

Along Escuela Avenue, overhead utility lines are typically located on the west side of Escuela Avenue. A line of wooden utility poles with overhead wires lines extends along the back of the west side sidewalk, and nearly all streetlights and other poles are similarly located behind the sidewalk.

Retail and commercial use at its southern terminus (from Latham Street to El Camino Real) already creates a convenience cluster of shops and services and a draw for the neighborhood, now redefined and strengthened as a "Village Center" under the newly adopted El Camino Precise Plan. With the longstanding presence of Mariano Castro Elementary School and churches supplanted within the last decade by important community facilities such as the Senior Center and community garden, the Day Worker Center, and the recently opened Teen Center, the entire length of Escuela Avenue has a continuous density of significant community origins and destinations for pedestrian, bicycle, vehicle, and transit trips for people of all ages. But neither the street's activity nor its community importance are well matched by its current minimal and utilitarian streetscape of too-narrow sidewalks, lack of consistent tree canopy, and infrequent, auto-oriented cobrahead lighting. Escuela Avenue can be seen in Figure 43 below.

FIGURE 43: VIEW NORTH ON ESCUELA AVENUE NEAR LATHAM STREET



In terms of drainage, storm drain inlets on Escuela Avenue are typically located at the curb returns of side street intersections and spaced approximately 500 lineal feet apart. The topography of the study area slopes to the northeast, with storm water infrastructure opportunities at the Escuela Avenue intersections at Villa and Crisanto. Currently there is minimal storm drain infrastructure and the overland surface flow along lengths of curb and gutter tend to result in isolated instances of standing water in the dry season, likely from private landscape irrigating. Private structures are located close to the existing back of sidewalk and many parcels drain storm water runoff into the street.

SHORELINE BOULEVARD

Like California Street's past, much of today's Shoreline Boulevard from Wright Avenue to El Camino Real was a shady two-lane residential street called Bailey Avenue prior to 1969. As part of a major restructuring of city circulation at that time, Bailey Avenue and the northern part of Stierlin Road (also a 2 lane road) were substantially widened and reconfigured as the future Shoreline Boulevard.

According to the City of Mountain View Street Tree list, Shoreline Boulevard is planned and identified to have a variety of species. Shoreline Boulevard has a significant amount of street trees that provide shade and beautify the corridor, enhancing the pedestrian experience. Some of the typical species along the corridor include pine, magnolia, California pepper, and sycamores. The street tree canopy is varied with deciduous and evergreen species. The public right-of-way, in many cases, extends beyond the back of

walk, and landscape improvements on these public properties add to the streetscape environment.

Storm drain inlets on Shoreline Boulevard are typically at the curb returns of side street intersections and spaced approximately 500 lineal feet apart. Currently there is minimal storm drain infrastructure and the overland surface flow along lengths of curb and gutter tend to result in isolated instances of standing water in the dry season, likely from private landscape irrigating. Private structures are located close to the existing back of sidewalk and many parcels drain storm water runoff into the street.

Utility lines are located underground along Shoreline Boulevard within the study area.

SHORELINE BOULEVARD FROM MONTECITO TO WRIGHT

The quarter-mile curving segment of Shoreline Boulevard from Wright Avenue to Stierlin Road did not exist prior to the 1970s, and as such today forms a short and distinct northern segment of Shoreline Boulevard within the study area. Its streetscape form is that of a late 20th Century arterial parkway, where clear sight lines predominate, landscaping primarily accents the driving experience, and facing buildings orient away from the street.

A continuous landscaped center median with changing segments of tree types helps greatly to reduce the corridor's scale to the benefit of both drivers and pedestrians, and especially helps the sub-segments without sidewalk planter strips and/or street trees. The median between Montecito and Wright Avenue has numerous street trees, spaced consistently of flowering plums and Brisbane box. The understory planting provides visual interest undulating along the length of the median.

Narrow sidewalks on the west side of the street do not allow for street trees, however, the City maintains trees at the back of walk. Street trees are located in a three foot planter strip, but are inconsistent on the east side of the street. Alongside both sidewalks, conditions range from no planter strip (not a comfortable experience next to 40+ mph traffic) to narrow planter strips of turf, ground cover, or occasional stretches of hedges. Throughout this stretch the street tree canopy is continuous enough to provide significant sidewalk shade with occasional gaps. The overall experience is typical of many similar landscaped arterial roads in the Santa Clara Valley.

SHORELINE BOULEVARD FROM WRIGHT TO VILLA

To construct the "half-cloverleaf" interchange at Central Expressway, several blocks and dozens of homes within today's Jackson Park neighborhood were demolished and the residents displaced[19]. The resulting overpass from Wright Avenue south to Villa Street forms an also-curving middle segment of Shoreline Boulevard that creates an in-town "superhighway" experience. For over 1,600 feet, it is disconnected from neighborhoods that front on the right-of-way (turning away from interchange roads and putting up walls and screening trees), creating

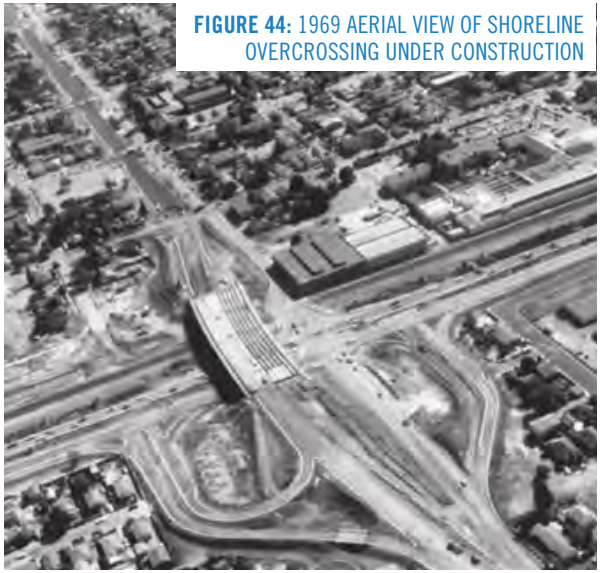


FIGURE 44: 1969 AERIAL VIEW OF SHORELINE OVERCROSSING UNDER CONSTRUCTION

Source: City of Mountain View Public Library, "Aerial View of Shoreline Overcrossing under Construction,"1969

a kind of superblock. No sidewalk is provided on the right-of-way's west side and at both bridge approaches, pedestrians are channeled to an asphalt east side path that swerves up to 80 feet away from the roadway and dips deeply beneath vehicle on- and off-ramps. The City is currently improving the accessibility of this path as part of the Shoreline Boulevard Pathway Project.

While the path is set within park-like settings of clustered mature trees and groundcover, its separation and descent create a lack of surveillability that is uncomfortable for less confident pedestrians. Atop the bridge deck, the pedestrian path (which is also used by bicyclists) is well buffered from fast traffic by a 4 foot wide concrete planter wall with small street trees. The overpass right-of-way provides some landscaping at the on and off ramps, but no street trees that benefit pedestrians. At midday, the majority of the path length lacks tree canopy shade,

19 Nick Perry, "The Birth and Breaking of a Forgotten Community: A Three Part Series," in The Mountain View Voice. Palo Alto: Embarcadero Media, September 6, 13, and 22, 2002, http://www.mv-voice.com/morgue/2002/2002_09_06.history1.html, http://www.mv-voice.com/morgue/2002/2002_09_13.his2.html, http://www.mv-voice.com/morgue/2002/2002_09_20.history3.html

a comfort issue during hot weather months. Descending from the bridge southward, a directory sign is the only cue that the left turn will serve as an entry to downtown. Figure 44 portrays Shoreline under construction.

SHORELINE BOULEVARD FROM VILLA TO EL CAMINO REAL

Like California Street's eastern segment, the mostly-straight southern segment of Shoreline Boulevard from Villa Street to El Camino Real bears the reminders of the more than doubling of width from the two-lane Bailey Avenue to the six-lane divided highway of today, with property acquisitions and widenings occurring mostly on the east side between Villa and Church Streets. The remaining west side bungalows and cottages had their front yards shortened and lost their broad planter strips and street trees, though new street trees have been continuously planted in sidewalk tree wells along both sides of the street. On both sides of the street, significant frontage lengths of vacant city-owned property (remnants of property acquisitions) have neither been re-developed nor utilized as parks. These relatively large publicly owned half parcels provide open space with multiple tree plantings. While remaining as open space, these may provide future opportunities related for sustainable for landscape improvements and/or storm water mitigation.

Throughout this segment of Shoreline Boulevard, street tree canopies provide relatively continuous shade and pedestrian buffering (with occasional gaps), and adequately sized sidewalks line both sides of the street. Street trees are typically in tree wells with approximate dimensions of three by six feet, and recently constructed curb extensions, or bulbouts, at cross street intersections include new street tree and understory plantings. In addition, triangular median islands act as a barrier for pedestrians in the middle of side streets, and these median islands are typically planted with a single street tree.

Detritus and pine needles from the evergreen pines in the street or adjacent properties consistently drop onto the pavement, and the pine needles in particular can create a hazard for bicyclists. Though, other than typical maintenance issues regarding street trees, the roadway has a significant urban forest canopy that adds to the overall aesthetic, traffic calming and pedestrian experience associated with Shoreline Boulevard.

For all that, however, the sidewalks are still dwarfed by the vast expanses of adjacent road width. On the broad landscaped center median, London Plane and conifer trees have reached mature proportions that complement the immense scale of the street, while other species remain undersized. On both the southern and middle segments, the consistent arterial-scaled, double-headed "T" streetlights mounted along the center median are almost the sole source of street lighting (except at intersections). As such, between signalized intersections, luminaries are far from pedestrians, parked cars and bicyclists and provide less than supportive lighting for more sensitive activities and users – especially at locations like the Mountain View Academy and Eagle Park's western entry gate.

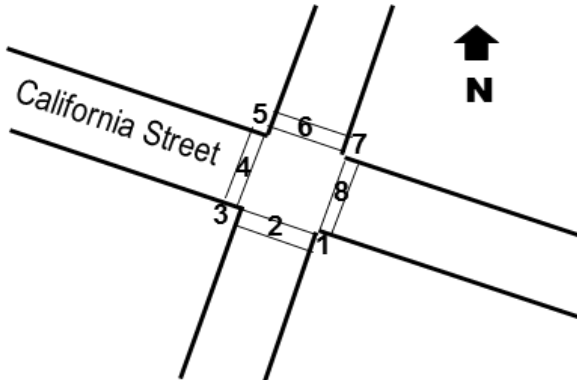
LIGHTING CONDITIONS

LUMEN COUNTS

Lighting conditions were measured in terms of lumen counts at several intersections with California Street, which were selected in conjunction with city staff. For each intersection that was analyzed, lighting levels were measured in terms of foot-candle levels at eight (8) locations within the intersection, including corners and midpoints of crosswalks. The numbering system that was used to identify these locations is shown in the figure below:

The lighting levels measured at each location for each intersection are presented in Figure 46. All numbers presented in the figure represent averages for counts taken at the location. Each measurement for corner locations was taken from the sidewalk facing toward the corner (pork chop). Generally pork chops have higher lumen levels than sidewalks.

FIGURE 45: NUMBERING SYSTEM FOR LUMEN COUNTY LOCATIONS WITHIN EACH INTERSECTION



Key issues with respect to lighting are outlined below:

- At Showers Drive there are a total of (4) metal halide pole lights over pedestrian walkways with good lighting levels. Lighting levels in the north-east corner can be improved by tree trimming.
- At Ortega Avenue all corner locations have good light levels with no obstructions for the metal halide pole lights.
- At Oak Tree Drive there is only one metal halide light pole on northwest corner of this inter-section. Light levels can be improved by tree trimming near the pole light and providing an additional light on the opposite side of the street.
- At Rengstorff Avenue there are (4) metal halide light poles on the corners. Light levels on the southwest corner can be improved by tree trim-ming.
- At Escuela Avenue there are no light pole obstructions on any corners. The light source is high pressure sodium.
- At Chiquita Avenue there are only (2) metal halide pole lights at this intersections on the northwest and southeast corners with no obstructions. Two additional light poles would improve the light levels on the northeast and southwest corners.
- At Mariposa Avenue there are (4) light poles on this intersection. The one on the northwest side is high pressure sodium and turns on and off oc-casionally. The rest are metal halide. No obstruc-tion was observed for the poles.

FIGURE 46: LUMEN COUNTS AT INTERSECTIONS ALONG CALIFORNIA STREET (FOOT-CANDLE LEVEL)

LOCATION INTERSECTION	VISIBLE ISSUES	1	2	3	4	5	6	7	8
@ Showers Dr	Trim NE corner	1.5	1	0.1	1.5	0.1	0.5	0.1	1.3
@Ortega		0.8	1.1	2	0.1	2	0.4	1	0.1
@Oak Tree Dr	Trim NW corner, 1 light only	0	0.3	1	0	0	0	0	0
@Rengstorff Ave	Trim SW corner	0	0.2	0.2	0.3	0.1	0.1	0.5	0.1
@ Escuela Ave		0.5	1.5	0.6	2.5	2.5	1.3	3.5	2.5
@ Chiquita Ave	2 lights only	0	0.1	0.2	0	0	0.1	0.6	0
@ Mariposa Ave		0.1	0.2	0.9	0.6	0.5	0.2	0.3	1.9

Key: Green = Meets minimum lighting requirement (0.15 FC)
Yellow = Lighting but does not meet minimum requirement
Red = No lighting present

STREET AND SIDEWALK LIGHTING CONDITIONS

In addition to the above lighting conditions at specific intersections, night-time lighting conditions within the study area are substantially conditioned by the existing Urban Design and Landscaping features previously discussed, especially by street width and tree canopy. Existing street lighting within the study area is entirely provided by roadway-height "cobrahead" streetlights, which are downward-oriented luminaires on an arm cantilevered over the roadway, mounted atop a sidewalk, planter-strip or median mounted pole. These streetlights range in height from approximately 20 to 30 feet, with two exceptions:

- On Shoreline Boulevard, pedestrian-height (approximately 14 feet high) poles and luminaires that line the grade-separated pedestrian pathway approaches to the Central Expressway overpass (on the east side only between Villa Street and Wright Avenue).
- At the California and Bryant Street intersection only, "shoebox" luminaires are used atop approximately 20 foot high poles.

In general, the luminaire optics of older cobrahead lamps (with "bulb" sources such as HPS, in contrast to today's LED luminaires) are designed to cast lighting with a specified light level and uniformity in elongated rectangular patterns along the roadway's centerline to enable wide spacing of poles for efficiency (often up to 200 linear feet between luminaires).

While street lighting provided by older cobrahead lights is generally adequate for drivers, lighting of sidewalk areas can be more problematic, both for pedestrians' visibility of their walking paths and drivers' awareness of pedestrians' night-time presence. Sidewalk lighting is strongest near the pole base itself, but because all other sidewalk areas (same-side and across the street) fall at the farthest edges of a given cobrahead luminaire's illumination pattern, many sidewalk areas are significantly darker than roadways.

Streetlight pole layouts are commonly "staggered" along a street, with alternating pole placement along a street such that while linear spacing between luminaires along the centerline may be 200 feet, the distance between poles on the same side of the street may be 400 feet. Where curb-to-curb distances of multi-lane streets are wider, however (such as along California Street), the longer cross-street distance poses a greater challenge to effectively illuminate the sidewalk across the street. This often results in relatively dark segments of sidewalk where light does not reach that segment for significant distances.

In addition, roadway-height lighting of sidewalk areas is particularly obscured by tree canopy foliage between 10 and 25 feet high, particularly where light is blocked from reaching the segments in between streetlight poles. The landscaped median with trees along California Street from Mariposa Avenue to Bryant Street particularly challenges the effectiveness of staggered layouts.

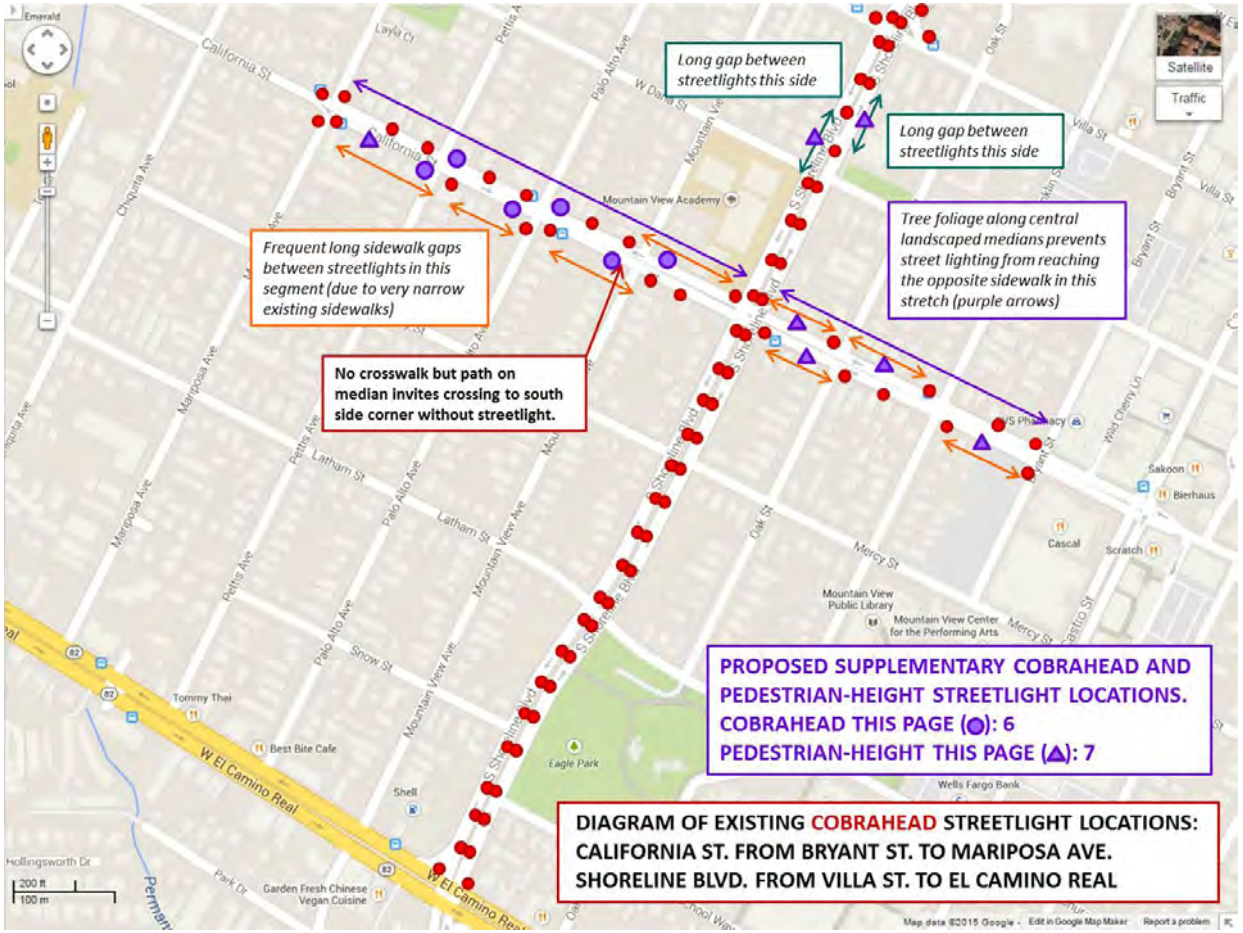
While street lighting is typically positioned to illuminate marked crosswalks (particularly at signalized intersections via "safety lights" atop traffic signal poles), there are instances of crosswalks where no streetlight is nearby. Likewise, there are intersection corners where, though no crosswalk is marked, on a narrower street like Escuela, those locations form "desire lines" that attract pedestrians to cross. These conditions are noted in the segment-specific descriptions below.

SHORELINE BOULEVARD FROM MONTECITO AVENUE TO VILLA STREET

Shoreline Boulevard is distinguished by its twin-armed roadway lights at its central landscaped medians along much of its length within the study area. Their relatively close spacing provides lighting of roadways and reaches sidewalks under tree canopies between Wright Avenue and Villa Street. However, the segment from Montecito to Wright Avenue uses sidewalk-mounted lights in typical staggered configuration with long spacings, with resulting diminished effects on pedestrian lighting. For example, on the east side of Shoreline from Wright Avenue to the front of 419 Shoreline, the distance between streetlights is approximately 330 feet. Given the wide street right-of-way, cross-street lighting is unable to reach pedestrian facilities on the other side of the road.

Map Base Source: Google

FIGURE 47: STREETLIGHT LOCATIONS ON SHORELINE BOULEVARD BETWEEN VILLA STREET AND MONTECITO AVENUE



Map Base Source: Google

FIGURE 48: STREETLIGHT LOCATIONS ON SOUTH SHORELINE AND CALIFORNIA STREET (EASTERN PORTION)

CALIFORNIA STREET FROM BRYANT STREET TO MARIPOSA AVENUE

California Street has a continuous landscaped median with trees that vary from small deciduous trees to clusters of mature Redwood trees. When leafed out, these trees block significant street lighting from reaching the opposite side of the street, particularly the opposite-side sidewalk. In addition, streetlight poles are irregularly staggered along this segment due to very narrow existing sidewalks. As a result, there are long stretches of sidewalk (over 300 feet as shown in Figure 48) between streetlights, where lighting from the opposite side of the street is often blocked by trees. At the west side of the intersection of California Street and Mountain View Avenue, though there is no marked crosswalk, an asphalt path provides an invitation and refuge for pedestrian crossing of California St. The south side of the street has no nearby streetlight, and light from the nearest streetlight on the north side is partially obscured by redwood trees on the median.

SHORELINE BOULEVARD FROM VILLA TO EL CAMINO REAL

As noted above, the twin-mounted median light standards are closely spaced and provide relatively uniform lighting compared to other parts of the study area. Due to the break in the median at the fire station between Dana and Villa Streets, longer gaps between streetlights and diminished pedestrian lighting results for a short segment.

CALIFORNIA STREET FROM MARIPOSA AVENUE TO RENGSTORFF AVENUE

In this concentrated segment of apartment complexes, the combination of California Street's broad width (4 to 5 lanes), varied tree canopy, and varied staggered streetlight spacings results in areas of low sidewalk illumination. At the extreme, both the El Portal Apartments at 2065 California Street and the Windsor Apartments at 1900 California Street notably have extents of approximately 310 feet between streetlights along their frontages.

Given the high residential densities and long block lengths, it is likely that pedestrians will tend to cross the street at midblock locations for this portion of the study area. Currently, there are no midblock crossing facilities or accompanying lighting.

ESCUELA AVENUE

Though Escuela Avenue's narrower width enables greater effectiveness of roadway-height streetlights to illuminate opposite side sidewalks, there are often lengthy distances between streetlights on the same side of the street, where just one streetlight on the opposite side in-between will not fully fill the gap. For example, on the west side of Escuela Avenue, the distance between adjacent streetlights at the California and Gamel Way intersections is over 530 feet. South of the Gamel Way/Escuela "T" intersection, a midblock crosswalk has no immediately adjacent streetlight – the nearest ones are 100 feet to the north and to the south. Both the Gamel Way and Mount Vernon Court "T" intersection lack crosswalks (though they bracket the frontage of the Mariano Castro Elementary School) and the nearby street-

Map Base Source: Google

FIGURE 49: STREETLIGHT LOCATIONS ON ESCUELA AVENUE AND CALIFORNIA STREET (CENTRAL PORTION)

Map Base Source: Google

FIGURE 50: STREETLIGHT LOCATIONS ON CALIFORNIA STREET (WESTERN PORTION)

lights are not well-oriented to illuminate their north-south pedestrian crossings along Escuela.

CALIFORNIA STREET FROM RENGSTORFF AVENUE TO SHOWERS DRIVE

Though this segment curves, it has similar issues to the Mariposa to Rengstorff segment. For example, the Aviana Apartments at 2101 California Street has an extent of over 360 feet between streetlights along its frontage, and the north side of the Target store at 555 Showers Drive has an extent over 260 feet between streetlights along its frontage. These long gaps reduce the effectiveness of street lighting for facilities.

Given the high residential densities and long block lengths, it is likely that pedestrians will tend to cross the street at midblock locations for this portion of the study area. Currently, there are no midblock crossing facilities or accompanying lighting.

05

STUDY GOALS AND OBJECTIVES

Based on existing conditions analysis and community feedback, a number of goals and objectives have been compiled in relation to the California / Escuela / Shoreline Complete Streets Feasibility Study. These goals and objectives reflect community values and issues raised during the community outreach as well as the findings of the existing conditions assessment.

GOALS

This study aims to assess the feasibility of improvements to California Street, Escuela Avenue, and South Shoreline Boulevard that will improve safety, accessibility, and convenience for all types of road users. In particular, the study aims to create a welcoming environment for pedestrians and bicyclists within the study area. It also aims to engage the community in identifying and refining improvements.

OBJECTIVES

The following more detailed objectives have been devised to help with assessment and evaluation of the success of complete streets improvements within the study area:

- Compliance with ADA accessibility guidelines
- Improved level of satisfaction of pedestrians and cyclists within the study area
- Increased number of pedestrians and rate of walking within the study area
- Increased number of cyclists using facilities within the study area
- Reduced number and rate of injuries and fatalities associated with pedestrian-vehicle and bicycle-vehicle collisions within the study area
- Reduced incidence of excessive speeding by motorists within the study area and particularly at conflict points
- Improved facilities for cyclists moving through or turning left at intersections
- Increased connectivity to the wide pedestrian and bicycle network and across Central Expressway

DESIGN CRITERIA

Based on the issues, goals and objectives listed above, the following design criteria are proposed for the California / Escuela / Shoreline Complete Streets study. These criteria will be used to assess the effectiveness of conceptual alternatives that emerge from the study. The criteria will be assessed in a qualitative manner for initial consideration of design concepts. Where applicable, more quantitative measures (such as non-motorized access benefits, traffic impacts, and costs) will be used for final assessment of alternatives.

PEDESTRIAN AND BICYCLE ACCESS

In order to assess impacts on pedestrian and bicycle access, alternatives will be assessed in relation to the following issues:

- Do facilities meet the goals and guidelines set forth in the City's Pedestrian Master Plan (2013) and Draft Bicycle Transportation Plan (2016) as well as VTA's Pedestrian Technical Guidelines (2003) and Bicycle Technical Guidelines (2012)?
- Do sidewalk and bicycle facility dimensions and placement meet best practices such as the NACTO Urban Street Design Guide and NACTO Urban Bikeway Design Guide?
- What is the likely impact on the number of intersections that allow continuous bike and pedestrian paths through the intersection and safe left turns at the intersection?
- What is the impact on the number of intersections with short crossing distances, tight turning radii, and high visibility crossing treatments?
- What is the likely impact on the length of pedestrian connection gaps within the study area?
- What is the likely impact on the length of bicycle connection or quality gaps (e.g. door zone, gutter zone) within the study area?
- What proportion of the road has frequent (every 400 feet), safe crossing opportunities?
- In zones with higher speed limits or zones with excessive speed limit, what length of road has physical separation between pedestrians and moving traffic?

IMPACT ON TRAFFIC

In order to assess impact on traffic, alternatives will be assessed in relation to the following issues:

- What is the travel time along each segment?
- What is the likely impact on traffic level of service (LOS) as it is currently assessed in the City of Mountain View?

COST

In order to assess costs, alternatives will be assessed in relation to the following issues:

- What are the likely capital, maintenance and operating costs associated with the designs?

06

SUMMARY OF ALTERNATIVES

INITIAL ALTERNATIVES

On the basis of multimodal analysis and community input received at the October 2014 workshop, three distinct design concepts were developed to improve safety and make it more convenient and accessible for all users within the study area. These preliminary design alternatives are listed below:

Traffic calming could include lane narrowing, corner bulbouts, "thumbnail" refuges, and high visibility crosswalks. Along Shoreline Boulevard, traffic calming would not include speed bumps.

Another design alternative that was considered included a median bikeway concept along Shoreline Boulevard and combinations of a median bikeway and other options. These options were not pursued further due to concerns regarding street geometry, safe turning arrangement for cyclists, transitions between different configurations, access to land uses, and impacts to vehicle flow.

Preliminary analysis of benefits and impacts suggested that Initial Alternative 1 was unlikely to yield significant benefits. For example, along California Street between Mariposa and Shoreline Boulevard, Initial Alternative 1 would not alter bicycle facilities to address quality gaps that had been identified. On Escuela, Initial Alternative 1 was considered inadequate for this high priority site with a high volume of children, high population density, and significant collision history.

For the remaining alternatives, feedback from B\PAC and staff supported the idea of designing phased alternatives that incorporate the above features, while allowing for phased implementation from one alternative to the next. The final build out would correspond to Initial Alternative 3, while earlier phased alternatives would allow for pilot implementation.

FIGURE 51: INITIAL ALTERNATIVES

ALTERNATIVE	CALIFORNIA STREET	ESCUELA AVENUE	SHORELINE BOULEVARD
1	Traffic calming	Traffic calming Bike boulevard	Traffic calming
2	Traffic calming Lane reduction (4à3 lanes with 2-way left turn lane) Parking protected bike lanes	Traffic calming Bike lanes Parking removal on one side	Traffic calming Lane reduction (6à4 lanes) Buffered bike lanes
3	Traffic calming Lane reduction (4à2 lanes) Parking protected bike lanes Landscaped median	Traffic calming Bike lanes Wide sidewalks Urban design No on-street parking	Traffic calming Lane reduction (6à4 lanes) Protected bike lanes & protected intersections

PHASED ALTERNATIVES

Three phased alternatives were advanced for further refinement through the design process and are outlined in Figure 52.

Along California Street, the first phased alternative could be a pilot 4-to-3 lane reduction created through pavement marking and temporary bulbouts either with paint or raised measures like planters, bollards, or rubber stoppers. This lane reduction would allow for shorter crossing distances and parking protected bike lanes with painted buffers. Under the second phase, permanent bulbouts with green street landscaping features would be added at intersections and midblock crossing locations. Under the final phase, a 4-to-2 lane reduction would be installed with limited gaps for left turn access between Showers Drive and Mariposa Avenue. The existing landscaped median east of Mariposa Avenue would also be retained under all three phases.

As a priority route, Escuela Avenue would be completed in just two phases. Under the first phased alternative, west-side bulbouts and raised crosswalks would be added. Under the second phase, bike lanes would be installed with removal of parking on the east side of the road.

Along Shoreline Boulevard, the first phased alternative would be a pilot 6-to-4 lane reduction created using pavement marking and temporary bulbouts either with paint or raised measures like planters, bollards, or rubber stoppers. Additional space created from this lane reduction would allow for buffered or parking protected bike lanes along the corridor. Under the second phase, permanent bulbouts would be installed with green street features. Under the final phase protected bike lanes and protected intersections would be implemented along the route.

FIGURE 52: PHASED ALTERNATIVES

PHASED ALTERNATIVE	CALIFORNIA STREET	ESCUELA AVENUE	SHORELINE BOULEVARD
1	Pilot 4-to-3 lane reduction ■ 2-way left turn lane ■ Parking protected bike lanes ■ Temporary bulbouts ■ Midblock crossings Intersection treatments at California/Rengstorff	Bulbouts Raised crosswalks at school and senior center	Pilot 6-to-4 lane reduction ■ Painted bike buffers ■ Temporary bulbouts
2	Permanent bulbouts with green street features	Bike lanes Parking removal on one side	Permanent bulbouts with green street features
3	4-to-2 lane reduction ■ Protected bicycle lanes ■ Landscaped median Sidewalk widening downtown	(Completion under Phase 2)	6-to-4 lane reduction ■ Protected bike lanes ■ Protected intersections

* Early implementation between Mariposa and Escuela to align with undergrounding of utilities
* Priority implementation of intersection treatments at California/Rengstorff
** Early implementation of intersection improvements at Shoreline/Villa and lane narrowing northbound over expressway to align with planned project

07

DESIGN FEATURES BY SEGMENT

FIGURE 53: PARKING PROTECTED BICYCLE LANES IN SAN FRANCISCO

Source: Flickr User Sergio Ruiz

Key design features the ultimate conceptual design along each segment are outlined in the following section.

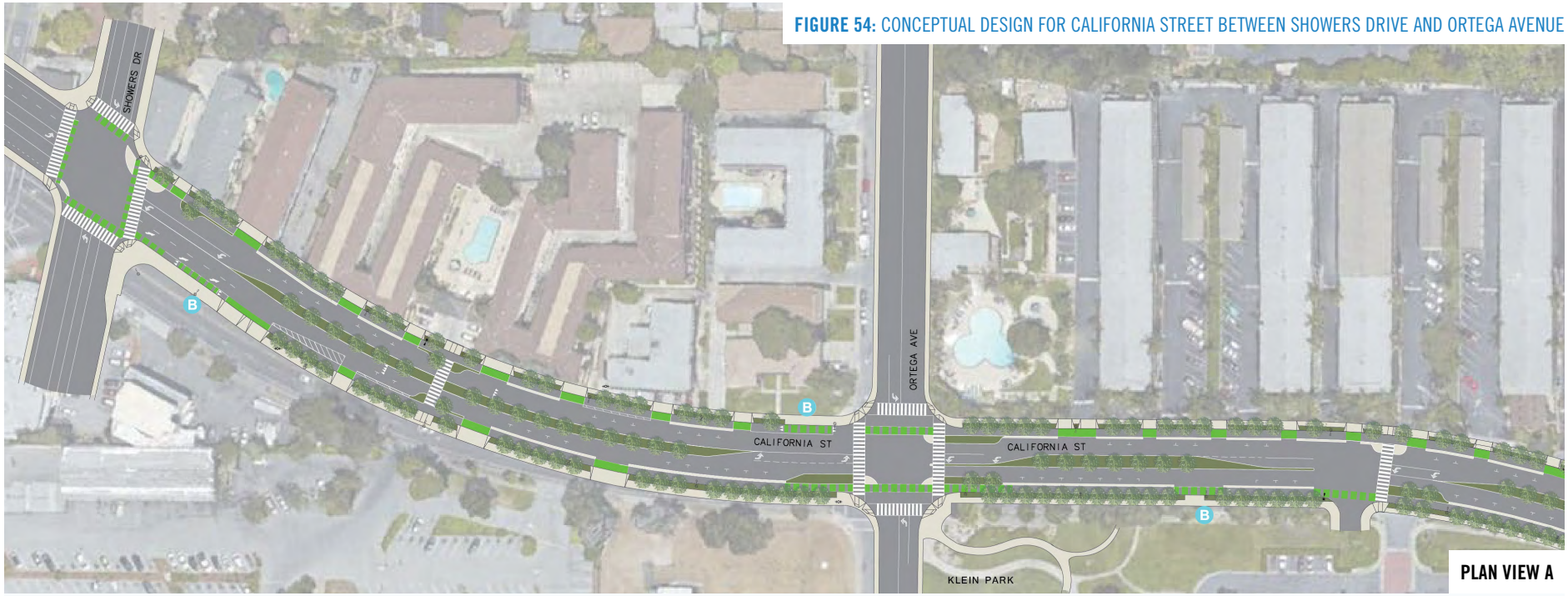
CALIFORNIA STREET: SHOWERS DRIVE TO ORTEGA AVENUE

The southern side of California Street between Showers Drive and Ortega Avenue falls within the San Antonio Precise Plan area. Under full buildout, the Precise Plan calls for 8-foot sidewalks and 6-foot amenity/planter zones outside of the curb. These dimensions suggest a 4-foot dedication beyond the existing back of the sidewalk on the southern side of California between Showers Drive and Ortega Avenue, and no relocation of the curb face.

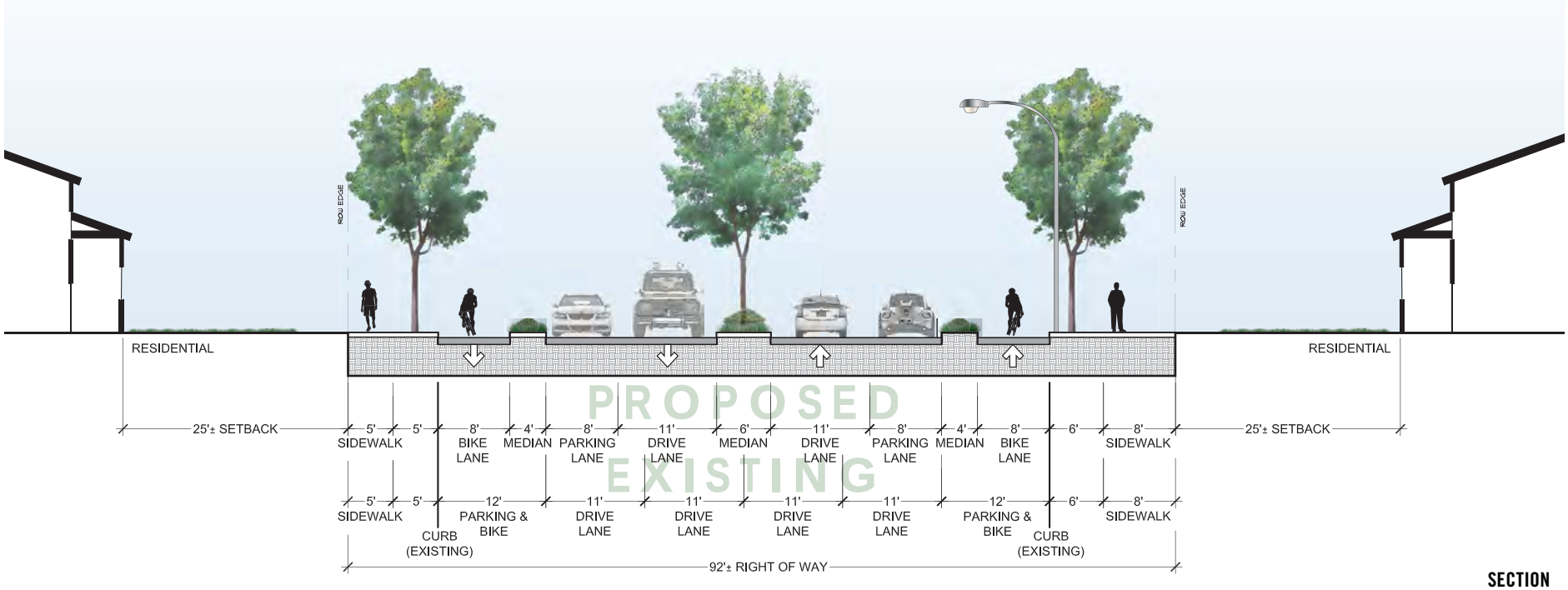
The present study assumes that the transition from an 8-foot sidewalk and 6-foot amenity/landscaped zone to a narrower 10-foot wide residential sidewalk and landscaped zone would occur at Showers Drive on the north side of California Street and Ortega on the south side of the street. Between the existing curbs, the transition from the San Antonio Plan street profile of four travel lanes (two in each direction) to a 4-to-2 lane reduction with parking would occur at Showers Drive.

Between curbs, the configuration of the lane reduction would include an 8-foot bike lane with sufficient room for passing, a 4-foot buffer zone, 8-foot parking lane, 11-foot travel lane and 10-foot turn lane. At Showers Drive, the initial transitional configuration in the eastbound direction would include a 6-foot bike lane and 11-foot merge/travel lane. Modified protected intersections would be installed to allow low-speed turning movements by various vehicle types. A midblock crossing with curb bulbouts would provide more frequent crossings and improved local access to shopping areas within the San Antonio Precise Plan area (south of California).

FIGURE 54: CONCEPTUAL DESIGN FOR CALIFORNIA STREET BETWEEN SHOWERS DRIVE AND ORTEGA AVENUE



PLAN VIEW A



SECTION

FIGURE 55: LANE REDUCTION ON THE ALAMEDA (FORMERLY SR82) IN SAN JOSE

Source: Nelson\Nygaard

FIGURE 56: PLANNED ROADWORK PROVIDES OPPORTUNITY FOR STREET REDESIGN

Source: Nelson\Nygaard

CALIFORNIA STREET: ORTEGA AVENUE TO MARIPOSA AVENUE

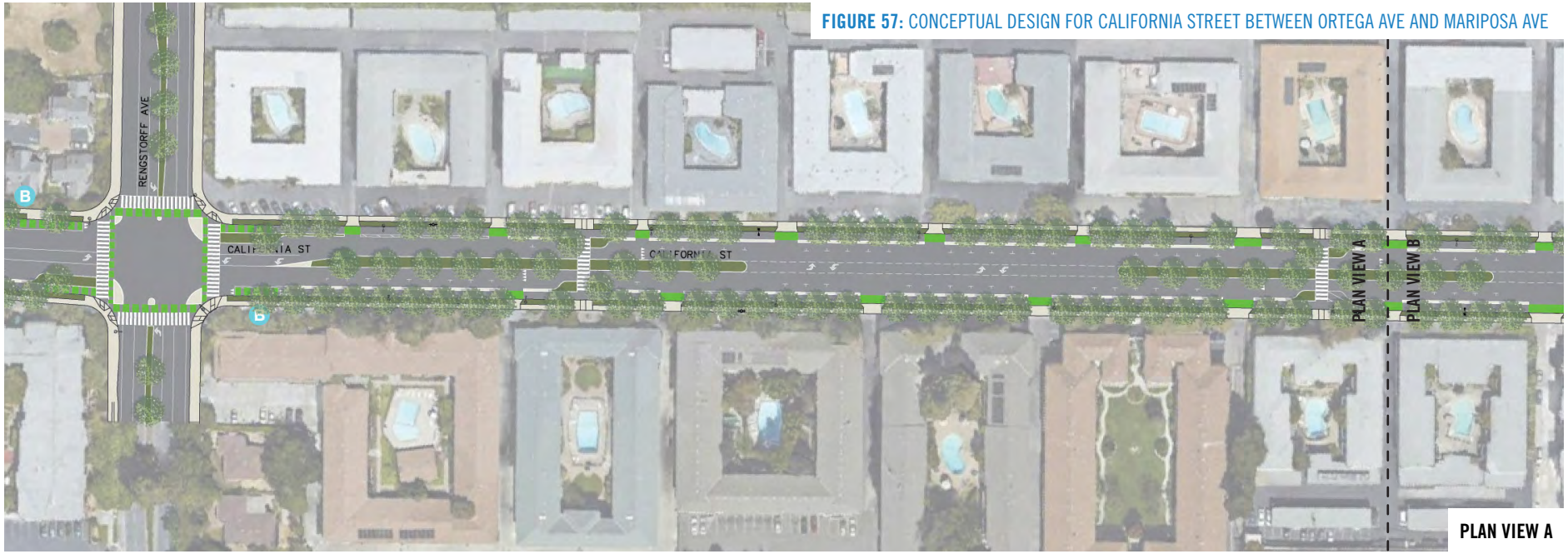
The segment between Ortega Avenue and Mariposa Avenue includes several long blocks lined with multi-family residential uses. In this segment, the final phased alternative could include a continuation of the 8-foot parking protected bike lane, 4-foot buffer, 8-foot parking lane, and 11-foot travel lane. Between intersections, the long blocks could be broken up with one to two additional crossing points with curb bulbouts and high visibility continental crosswalks. Corner bulbouts, continental crosswalks, and Dutch style protected intersections could also be installed at selected intersections.

Within this segment, there are two priority zones. The first priority zone is the street segment between Mariposa Avenue and Escuela Avenue. Given the utility undergrounding work that is slated to occur in 2016, early implementation of streetscape improvements could help to reduce costs, minimize neighborhood disruption, and maximize benefits in this area.

The second priority zone within this segment is the intersection of California Street and Rengstorff Avenue, which has been the site of a number of bicycle collisions. This intersection could be considered as a candidate for early implementation.

At all public bus stops along California Street, the travel lane would widen from 11 feet to 20 feet, which provides sufficient space for light vehicles to pass while buses are stopped. At these locations, the bike lane will continue along the curbside, and the raised buffer will narrow to a raised curb. Behind the raised curb, a small raised crosswalk across the bike lane would provide transit riders with clear priority as they embark and alight transit vehicles..

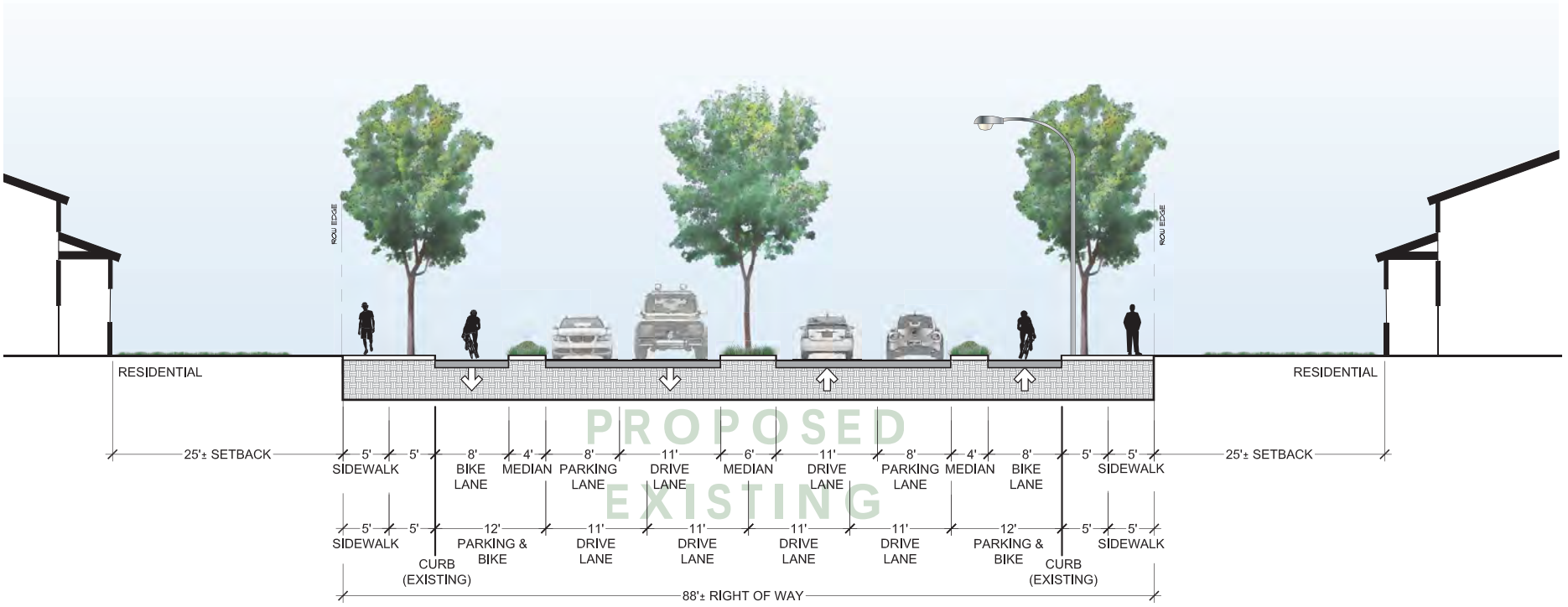
FIGURE 57: CONCEPTUAL DESIGN FOR CALIFORNIA STREET BETWEEN ORTEGA AVE AND MARIPOSA AVE



PLAN VIEW A

PLAN VIEW B

PLAN VIEW C



SECTION

FIGURE 58: A PARKING PROTECTED BIKE LANE WITH MINIMAL GRADE CHANGE BETWEEN THE BIKE LANE AND SIDEWALK

Source: Nelson\Nygaard

CALIFORNIA STREET: MARIPOSA AVENUE TO BRYANT STREET

The segment of California Street between Mariposa Avenue and Bryant Street would feature a continuation of the 4-to-2 lane reduction.

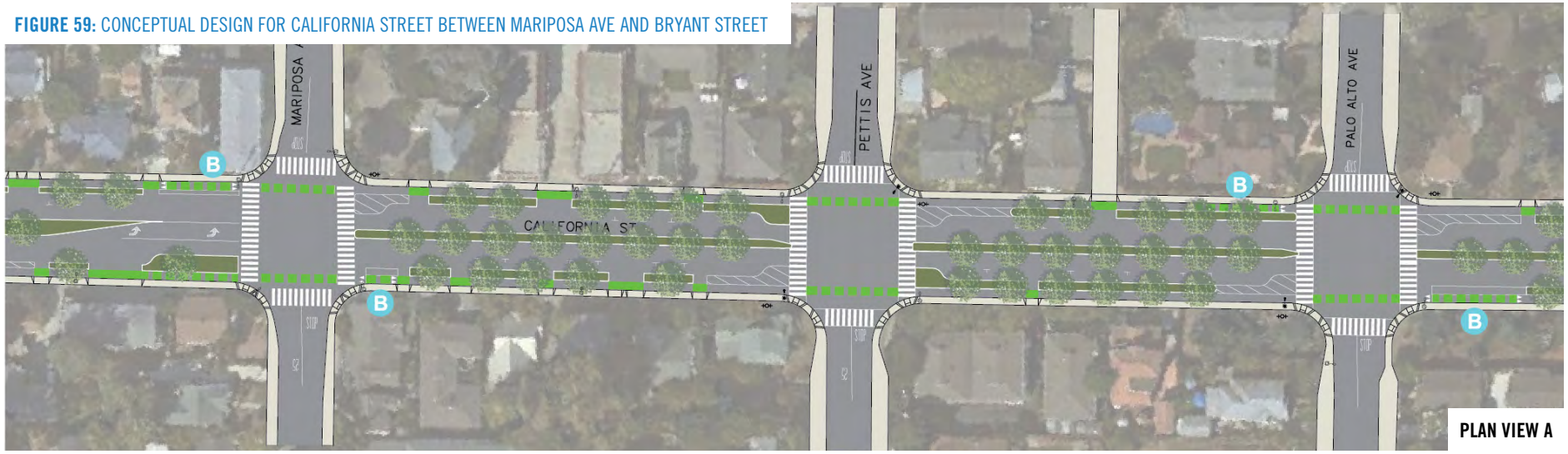
Between Mariposa Avenue and Shoreline Boulevard, the lane reduction would include a 6-foot wide parking protected bike lane, a 6-foot landscaped buffer, 8-foot wide parking lane and 11-foot wide travel lane. The wider buffer along this segment allows for more intense plantings in an area that currently lacks a buffer between the sidewalk and travel/parking lanes.

Along this segment, there are two options for placement of the bike lane. The first option would place the bike lane at the road level and inside the existing curb. The second option would place the bike lane at the sidewalk level, effectively creating a wider multiuse facility for both bicycle and pedestrians. The tradeoff to providing this wider combined facility is the more costly and complex construction of a new curb face and gutters. A multiuse facility would provide a more expansive pedestrian realm, but may allow for some cyclists to encroach into pedestrian space.

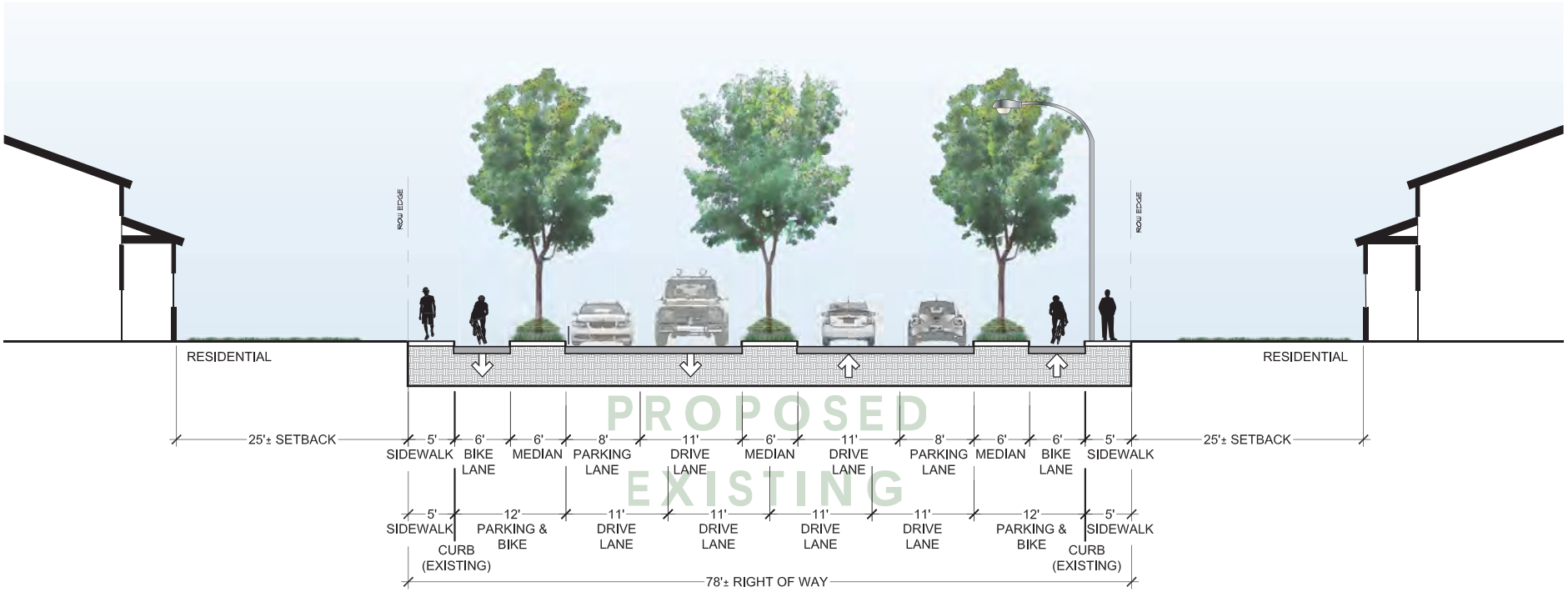
To the east of the Shoreline Boulevard, the street would transition to the existing lane reduction in the downtown. In this area there is potential to widen sidewalk in order to provide a more uniform and wide pedestrian realm. The tradeoff is that sidewalk widening would require removal of mature trees in this area.

Throughout this segment, corner bulbouts and installation of high-visibility continental crosswalks would improve the quality of pedestrian crossing facilities.

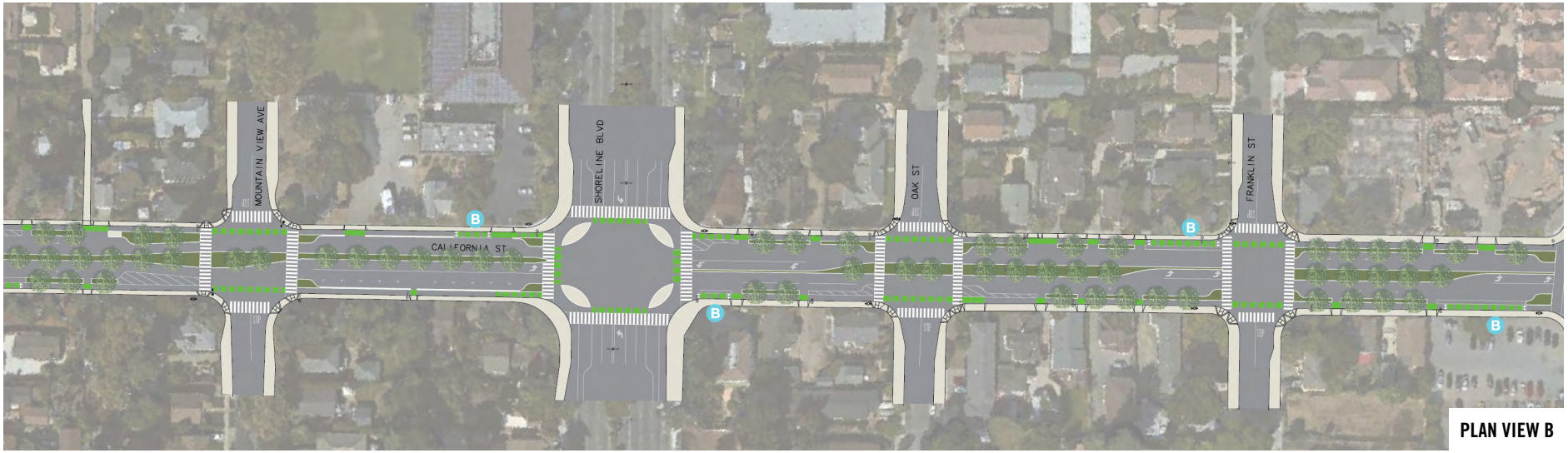
FIGURE 59: CONCEPTUAL DESIGN FOR CALIFORNIA STREET BETWEEN MARIPOSA AVE AND BRYANT STREET



PLAN VIEW A



SECTION


MOUNTAIN VIEW AVE
CALIFORNIA ST
SHORELINE BLVD
OAK ST
FRANKLIN ST
B
B
B
B

PLAN VIEW B

ESCUELA AVE: LATHAM STREET TO CRISANTO AVENUE

Along Escuela Avenue, the final phased alternative would include new bike lanes achieved through removal of parking on the east side of the street. A wider bike lane is recommended for the west side of the street, to provide protection from potential "dooring" collisions with parked vehicles.

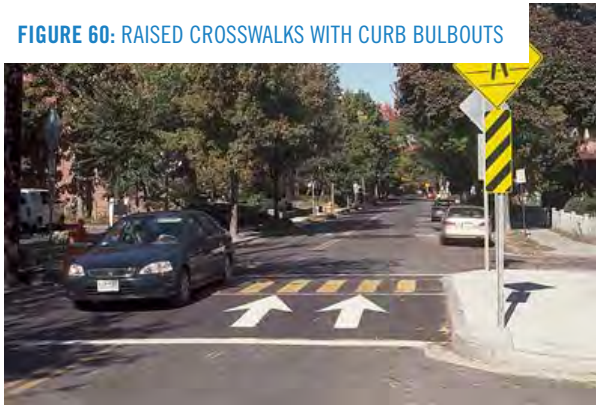
In advance of this treatment, an initial phased alternative includes west-side bulbouts at corners and crossing locations as well as installation of raised crosswalks at Castro Elementary School and the Mountain View Senior Center.

Early consideration of more intense urban design treatments and sidewalk widening was not advanced to conceptual design due to potential impacts of removing parking on both sides of the street.

Parking supply and utilization counts were collected for on-street spaces and public off-street spaces on Wednesday, March 25, 2015 and Sunday March 29, 2015. These counts indicated that on-street parking reaches an overnight peak of around 85%, which corresponds to an optimal peaking rate. Removal of on-street parking on one side of the street could potentially be accommodated through underutilized public and private off-street spaces (only public off-street spaces were included in this survey). Neighborhood travel demand management (TDM) strategies for new development or key land uses could also enhance multimodal transportation options and reduce parking demand.

As discussed in the B/PAC and Council meetings, this street segment is a priority area for pedestrian and bicycle safety improvements.

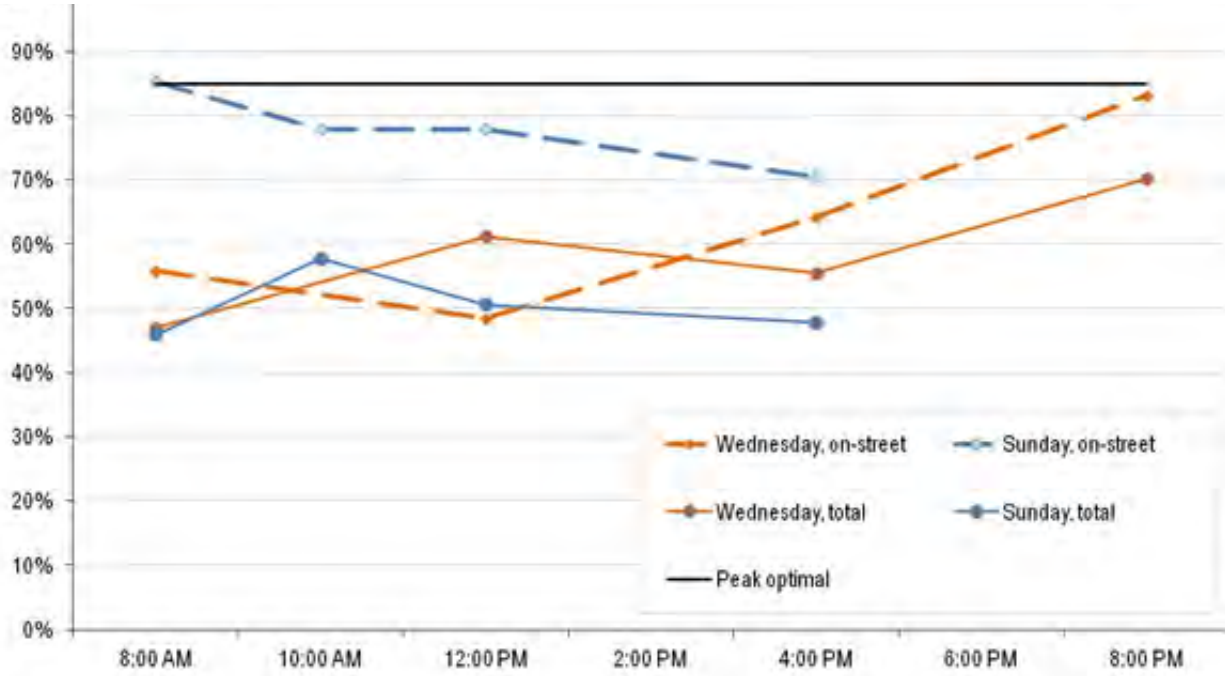
FIGURE 60: RAISED CROSSWALKS WITH CURB BULBOUTS



Source: bikexprt.com

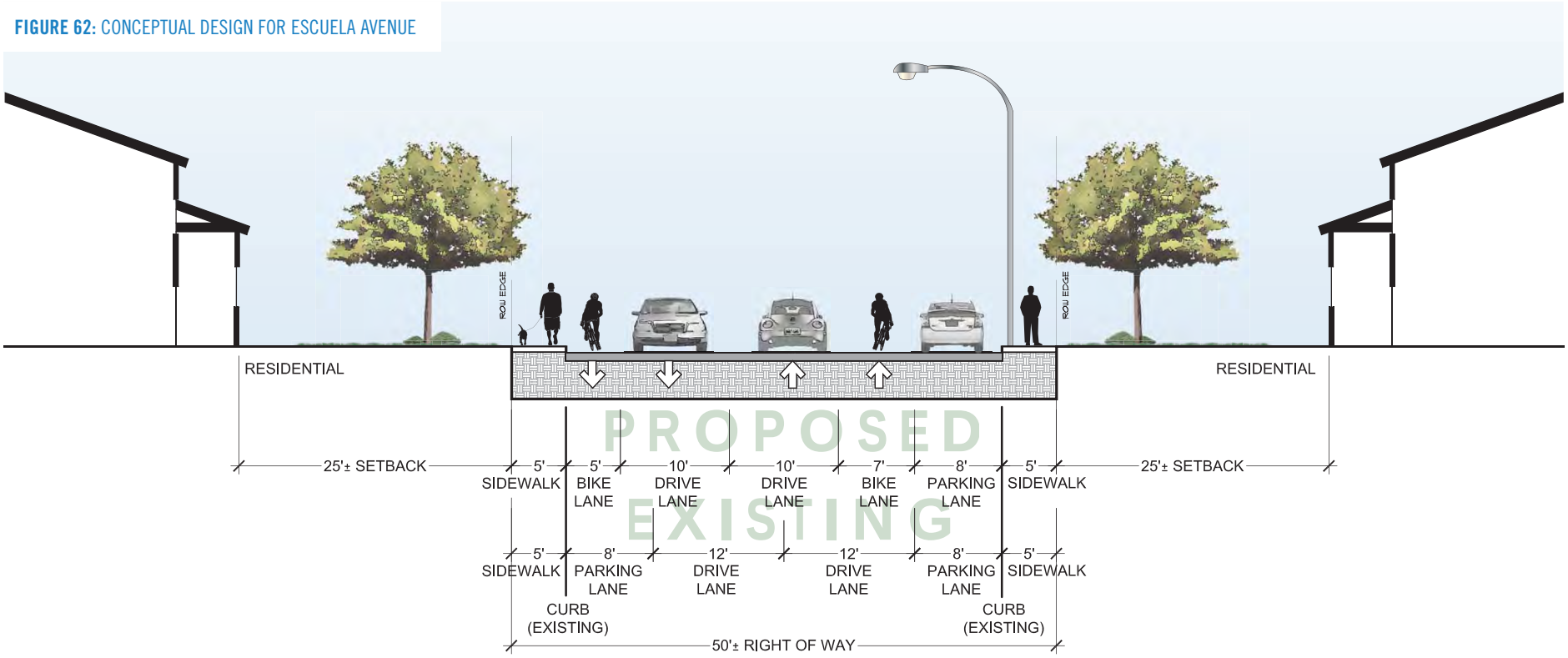
Source: PlaceWorks (Green Streets Treatment)

FIGURE 61: PUBLIC AND ON-STREET PARKING UTILIZATION ALONG ESCUELA AVENUE, WED 3/25/2015 AND SUN 3/29/2015



Source: Nelson\Nygaard

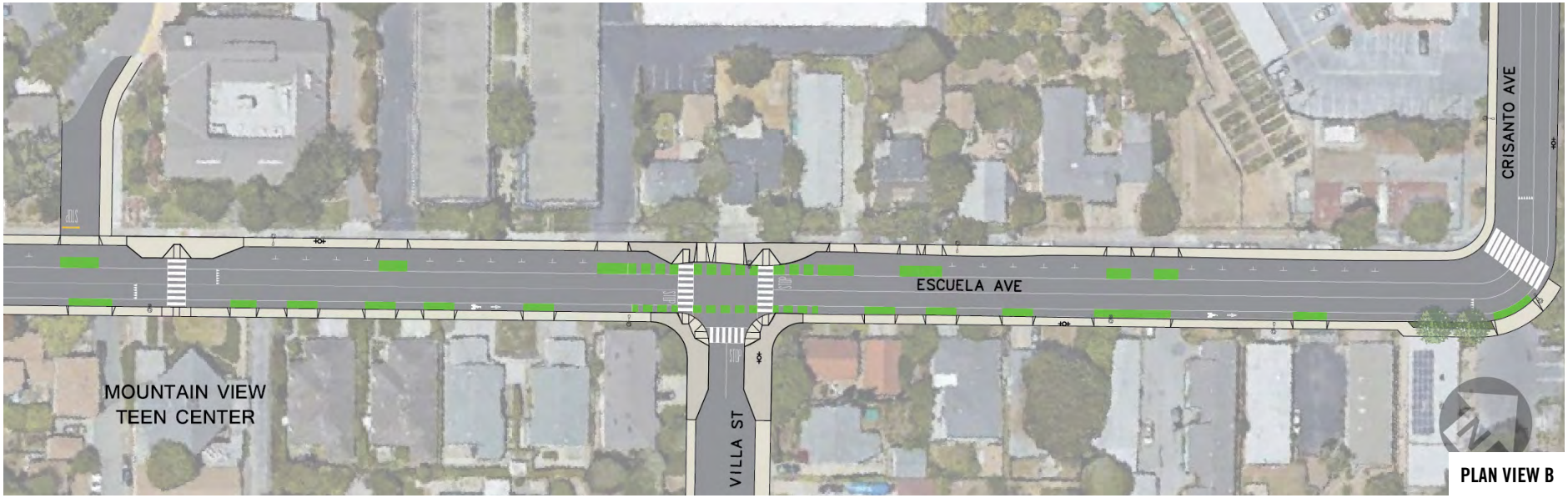
FIGURE 62: CONCEPTUAL DESIGN FOR ESCUELA AVENUE



SECTION

FIGURE 63: CONCEPTUAL DESIGN FOR ESCUELA AVENUE

PLAN VIEW A


CRISANTO AVE
ESCUELA AVE
MOUNTAIN VIEW
TEEN CENTER
VILLA ST
STOP
STOP
STOP

PLAN VIEW B

SHORELINE BOULEVARD: EL CAMINO REAL TO VILLA STREET

The southern segment of Shoreline Boulevard would retain the existing median and turn pockets as well as two 11-foot travel lanes (narrowed from 12 to 13 feet). The existing travel lane closest to the curb would be removed and the space from this lane as well as reduced width in other travel lanes would be reallocated to provide improved multimodal facilities. These facilities include a 10-foot sidewalks, 5-foot landscaped buffer, 8-foot protected bike lane, 6-foot landscaped bike buffer, and 8-foot parking lane.

Key improvements along Shoreline Boulevard would also include protected intersections at all signalized intersections (at El Camino Real, California Street, Villa Street and Montecito Avenue) with corner bulbouts to shorten pedestrian crossing distances, and caps to slow turning movements as motorists cross the pedestrian and bicycle crossings. At all signalized intersections (along both Shoreline Boulevard and California Street), a 2 second advanced pedestrian interval would be introduced to provide pedestrian priority and visibility within signalized crossings and to allow bicycles to enter the intersection before potential conflicting right-turning vehicles.

FIGURE 64: PROTECTED BICYCLE LANES IN ROSEMEAD, CA

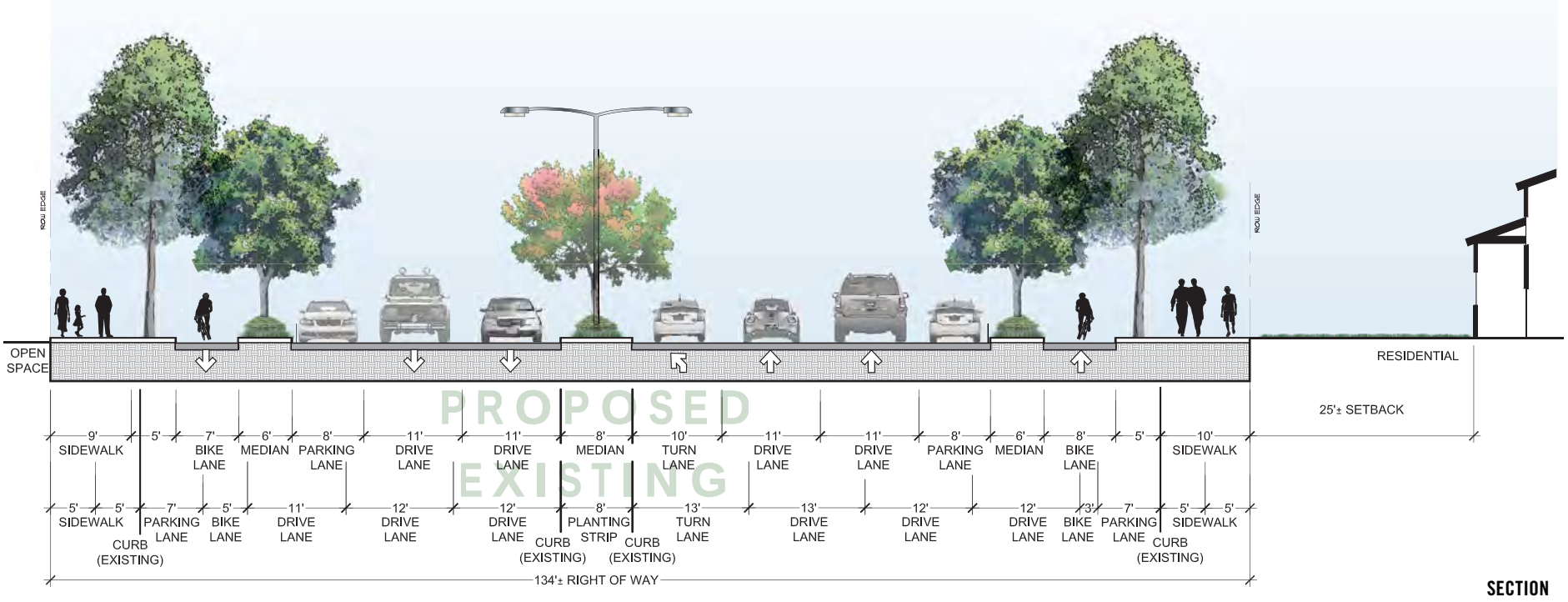
Source: Joe Linton, Streetsblog LA

FIGURE 65: PROTECTED INTERSECTIONS IN DAVIS PROVIDE CONTINUOUS BICYCLE ACCESS THROUGH INTERSECTIONS

Source: City of Davis

FIGURE 66: CONCEPTUAL DESIGN FOR SHORELINE BOULEVARD BETWEEN EL CAMINO REAL AND VILLA STREET

PLAN VIEW A

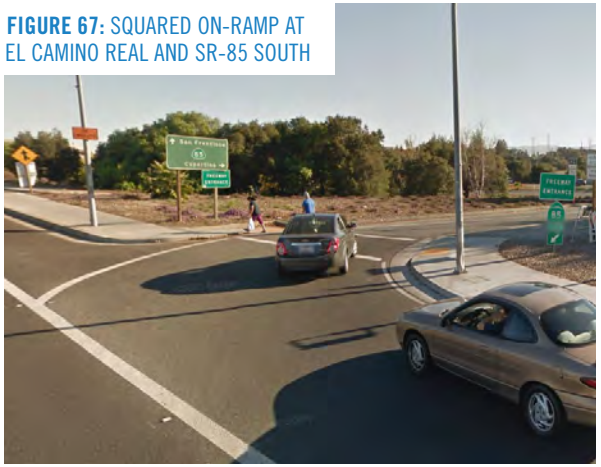


SECTION


CALIFORNIA ST
MOUNTAIN VIEW ACADEMY
W. DANA ST
SHORELINE BLVD
VILLA ST
B
B

PLAN VIEW B

FIGURE 67: SQUARED ON-RAMP AT EL CAMINO REAL AND SR-85 SOUTH



Source: Google Streetview

FIGURE 68: BUS BAY WITH PROTECTED BIKE LANE

Source: Dylan Passmore

SHORELINE BOULEVARD: VILLA STREET TO MONTECITO AVENUE

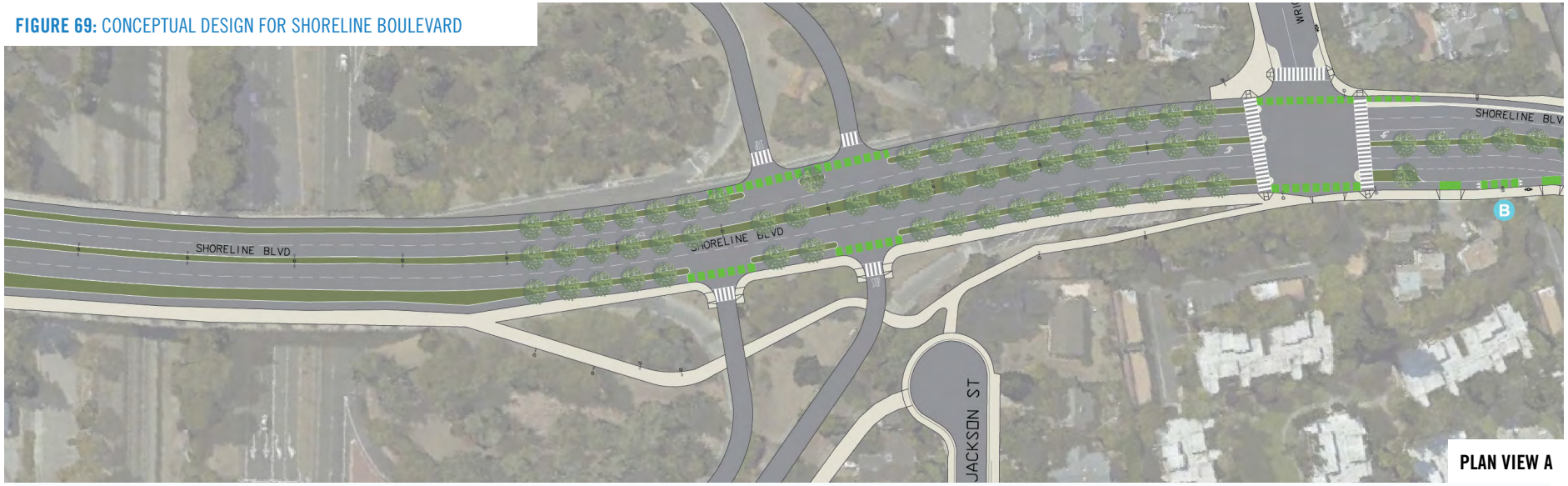
Along the overpass segment between Villa Street and Wright Avenue, pedestrian access along the east side of the overpass would be provided by the improved pedestrian facility under development as part of the Shoreline Boulevard Pathway Project. For cyclists, protected 8-foot bicycle lanes (with a buffer of varying widths) would continue from the south along both sides of the overpass. On- and off-ramps for Central Expressway would also be "squared up" and stop signs placed at off-ramp approaches to Shoreline Boulevard in order to dramatically reduce the speed of entering and exiting vehicles as they cross the bike facilities. The ramps will be designed to achieve as close to a 90 degree intersection as the grades will allow.

To the north of Wright Avenue, the existing right-of-way is narrower as the road shifts from six to four travel lanes. As the right-of-way narrows, the bicycle buffer would also narrow. Additional space from lane narrowing would be allocated to provide comfortable bike lanes with a narrow raised buffer. Along this stretch, bus stops located near Wright Avenue would be retained, with bicycle facilities going behind the bus bay to avoid any potential conflicts between buses and bikes. At the bus stops, a small raised crosswalk across the bike lane would provide transit riders with clear priority as they embark and alight transit vehicles.

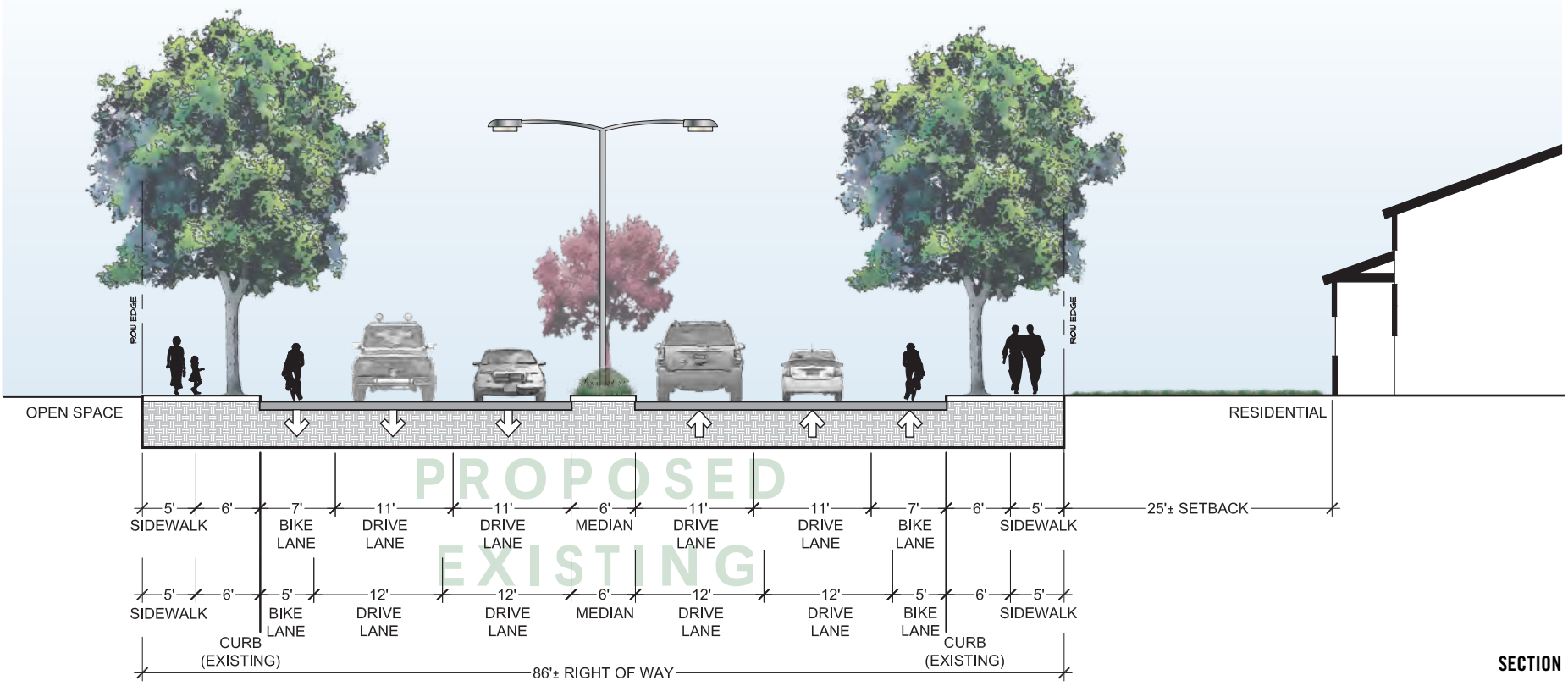
Between the bus bay and Montecito Avenue, there is insufficient right-of-way to accommodate Class IV protected bikeways or Class II buffered bike lanes based on design assumptions of 11-foot travel lanes, retention of existing landscaped medians, and no taking of right-of-way. According to the City's Draft Bicycle Transportation Plan, however, the City should give priority consideration to the installation of Class IV protected or separated bike lanes on city streets with vehicle speeds at or above 30 miles per hour. The City may therefore wish to further analyze tradeoffs and options to facilitate installation of Class II buffered bike lanes or a Class IV protected bikeway along this stretch.

Along this segment a priority zone is the intersection of Shoreline Boulevard and Villa Street and lane narrowing northbound over the expressway. At this location, intersection and lane narrowing changes could occur in advance of other work to align with other projects. Likewise, the Shoreline Boulevard Pathway Project is underway and is designed to improve ADA performance of pedestrian access on the east side of the overpass.

FIGURE 69: CONCEPTUAL DESIGN FOR SHORELINE BOULEVARD



PLAN VIEW A



SECTION

PLAN VIEW B

FIGURE 70: GREEN STREETS TREATMENT AT RAISED CROSSWALK

Source: PlaceWorks

GREEN STREETS FEATURES

As discussed in the previous sections, streets in the study area can be more efficiently designed to create spaces for pedestrians and planted areas. This plan for multimodal improvements in the corridors creates center medians or vegetated buffers that help reduce traffic speeds while providing beneficial environmental services, such as stormwater retention and greenhouse gas reduction. Trees and other landscape plantings offer significant urban greening benefits, including improved ecological function, enhanced health and quality of life for residents, and increased economic value of commercial and residential properties. Services such as stormwater retention, carbon dioxide reduction, and shade protection are extremely valuable and trees and plants offer an economically sensible and ecologically sensitive way of providing these services in urban areas. Furthermore, increased greening and well-maintained natural features provide an attractive urban condition that can positively impact resident and visitor experiences within the City of Mountain View. Appropriate plant selection and thoughtful short- and long-term maintenance can ensure that these green assets are maximized and retain their value over time.

A plant palette includes a list of trees, shrubs, grasses, perennials, and groundcovers that are drought-resistant and appropriate for the local climate. Plant water requirements are based on the Water Use Classifications of Landscape Species (WUCOLS IV), published by UC Davis in collaboration with the California Center for Urban Horticulture (CCUH) and the State of California Department of Water Resources. More information is available at: www.ucanr.edu/sites/WUCOLS/. A suggested Plant Palette for this study area is provided at Appendix E.

Existing conditions impacting the plant palette include the climate zone. Based on the categorization in the Sunset Western Garden Book, a planting resource guide for climate-specific planting, the City of Mountain View is located in Climate Zone 15. There is little to no summer precipitation in Mountain View so plants requiring water need to be irrigated during the summer months. As of 2015, California is in its fourth year of a serious drought. In April, Governor Jerry Brown issued Executive Order B-29-15a with immediate restrictions placed on water use in the landscape. Therefore, new planting must be drought-tolerant to minimize irrigation needs given current conditions and anticipated, continued water restrictions.

GREEN STREETS DESIGN GUIDELINES PLANT SELECTION

The following is a list of specific criteria to consider during plant selection, including invasive species, native species, hydrozones, soil, year-round interest, and plant height and spacing, as described below.

- **Invasive Plants**. Invasive plants should always be avoided during plant selection. CAL-IPC's "Don't Plant a Pest" list for the Bay Area region and PlantRight's invasive plant list for the North and Central Coast region should be used as references. These lists are updated periodically, so it is important to check them on a regular basis to ensure newly-identified invasive species are not planted. More information is available at: http://www.cal-ipc.org/landscaping/dpp/planttypes.php?region=bayarea or http://www.plantright.org/regions/north-and-central-coast

- **Native Species.** Ecosystems are comprised of flora and fauna that have co-evolved. Plant species from other regions are often inedible to local fauna, such as native moths and butterflies. Removing native plants and replacing them with decorative and exotic plants throws the system into imbalance and fragments functional habitat. Native species should be prioritized during plant selection because they improve biodiversity and have a measureable effect on the health of the landscape. They also can help define a region and draw attention to the area's unique quality. Native plants are extremely well-suited for the climatic conditions of their home range; however, the soil compaction and environmental conditions of an urban setting may limit the success of some species of native plants. Native species can be augmented by plants from similar climatic regions that are well adapted to urban environments. The Plant Palette builds on the native plants of the region and supplements them with plants adapted to the climatic conditions of Mountain View.

- **Hydrozones.** Plant selection should respond to varying soil, water, and sun exposure requirements. Consider the site's microclimate and potential for reflected heat from roadways or buildings, and group plants with similar tolerances. Do not mix California natives and Mediterranean plants with species from other regions that are not adapted to dry summer climates in the same hydrozone as this will result in over- or under-watering, and they will not naturally thrive.

- **Soil.** Soil type and quality are important in plant selection, both because of the water-holding capacity of the different soil types as well as general soil preferences for certain plant species. Although soil amendments such as compost can vastly improve the soil's ability to sustain growth, it is important to consider existing soil restrictions.

- **Year-Round Interest.** Utilize evergreen shrubs and groundcovers in the Plant Palette to help provide year-round interest. Anchoring the planting layout with drought-tolerant and native plants that will remain green year-round helps provide structure. Both seasonal and year-round flowering shrubs and trees should be used where they can be most appreciated – adjacent to walkways and recreational areas, or as a frame for site gateways, building entrances, and stairs. Plants should be selected and sited to reflect both ornamental and functional characteristics. Full-canopy shade trees, greenery, and brightly colored flowering materials should be combined.

- **Plant Height.** Groundcover and shrub heights, as well as sightlines, should be considered when selecting plant species. When placing plants near roadways and intersections, provide sufficient setbacks for larger plants to ensure good visibility by both pedestrians and vehicles, thereby protecting pedestrian safety when crossing streets and providing safe turning distances for vehicles. Plants within sightline zones should grow no higher than 24 inches at maturity.

- **Crime Prevention** Through Environmental Design (CPTED) guidelines encourage visual corridors to be maintained throughout the public realm. Groundcover and shrubs should be maintained to remain below 36 inches, and tree canopies should be above head height (6 feet above the ground).

- **Plant Spacing.** Plants should be selected and placed to allow room to grow to full size at maturity. Ensure the plant is the right size for the space. Mature sizes of plant materials should be considered when selecting plant species to avoid unnecessary shearing to maintain plant health and avoid green waste. Plants and foliage do not need to fill the entire planting area in order to create a visually attractive landscape. Mulch or ground surfacing such as decomposed granite (DG) can provide an attractive and

functional ground surface between plants while further limiting water needs.

SUITABLE AREAS (PLANT COMMUNITIES)

Different plant species are more suitable for some types of spaces than others. In certain situations, trees can cause safety hazards and/or destruction of property. Key plant communities are defined below and categorized in the Plant Palette as "suitable areas" or sites where the species would be well-suited or useful.

- **Stormwater Management.** Plants that can withstand flooding are the ideal plants for areas with persistent stormwater issues at low points in the landscape. Factors to be considered include inundation period, volume of water, expected velocity of water flow, and access and maintenance requirements. Specific shrubs and grasses that help with stormwater infiltration and phytoremediation are categorized in the Plant Palette. Additional guidance is provided in the section below on Stormwater Management.
- **Street Corridors.** Many species have fast-growing, shallow, and/or large root systems that are known to damage asphalt and create conflicts with underground utilities. While locating street trees, consider the presence of underground utilities, especially gas lines. Also account for enough tree well space to give street trees enough room to thrive, and space trees appropriately to provide for enough shade without excessively overlapping canopies. Trees in the streetscape should also have an upright habit without low branching to maintain sightlines.
- **Turf Alternatives.** Turf grass is often selected for active use areas, but it has high-water needs and requires routine mowing, as well as fertilizer and pesticide application. Therefore, turf grass should be eliminated when it is not serving a specific recreational or public use function. No-mow grass alternatives or native grass blends should be used wherever possible. Examples of turf alternatives are listed in the Plant Palette.

IRRIGATION DESIGN

The majority of California native and climate-adapted plants do not respond well to overhead water in the summer. New planting often needs to be irrigated regularly when first installed, but on-going irrigation is not always needed once the plants are established. This is particularly true of species with low water needs, as indicated in the Plant Palette. Where necessary, a low volume irrigation system (i.e. drip, inline drip, and bubblers) should be installed, and recycled water should be utilized, if feasible.

Irrigation systems should be designed and installed to be highly-efficient with self-adjusting ("smart") irrigation controllers that are weather-based or soil-based. All systems should be equipped with a rain-sensing or moisture-sensing shutoff device to ensure water is applied sparingly yet efficiently. To eliminate runoff, multiple start times may be required to allow infiltration into the soil for water conservation. Also, proper soil management should be used to avoid compaction (which leads to runoff) and to maximize infiltration, utilizing good quality green-waste compost and avoiding the use of synthetic fertilizers and pesticides.

City-established irrigation standards and guidelines for appropriate irrigation techniques will help to appropriately irrigate plants to responsibly conserve water. All irrigation design must comply with the California Water Efficient Landscape Ordinance (CAL WELO). To help comply with CAL WELO, the following note should be included on irrigation construction documents: "Contractor to provide product list, parts, models, and shop drawings with flow rate, head spacing for full coverage, distribution, and matched precipitation rates meeting the most recent California Water Efficient Landscape Ordinance (CAL WELO)." More information is available at: www.water.ca.gov/wateruseefficiency/landscapeordinance/

STORMWATER MANAGEMENT

Plants that can withstand flooding are the ideal plants for areas with persistent stormwater issues at low points in the landscape. Factors to be considered include inundation period, volume of water, expected velocity of water flow, and access and maintenance requirements. Specific shrubs and grasses that help with stormwater infiltration and phytoremediation are categorized in the Plant Palette.

Sustainable stormwater management techniques have the capacity to reduce flooding, improve water quality, and provide habitat for wildlife. These techniques, known as low impact design (LID), attempt to mimic nature by restoring hydraulic patterns through cleansing, diffusing, and absorbing the water where it falls. Additionally, stormwater practices that utilize natural processes often involve creating rain gar-

dens, swales, and other attractive drainage plantings in areas that would otherwise be eyesores. Other LID strategies include:

- Maximizing the tree canopy, which can catch and slow rain fall before it hits the ground, thus slowing runoff rates and allowing more time for in-filtration.
- Installing permeable hardscape, allowing runoff to be absorbed into the ground.
- Using structural features, such as green roofs, cisterns, and rain barrels, to collect and use rainwater.
- Adding energy dissipaters, such as vegetation, rocks, and fiber rolls, in the path of water flow to reduce the speed of runoff.

These LID techniques aim to preserve or replicate natural drainage patterns, maximize permeable areas where stormwater can be absorbed into the ground, detain and retain runoff, and direct small quantities of runoff into landscape areas to spread out stormwater infiltration areas.

FIGURE 71: SUSTAINABLE STORMWATER MANAGEMENT

Source: PlaceWorks

Such practices offer economic benefits as well. LID projects can be completed at a cost reduction of 25 to 30 percent over conventionally developed projects, as costly stormwater ponds, underground drainage pipes, or wide streets are replaced by less expensive features such as rain gardens and planted swales. Cities across the country, including Chicago, Philadelphia, New York, and Seattle, are increasingly using such techniques to improve water quality, reduce flooding, and build resilience to weather extremes. The US Environmental Protection Agency (EPA) also supports these techniques as a way to better manage stormwater while achieving other goals such as water quality.

STORMWATER MANAGEMENT DESIGN GUIDELINES

This section identifies tools that will help the City of Mountain View comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for Small Municipal Separate Storm Sewer Systems (MS4) and the California Water Efficient Landscape Ordinance (CAL WELO). This program, authorized by the Clean Water Act, controls water pollution by regulating municipal point sources that discharge pollutants into waters of the United States. The amount of pollutants that enter a storm drain can be significantly reduced by intercepting and infiltrating stormwater in planting spaces.

Site planning and design prior to construction can help to mitigate stormwater with low-impact development. BMPs include:

- Preserving or replicating natural drainage patterns
- Avoiding excessive grading and disturbance of existing vegetation
- Concentrating development on portions of the site with less permeable soils to preserve areas that can promote infiltration
- Limiting a project's overall impervious coverage (i.e. paving and roof area);
- Detaining and retaining runoff throughout the site
- Employing small-scale design solutions that direct smaller quantities of runoff into landscape areas, which spreads out stormwater infiltration areas, allowing for more stormwater to sink in, thereby reducing infrastructure costs
- Sites with existing stormwater issues can be retrofitted with the following design elements, wherever feasible.

MAXIMIZE TREE CANOPY:

A healthy urban forest can help contribute significantly to addressing stormwater. Tree canopies catch and slow rain fall before it hits the ground, thus slowing runoff rates and allowing more time for infiltration. Trees also draw water from the soil and release it into the atmosphere. The contribution of an urban forest to stormwater management increases as the overall canopy coverage grows. A well maintained tree canopy can provide additional environmental benefits, such as providing erosion control and regulating air temperature. Guidance on appropriate

tree species for absorbing stormwater can be found in the Plant Palette.

Trees should be strategically preserved and planted where they will have the most impact, such as above hardscape in streetscapes and parking lots. Large, leafy tree canopies are best at intercepting rainwater.

Ideally, street trees should be located in planted areas with ample room to grow. Where space is limited, the elements described below should be implemented to improve tree health.

- Tree Wells. Pre-engineered and custom tree wells can provide increased runoff storage and filtration utilizing growing medium to uptake water and pollutants. One advantage of pre-engineered units is the availability to use them for retrofits of existing parking lots with minimal disruption to the existing landscaping and infrastructure.
- Structural Soil. Extensive research has demonstrated that structural soil can perform as a paving base, while also serving as optimum growing medium for trees. The material consists of gap-graded gravels made up of crushed stone, clay loam, and a hydrogel stabilizing agent. This material can be compacted to meet pavement loading requirements while maintaining a lattice and void structure that allows for root development. Structural soils, when correctly designed and installed, provide multiple benefits, such as encouraging deeper root growth, providing a reservoir for stormwater retention (a water supply source for tree roots), and protecting underlying soils from compaction.
- Bio-Retention Cells. A subsurface pavement support system, such as DeepRoot's Silva Cell©, can serve as an alternative to structural soil. A modular cell system that supports traffic loads while preventing soil compaction can also house soil within its cells to support root growth and retain stormwater.

INSTALL PERMEABLE HARDSCAPE:

Traditional paving materials are impermeable; therefore, rainfall is not able to infiltrate into the soil below. Installing porous hardscape materials will allow water to move through the surface and into the soil below, imitating natural drainage systems and significantly reducing the quantity of runoff. Utilizing permeable hardscape within the street corridor with existing storm drains will likely result in cost savings when the storm drain system is replaced. Several examples are described below.

- Porous Paving. Porous asphalt and concrete paving use a coarse aggregate mix that eliminates the finer particles, creating pockets in the finished surface. As mixing and placement requirements differ from standard concrete and asphalt, working with qualified vendors and certified contractors is critical to optimum performance. Porous concrete can also be manufactured in the form of pavers, allowing water to drain directly through the paver.
- Open Grid Paving. Paving systems with open-jointed block paving and filled with permeable aggregates allow for water to enter into the joints between the pavers and infiltrate to the soil. Open-cell paving grids have large voids filled with aggregate or sod, which are designed to structurally support the weight of pedestrians and vehicles.
- Infiltration Trenches. Infiltration trenches are shallow basins that serve as underground reservoirs for stormwater. The trenches, which are lined with filter fabric and filled with gravel, help slow stormwater runoff and remove pollutants from stormwater.
- Energy Dissipaters. Fast-moving stormwater, especially on steeper slopes, can cause major erosion and damage downstream channels and drainage structures. Slowing the velocity of the water flow with energy dissipaters can prevent these problems. Examples of energy dissipaters include vegetation, as well as stone-lined channels and compost socks.

UTILIZE BIOFILTRATION FEATURES:

Landscape-based treatment measures, including biofiltration trenches, vegetated swales, and rain gardens, should be strongly encouraged as they are found to be the most effective way to holistically treat stormwater runoff. The vegetation that these measures support is able to filter pollutants from stormwater, while also absorbing the water over time and releasing it back into the atmosphere through transpiration. Hardscape should be sloped toward these treatment areas, and any barriers, such as curbs, should be designed to allow for stormwater runoff to travel into the planted areas. Paving should be strategically located and pedestrian "bridges" should be included to reduce foot traffic through the stormwater features. Low-irrigation and low-main-

tenance plant species that are suitable for periodic inundation are identified in the Plant Palette.

To increase the water-absorbing capabilities of on-site soils, compost tea or non-synthetic fertilizers should be used. Because fertilizers and pesticides negatively impact stormwater quality, integrated pest management should be utilized during project construction and maintenance, focusing on mechanical, cultural, physical, and biological pest controls and utilizing the least toxic pesticides as a last resort. Adding mulch to landscape areas will provide soil stabilization, reduce stormwater runoff velocity, and improve the infiltration of runoff. A 2- to 3-inch layer of mulch is recommended for all exposed soils around plants, except in turf areas or direct seeding applications. Sheet mulching – applying a layer of paper or cardboard underneath the mulch – will further enhance weed suppression and build soil health.

- **Biofiltration Trenches**. A planted trench integrated into the streetscape introduces plants to capture stormwater pollutants and allows stormwater to infiltrate through the soil and into the groundwater below. Curb cuts allow stormwater to enter the trench. The trenches also provide space to plant street trees, but appropriate tree selection is important to ensure tree health and avoid damage to the surrounding hardscape with large root systems. Biofiltration trenches can be integrated into sidewalks, planting strips, and other locations.
- **Vegetated Swales**. Vegetated swales are linear open channels planted with vegetation that filter out sediments as the runoff flows across the surface. Suitable locations include planted areas in parking lots and along streets, where stormwater can enter the swale. Side slopes should not be more than 2:1, with 3:1 or flatter preferred. The soil within vegetated swales should have a percolation rate of 5 inches per hour. Often, well-draining soil must be imported to meet this requirement. Swales constructed over heavy clay soils may require an underdrain to prevent ponding. Plant material used in vegetated swales needs to tolerate both inundation and drying periods. Grasses and fine-leaved plants are preferred to trap sediments, however conventional mowed turf is discouraged due to the use of fertilizers and herbicides. Drought tolerant no-mow turf varieties are encouraged, as they reduce maintenance needs.
- **Rain Gardens**. Rain gardens are depressions that infiltrate and treat runoff through evaporation and transpiration. Rain gardens can be located in curb bulb-outs, sidewalk extensions, or low-lying planted areas. When located within the streetscape, curb cuts can allow stormwater to enter. As with vegetated swales, side slopes should not be more than 2:1, the soil should have a percolation rate of five inches per hour, and underdrains may be required if it is constructed over heavy clay soil. Plant material will also need to tolerate inundation, as well as periods of drought.

FIGURE 72: VEGETATED SWALE

FIGURE 73: CURB BULBOUT WITH RAIN GARDEN

08

ESTIMATED COSTS AND IMPACTS

PEDESTRIAN AND BICYCLE BENEFITS

CALIFORNIA STREET

Proposed improvements along California Street are expected to yield substantial benefits in terms of pedestrian and bicycle access, convenience and safety. Key benefits are summarized in Figure 74. Proposed improvements will increase the number of pedestrian crossing points with high visibility and short crossing distances from two (2) downtown intersections, to 20 locations throughout the corridor (including 14 intersections and 6 midblock crossings). This would increase the length of street with frequent crossings from 1,050 feet in downtown currently to 8,340 feet (1.6 miles), a 690% increase.

Proposed improvements would also allow bicycle facilities along California Street to meet or exceed VTA Bicycle Transportation Guidelines (BTG) regarding dimensions for bike lanes in areas with posted speed limits of 35-40 mph. This will effectively close the quality gap in bicycle facilities from 1.4 miles (7,400 feet) to 0 feet. Under the Phased Alternative 3, the streetscape would achieve national best practice for pedestrian and bicycle access.

ESCUELA AVENUE

Along Escuela Avenue, proposed improvements would improve pedestrian and bicycle access, con-

FIGURE 74: SUMMARY OF PEDESTRIAN AND BICYCLE BENEFITS ON CALIFORNIA STREET

	EXISTING ON CALIFORNIA STREET			PROPOSED ON CALIFORNIA STREET			CHANGE
	Showers Dr – Ortega Ave	Ortega Ave – Mariposa Ave	Mariposa Ave– Bryant St	Showers Dr – Ortega Ave	Ortega Ave – Mariposa Ave	Mariposa Ave– Bryant St	
City/VTA goals & guidelines	No	No	No	Yes	Yes	Yes	
Best practice	No	No	No	Yes	Yes	Yes	
Intersections with continuous paths	0 (0%)	0 (0%)	0 (0%)	2 (100%)	5 (100%)	7 (100%)	∞
Intersections or midblocks with short crossings, tight turns, high visibility crossing	0 (0%)	0 (0%)	2 (29%)	2 (100%)	11 (100%)	7 (100%)	900%
Length of pedestrian connection or quality gaps (ft)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Length of bicycle connection or quality gaps (ft)	900 (100%)	4880 (100%)	1510 (59%)	0 (0%)	0 (0%)	0 (0%)	-100%
Length of street with crossings every 400 feet	0 (0%)	0 (0%)	1050 (41%)	900 (100%)	4880 (100%)	2560 (100%)	694%
Buffer for higher speed zones	0 (0%)	0 (0%)	0 (0%)	900 (100%)	4880 (100%)	1510 (59%)	∞

venience and safety as shown in Figure 75. Traffic calming improvements would increase the number of pedestrian crossing points with high visibility and short crossing distances from one (1) to all five (5) intersections or midblock crossings, a 500% increase. This would increase the length of street with frequent crossings from 1,740 feet to 2,540 feet, a 46% increase.

New bicycle lanes would also provide 2,540 feet of bicycle facilities that align with the quality of facilities envisioned in the 2008 Bicycle Transportation Plan (as well as the 2016 Update). These facilities would also align with VTA Guidelines and national best practice for low volume streets such as Escuela Avenue.

SHORELINE BOULEVARD

Proposed improvements would dramatically improve pedestrian and bicycle conditions along South Shoreline Boulevard within the study area. As shown

FIGURE 75: SUMMARY OF PEDESTRIAN AND BICYCLE BENEFITS ON ESCUELA AVENUE

	EXISTING ON ESCUELA AVENUE	PROPOSED ON ESCUELA AVENUE	CHANGE
City/VTA goals & guidelines	No	Yes	
Best practice	No	Yes	∞
Intersections with continuous paths	0 (0%)	5 (100%)	500%
Intersections or midblocks with short crossings, tight turns, high visibility crossing	1 (17%)	6 (100%)	500%
Length of pedestrian connection or quality gaps (ft)	0 (0%)	0 (0%)	∞
Length of bicycle connection or quality gaps (ft)	0 (0%)	2,540 (100%)	
Length of street with crossings every 400 feet	1,740 (69%)	2,540 (100%)	46%
Buffer for higher speed zones	N/A	N/A	N/A

in Figure 76, key improvements include providing 5,800 feet (1.1 miles) of protected bicycle lanes along the corridor. Additionally, the lane reduction, intersection and crossing improvements would increase the number of pedestrian crossing points with high visibility and short crossing distances from zero (0) to seven (7) intersections or midblock locations. Continuous bicycle facilities would be provided through each of these locations.

While just a modest increase can be seen in the length of road with crossings every 400 feet (360 feet), the improvements would actually improve the frequency of high quality and short distance crossings, however, most blocks fall just outside of the 400-foot threshold that was used for this analysis. If a 600-foot threshold is used, the length of road with fairly frequent crossings would increase to 3,140 feet (54% of the study segment).

These improvements would align pedestrian and bicycle facilities along Shoreline Boulevard with the City's stated goals, VTA Guidelines, and national best practice.

FIGURE 76: SUMMARY OF PEDESTRIAN AND BICYCLE BENEFITS ON SHORELINE BOULEVARD

	EXISTING ON SHORELINE BOULEVARD		PROPOSED ON SHORELINE BOULEVARD		CHANGE
	EL CAMINO REAL – VILLA STREET	VILLA STREET – MONTECITO AVE	EL CAMINO REAL – VILLA STREET	VILLA STREET – MONTECITO AVE	
In line with City/VTA goals & policies	No	No	Yes	Yes	
In line with best practice	No	No	Yes	Yes*	
Intersections with continuous paths	0 (0%)	0 (0%)	5 (100%)	2 (100%)	∞
Intersections with short crossings, tight turns, high visibility crossing	0 (0%)	0 (0%)	5 (100%)	2 (100%)	∞
Length of pedestrian connection or quality gaps	0 (0%)	1693 (64%)	0 (0%)	1693 (64%)	0%
Length of bicycle connection or quality gaps	3140 (100%)	2659 (100%)	0 (0%)	800 (30%)	-86%
Safe crossings every 400 feet	0 (0%)	0 (0%)	360 (11%)	0 (0%)	∞
Buffer for higher speed zones	0 (0%)	0 (0%)	3140 (100%)	1859 (70%)	∞

* Except the portion of Shoreline between the bus bay near Wright Avenue and Montecito Avenue

MOTOR VEHICLE TRAFFIC IMPACTS

A preliminary traffic analysis of the proposed improvements was conducted as a part of this study. The analysis included traffic operations aspects

associated with all of the proposed changes under the phased alternatives for all three study corridors (outlined in Chapter 6). The traffic analyses incorporated proposed lane geometries at three time points: 1) existing traffic volumes, 2) near-term (2020) traffic volumes, and 3) future (2030) traffic volumes. The proposed changes that were accounted for within the traffic analyses include lane reduction on California Street and Shoreline Boulevard, signalized intersections with a leading pedestrian interval (LPI) of 2 seconds, and signal timing changes. It should be noted at California Street under the Phased Alternative 1, a 4-to-3 lane reduction is proposed to be installed and under the Phased Alternative 3, a 4-to-2 lane reduction is proposed to be installed. However, the traffic analysis results are the same under both phased alternatives. (A more accurate analysis of the pilot 4-to-3 lane reduction would have required data on all left turn movements into and out of adjoining properties.)

More detailed traffic analysis will be required as part of the next phase of detailed design, engineering and environmental analysis for projects as they advance through the planning process. For this analysis, Level of Service (LOS) and travel times along the corridor were selected as the key metrics for traffic impacts. It should be noted, however, that California is currently revising how traffic impacts will be evaluated as part of the California Environmental Quality Act (CEQA). Based on SB 743, degradations in LOS can no longer constitute a "significant impact" under CEQA certain locations. New criteria to measure transportation impacts are currently being finalized, but new CEQA metrics will likely focus on a shift from strictly measuring delay to a more holistic assessment of a project's impacts on greenhouse gas emissions and vehicles miles traveled. These types of metrics could therefore be added as part of that more detailed traffic analysis that would occur as the projects advance through the planning process.

Currently, the operations of roadway facilities are typically described with LOS classifications, a quantitative description of traffic flow based on factors such as speed, travel time, delay and freedom to maneuver. For this analysis, Synchro 8.0 software and HCM 2000 methodology were used to evaluate the study intersections. Detailed signal timings were coded into the Synchro software to obtain the LOS, delay at the study intersections, and average travel speeds for the study corridors between the signalized intersections. It should be noted that the signal timings were optimized only for the future (2030) traffic conditions. Existing signal timings were utilized for both the existing and near-term (2020) conditions.

Standard traffic analysis is conducted on the basis of a number of assumptions that should be noted. Firstly, the analysis only considers effects on private motor vehicles and does not account for any effects on any other modes of transportation such as transit, bicycling and walking. Secondly, the analysis does not account for mode shift that would occur as a result of longer travel times for motorists (or other strategies such as multimodal improvements or public education). Thirdly, in the context of Mountain View, traffic analysis is conducted based on an assumed traffic growth rate of 4% per year, which amounts to a growth rate of 80% when compounded over 15 years.

MOTOR VEHICLE TRAVEL TIME

The first metric is automobile travel time, which indicates how long it could take to get up the street in a motor vehicle. Figure 77 shows the increase in travel time in minutes due to the proposed lane geometry under existing, near-term (2020) and future (2030) conditions for California Street and Shoreline Boulevard. The increase in travel time due to the proposed geometry on Escuela Avenue is projected to be approximately one minute or less and so it is not reported in Figure 77.

The results indicate that the travel time increases under the proposed lane geometry for all three conditions: existing, near-term and future conditions. In the immediate term, complete streets improvements would increase travel times by one to two minutes on California Street, and would increase travel time by less than a minute on Shoreline Boulevard. By 2030, with 4% annual traffic growth, the baseline travel time would be two minutes longer along California Street and six to nine minutes longer along Shoreline Boulevard, which puts traffic conditions in a more unstable range. Implementation of the phased alternatives at this stage is then projected to increase travel times by five and nine minutes along both corridors. As a result, Shoreline Boulevard is projected to be significantly impacted with a total travel time of approximately 23 minutes during the p.m. peak hour in 2030.

FIGURE 77: TRAVEL TIME COMPARISON (MINUTES)

Year	CALIFORNIA STREET (BETWEEN SHOWERS & BRYANT)				SHORELINE BOULEVARD (BETWEEN MONTECITO & EL CAMINO REAL)			
	No Project		Phased Alternatives 1-3		No Project		Phased Alternatives 1-3	
	AM Peak Hour (WB)	PM Peak Hour (EB)	AM Peak Hour (WB)	PM Peak Hour (EB)	AM Peak Hour (NB)	PM Peak Hour (SB)	AM Peak Hour (NB)	PM Peak Hour (SB)
2015	5.5	5.2	+1.0 6.5	+1.9 7.1	3.3	5.3	+0.5 3.8	+1.0 6.3
2020	5.9	5.8	+3.8 9.7	+9.2 15.0	3.9	6.4	+1.7 5.6	+5.2 11.6
2030	7.0	7.4	+4.7 11.7	+8.4 15.8	8.6	14.0	+5.0 13.6	+9.4 23.4

MOTOR VEHICLE DELAY AND LEVEL OF SERVICE (LOS)

Other traffic analysis metrics calculated for this assessment include motor vehicle delay and level of service (LOS). Figure 78 summarizes the estimated traffic impacts in terms of average delay and LOS at each of the study intersections during both the a.m. peak hour and p.m. peak hour along California Street, Escuela Avenue and Shoreline Boulevard. Figure 79 through Figure 81 summarize the arterial speed and LOS during both the a.m. peak hour and p.m. peak hour.

Based on this analysis, the average delay at each study intersection is projected to increase with the increase in traffic volumes as well as proposed lane geometry. As a result, arterial speeds are projected to decrease due to an increase in traffic volumes as well as the proposed lane geometry. Levels of service for bicycles and pedestrians would increase as a result of the complete streets improvements, however this improvement was not modeled within the traffic analysis.

FIGURE 78: INTERSECTION LOS AND DELAY COMPARISON (SECONDS)

	INTERSECTION	PEAK HOUR	EXISTING VOLUMES				NEAR-TERM YEAR 2020 VOLUMES				FUTURE YEAR 2030 VOLUMES			
			EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY	
			DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS
1	California St/ Showers Dr	AM	20.9	C+	29.7	C	26.2	C	37.6	D+	49.9	D	74.6	E
		PM	28.1	C	32.3	C-	34.4	C-	40.7	D	65.6	E	79.3	E-
2	California St/ Ortega Ave	AM	15.0	B	21.3	C+	18.6	B-	25.9	C	21.9	C+	50.3	D
		PM	18.3	B-	37.0	D+	20.0	B-	78.2	E-	28.0	C	>80	F
3	California St/ S Rengstorff Ave	AM	31.5	C	45.5	D	41.8	D	>80	F	62.1	E	>80	F
		PM	36.9	D+	>80	F	55.1	E+	>80	F	>80	F	>80	F
4	California St/ Escuela Ave	AM	22.6	C+	35.1	D+	28.8	C	47.2	D	34.8	C-	>80	F
		PM	21.2	C+	68.1	E	29.8	C	>80	F	68.0	E	>80	F
5	California St/ Chiquita Ave*	AM	18.2	C	18.3	C	30.3	D	26.6	D	24.9	C	>50	F
		PM	22.0	C	22.5	C	20.9	C	28.8	D	22.9	C	>50	F
6	California St/ Mariposa Ave	AM	5.8	A	8.3	A	6.0	A	10.3	B+	7.1	A	12.8	B
		PM	5.7	A	10.9	B+	6.5	A	40.9	D	7.7	A	24.1	C
7	California St/ Pettis Ave*	AM	14.3	B	15.8	C	17.2	C	21.9	C	25.2	D	49.0	E
		PM	18.2	C	24.6	C	25.1	D	49.6	E	40.5	E	>50	F
8	California St/ Palo Alto Ave*	AM	15.3	C	15.6	C	19.2	C	19.7	C	23.6	C	39.3	E
		PM	19.8	C	20.3	C	23.3	C	34.0	D	33.3	D	>50	F
9	California St/ Shoreline Blvd	AM	26.1	C	35.8	D+	31.4	C	>80	F	70.1	E	>80	F
		PM	46.4	D	69.5	E	55.9	E+	>80	F	>80	F	>80	F
10	California St/ Franklin St*	AM	13.4	B	13.4	B	15.1	C	16.0	C	16.5	C	20.1	C
		PM	20.3	C	20.3	C	32.5	D	32.9	D	>50	F	>50	F
11	California St/ Bryant St	AM	11.4	B+	13.4	B	13.8	B	16.4	B	15.7	B	18.5	B-
		PM	17.8	B	20.6	C+	23.4	C	27.3	C	42.7	D	52.9	D-
12	Escuela Ave/ Villa St*	AM	9.0	A	9.6	A	9.5	A	10.2	B	9.9	A	10.6	B
		PM	9.8	A	10.6	B	10.6	B	11.6	B	11.8	B	13.3	B
13	Escuela Ave/ Latham St*	AM	13.6	B	13.6	B	16.9	C	16.9	C	18.6	C	18.6	C
		PM	13.0	B	13.0	B	16.0	C	16.0	C	24.0	C	24.0	C
14	Shoreline Blvd/ Montecito Ave/ Stierlin Rd	AM	28.6	C	29.6	C	38.3	D+	41.6	D	>80	F	>80	F
		PM	30.4	C	33.8	C-	67.6	E	>80	F	>80	F	>80	F

	INTERSECTION	PEAK HOUR	EXISTING VOLUMES				NEAR-TERM YEAR 2020 VOLUMES				FUTURE YEAR 2030 VOLUMES			
			EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GE-OMETRY		PROPOSED LANE GEOMETRY	
			DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS	DELAY	LOS
15	Shoreline Blvd/ Wright Ave	AM	18.0	B	20.7	C+	24.5	C	28.1	C	51.0	D	59.9	E+
		PM	15.7	B	18.9	B-	31.6	C	59.5	E+	>80	F	>80	F
16	Shoreline Blvd/ Villa St	AM	19.4	B-	23.0	C+	23.0	C+	53.0	D-	72.3	E	>80	F
		PM	19.6	B-	23.6	C	23.6	C	>80	F	>80	F	>80	F
17	Shoreline Blvd/ W Dana St*	AM	9.0	A	9.7	A	9.5	A	10.5	B	11.2	B	13.0	B
		PM	9.0	A	9.8	A	9.5	A	11.6	B	12.1	B	12.5	B
18	Shoreline Blvd/ Latham St/ Church St	AM	13.3	B	16.1	B	14.7	B	19.3	B-	29.3	C	39.7	D
		PM	41.8	D	48.4	D	60.3	E	>80	F	>80	F	>80	F
19	Shoreline Blvd/ High School Way/ Snow St*	AM	9.2	A	11.0	B	9.4	A	13.5	B	9.8	A	18.2	C
		PM	10.2	B+	11.0	B	10.1	B	11.9	B	15.7	C	15.0	C
20	Shoreline Blvd/ El Camino Real	AM	56.5	E+	69.7	E	>80	F	>80	F	>80	F	>80	F
		PM	44.6	D	51.2	D-	>80	F	>80	F	>80	F	>80	F

Note: *Unsignalized Intersections

FIGURE 79: ARTERIAL LOS AND DELAY COMPARISON – CALIFORNIA STREET

SEGMENT	PEAK HOUR	EXISTING VOLUMES				NEAR-TERM YEAR 2020 VOLUMES				FUTURE YEAR 2030 VOLUMES			
		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY	
		SPEED	LOS	SPEED	LOS	SPEED	LOS	SPEED	LOS	SPEED	LOS	SPEED	LOS
EASTBOUND CALIFORNIA STREET (SHOWERS DRIVE TO BRYANT STREET)													
Showers Drive to Ortega Avenue	AM	15.0	D	13.7	E	14.0	D	12.9	E	13.7	E	12.6	E
	PM	15.8	D	13.0	E	14.5	D	6.9	F	11.9	E	4.1	F
Ortega Avenue to S.Rengstorff Avenue	AM	17.9	D	16.6	D	16.6	D	14.3	D	17.2	D	13.7	E
	PM	16.3	D	11.4	E	13.6	E	4.0	F	11.7	E	3.7	F
S. Rengstorff Avenue to Escuela Avenue	AM	21.3	C	18.4	C	20.4	C	14.7	D	18.4	C	8.8	F
	PM	19.7	C	10.1	E	17.8	D	3.5	F	12.7	E	5.2	F
Escuela Avenue to Mariposa Avenue	AM	25.3	B	23.3	C	25.2	B	21.4	C	24.1	B	20.5	C
	PM	25.2	B	20.8	C	24.3	B	14.5	D	23.6	C	14.7	D
Escuela Avenue to Mariposa Avenue	AM	25.3	B	23.3	C	25.2	B	21.4	C	24.1	B	20.5	C
	PM	25.2	B	20.8	C	24.3	B	14.5	D	23.6	C	14.7	D
Mariposa Avenue to S.Shoreline Boulevard	AM	21.2	C	16.4	D	20.9	C	15.7	D	17.2	D	9.5	F
	PM	16.5	D	14.9	D	15.1	D	14.1	D	10.9	E	7.4	F
S. Shoreline Boulevard to Bryant Street	AM	18.7	C	18.0	D	17.9	D	17.0	D	15.9	D	15.9	D
	PM	15.8	D	14.9	D	13.9	E	12.8	E	10.3	E	9.5	F
WESTBOUND CALIFORNIA STREET (BRYANT STREET TO SHOWERS DRIVE)													
Bryant Street to S. Shoreline Boulevard	AM	10.6	E	9.3	F	10.2	E	9.0	F	7.2	F	5.7	F
	PM	13.3	E	10.5	E	11.9	E	10.0	E	7.1	F	3.7	F
S. Shoreline Boulevard to Mariposa Avenue	AM	25.3	B	24.0	C	25.3	B	23.5	C	24.3	B	22.6	C
	PM	25.4	B	23.4	C	24.8	B	20.8	C	24.4	B	22.0	C
Mariposa Avenue to Escuela Avenue	AM	19.2	C	17.3	D	18.7	C	14.5	D	17.2	D	10.1	E
	PM	18.5	C	14.8	D	17.6	D	9.0	F	17.0	D	8.6	F
Escuela Avenue to S. Rengstorff Avenue	AM	17.0	D	12.3	E	14.6	D	4.9	F	11.3	E	4.9	F
	PM	15.6	D	5.5	F	10.9	E	2.5	F	9.1	F	4.7	F
S. Rengstorff Avenue to Ortega Avenue	AM	20.0	C	17.8	D	19.2	C	16.5	D	18.3	C	13.9	E
	PM	20.4	C	18.9	C	20.3	C	17.2	D	17.9	D	13.0	E
Ortega Avenue to Showers Drive	AM	14.7	D	12.5	E	13.6	E	10.5	E	12.7	E	6.5	F
	PM	14.8	D	13.0	E	14.0	D	11.6	E	11.8	E	7.4	F

FIGURE 80: ARTERIAL LOS AND DELAY COMPARISON – SHORELINE BOULEVARD

SEGMENT	PEAK HOUR	EXISTING VOLUMES				NEAR-TERM YEAR 2020 VOLUMES				FUTURE YEAR 2030 VOLUMES			
		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY	
		SPEED	LOS	SPEED	LOS	SPEED	LOS	SPEED	LOS	SPEED	LOS	SPEED	LOS
NORTHBOUND SHORELINE BOULEVARD (EL CAMINO REAL TO MONTECITO AVENUE)													
El Camino Real to Latham Street	AM	19.9	C	17.3	D	18.7	C	15.6	D	14.1	D	8.9	F
	PM	14.2	D	12.5	E	12.0	E	8.0	F	3.6	F	2.3	F
Latham Street to California Street	AM	20.0	C	13.4	E	15.5	D	8.0	F	9.9	F	3.8	F
	PM	13.6	E	12.4	E	14.7	D	6.5	F	14.5	D	5.4	F
California Street to Villa Street	AM	21.7	C	18.6	C	18.4	C	8.0	F	6.5	F	2.9	F
	PM	18.9	C	15.2	D	15.2	D	4.2	F	4.1	F	2.3	F
Villa Street to Wright Avenue	AM	21.4	C	21.3	C	19.0	C	18.9	C	13.9	E	13.1	E
	PM	21.6	C	21.2	C	19.6	C	19.2	C	18.0	C	18.8	C
Wright Avenue to Montecito Avenue	AM	18.1	C	17.9	D	13.5	E	13.4	E	3.3	F	3.1	F
	PM	15.0	D	15.7	D	14.8	D	15.1	D	7.2	F	7.1	F
SOUTHBOUND SHORELINE BOULEVARD (MONTECITO AVENUE TO EL CAMINO REAL)													
Montecito Avenue to Wright Avenue	AM	18.0	C	15.6	D	15.8	D	14.9	D	12.8	E	11.4	E
	PM	18.0	C	16.3	D	10.5	E	5.9	F	2.4	F	2.1	F
Wright Avenue to Villa Street	AM	21.9	C	20.5	C	19.5	C	17.5	D	15.3	D	11.8	E
	PM	20.9	C	20.1	C	21.1	C	17.3	D	11.4	E	4.4	F
Villa Street to California Street	AM	17.7	D	15.0	D	16.1	D	6.1	F	7.2	F	3.6	F
	PM	9.1	F	6.3	F	8.9	F	2.4	F	4.1	F	2.0	F
California Street to Latham Street	AM	25.4	B	24.2	B	25.5	B	22.8	C	12.4	E	23.1	C
	PM	12.4	E	9.9	F	10.8	E	9.2	F	4.2	F	2.1	F
Latham Street to El Camino Real	AM	11.5	E	11.6	E	11.1	E	10.7	E	6.2	F	6.9	F
	PM	7.9	F	7.4	F	5.9	F	4.7	F	6.1	F	5.5	F

FIGURE 81: ARTERIAL LOS AND DELAY COMPARISON – ESCUELA AVENUE

SEGMENT	PEAK HOUR	EXISTING VOLUMES				NEAR-TERM YEAR 2020 VOLUMES				FUTURE YEAR 2030 VOLUMES			
		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GEOMETRY		PROPOSED LANE GEOMETRY		EXISTING LANE GE-OMETRY		PROPOSED LANE GEOMETRY	
		SPEED	LOS	SPEED	LOS	SPEED	LOS	SPEED	LOS	SPEED	LOS	SPEED	LOS
NORTHBOUND ESCUELA AVENUE (LATHAM STREET TO VILLA STREET)													
Latham Street to California Street	AM	14.4	C	13.9	C	13.2	C	13.1	C	12.0	D	9.9	D
	PM	14.1	C	13.9	C	13.2	C	13.1	C	10.3	D	5.2	F
SOUTHBOUND ESCUELA AVENUE (VILLA STREET TO LATHAM STREET)													
California Street to Latham Street	AM	12.6	D	12.0	D	11.5	C	10.5	D	8.5	E	5.5	F
	PM	14.1	C	13.9	C	13.0	C	12.9	D	9.3	D	4.0	F

COSTS

ESTIMATED COSTS

The estimated cost for all proposed improvements is in the range of $44 million to $70 million. The breakdown of costs by segment is provided in Figure 82.

ASSUMPTIONS

These estimates are conservative and are based on unit prices and characteristics from the Metropolitan Transportation Commission (MTC)'s Bicycle/Pedestrian Toolkit. The proposed improvements include a complete street approach, adding features to improve comfort to all modes of transportation and specifically bicycle users and pedestrians. Some of these features include:

- Wider sidewalks (or new sidewalks where there are none such as on the west side of Shoreline in the vicinity of Central Expressway)

FIGURE 82: ESTIMATED COSTS BY SEGMENT (2020 ESCALATED COST)

PROJECT SEGMENT	ESTIMATED COST		ESTIMATED COST WITH PILOT	
	LOW RANGE	HIGH RANGE	LOW RANGE	HIGH RANGE
California Street: From Showers Drive to Ortega Avenue	$3.44 million	$4.96 million	$3.68 million	$5.43 million
California Street: From Ortega Avenue to Mariposa Avenue	$13.66 million	$20.45 million	$14.60 million	$22.43 million
California Street: From Mariposa Avenue to Bryant Street	$5.49 million	$7.56 million	$6.07 million	$8.75 million
Escuela Avenue: From Latham Street to Cristanto Avenue	$4.20 million	$6.01 million	$4.20 million	$6.01 million
Shoreline Boulevard: From El Camino Real to Villa Street	$5.03 million	$7.12 million	$5.64 million	$8.43 million
Shoreline Boulevard: From Villa Street to Montecito Road	$12.62 million	$18.26 million	$13.03 million	$19.16 million
TOTAL	**$44.44 million**	**$64.36 million**	**$47.22 million**	**$70.21 million**

- Reduced number of lanes and lane widths, slowing down vehicles
- Lighting
- High visibility crosswalks
- Median refuges
- Eliminating pork chop islands that enable vehicles to turn at higher speeds (leaving bicycle users and pedestrians uncomfortable)
- Increased the number of and improve the quality of ADA ramps
- Green bike lanes
- Buffered bike lanes
- Landscaping
- Bike/pedestrian friendly signal modifications
- Pedestrian beacons

Costs are escalated to the year 2020. No right-of-way acquisition is anticipated for these improvements except land dedication in connection with new development in the San Antonio Precise Plan area. The cost estimates include the following elements:

- utilities, traffic handling, and mobilization
- project contingency costs
- environmental and design costs
- city administration costs (including design, testing and inspection)
- construction management
- escalation to year 2020 at 3% per year.

PHASING AND IMPLEMENTATION

Full implementation of the complete package of improvements will take time, and will be phased. Designs need to be further refined and developed, and several issues require additional study. Nevertheless, the City has prioritized multimodal improvements to all three corridors (Shoreline, California, and Escuela) and seeks to implement various aspects of the recommendations as soon as possible.

Based on the descriptions and priorities outlined in Section 7, a phased implementation plan (Figure 83) is proposed. This phasing plan includes pilot implementation of lane reduction for California Street and Shoreline Boulevard in advance of full development. The cost by phase for each study segment is outline below:

Phasing may be adjusted over time as conditions evolve and funding becomes available. Also, effort should be made to opportunistically align implementation of component project with other projects such as utilities work, and scheduled pavement repair so as to reduce implementation costs and disruption to the community and traffic.

FIGURE 83: ESTIMATED COSTS BY PHASE (2020 ESCALATED COST)

PROJECT SEGMENT	PHASE 1		PHASE 2		PHASE 3	
	LOW RANGE	HIGH RANGE	LOW RANGE	HIGH RANGE	LOW RANGE	HIGH RANGE
California Street: From Showers Drive to Ortega Avenue	$0.24 million	$0.47 million	$1.75 million	$2.57 million	$1.69 million	$2.39 million
California Street: From Ortega Avenue to Mariposa Avenue	$0.94 million	$1.98 million	$8.96 million	$12.78 million	$4.70 million	$7.67 million
California Street: From Mariposa Avenue to Bryant Street	$0.58 million	$1.19 million	$4.38 million	$6.36 million	$1.11 million	$1.20 million
Escuela Avenue: From Latham Street to Cristanto Avenue	$2.66 million	$4.39 million	$1.54 million	$1.62 million		
Shoreline Boulevard: From El Camino Real to Villa Street	$0.61 million	$1.31 million	$2.81 million	$4.10 million	$2.22 million	$3.02 million
Shoreline Boulevard: From Villa Street to Montecito Road	$0.41 million	$0.90 million	$8.51 million	$11.93 million	$4.11 million	$6.33 million
TOTAL	**$5.44 million**	**$10.24 million**	**$27.95 million**	**$39.36 million**	**$13.83 million**	**$20.61 million**

INITIAL PROJECTS

On October 13, 2015, Mountain View City Council provided recommendations on key priorities and initial implementation projects. Council highlighted the following key priorities for near term implementation:

- Complete streets improvements along Escuela Avenue
- Ramp reconfiguration on Central Expressway overcrossing
- Phased approach with pilot implementation of complete streets
- More detailed information on council discussion and feedback is provided in Appendix C.
- Initial projects that encompass these priorities are listed in the following table along with estimated costs (2015 $). A more detailed breakdown of estimated costs are provided in Appendix D.

FIGURE 84: ESTIMATED COSTS OF INITIAL PROJECTS

PROJECT SEGMENT	DETAILS	ESTIMATED TOTAL COST (2015 $)
Escuela Avenue Traffic Calming between Latham Street and California Street	■ bulbouts at corners on west side of street as well as at Latham Street ■ west-side bulbout and raised crosswalk next to Castro Elementary School ■ continental crosswalks at intersections and the school crossing ■ green street treatments in bulbouts	$2,330,000
Escuela Avenue Traffic Calming between California Street and Crisanto Avenue	■ bulbouts at Villa Street and near the Senior Center ■ bulbout and raised crosswalk next to Mountain View Senior Center ■ continental crosswalks at intersections and midblock crossing ■ green street treatments in bulbouts	$1,370,000
Escuela Avenue Bicycle Improvement between Latham Street and Crisanto Avenue	■ parking removal on the east side of the street ■ installation of bike lanes as well as green zones	$1,400,000
California Street Complete Street Pilot between Showers Drive and Ortega Avenue	■ parking removal on the east side of the street ■ installation of bike lanes as well as green zones ■ installation of a new midblock crossing between Showers Drive and Ortega Ave ■ temporary bulbouts at corners and midblock crossings ■ continental crosswalks at intersections ■ wider (8-foot) painted parking protected bicycle lanes with (4-foot) painted buffer ■ temporary modified protected intersections at Showers Drive/California Street and Ortega Avenue/California Street ■ 4-to-2 lane reduction pilot, with transition at Showers Drive ■ bus stop accommodation (de facto bus pull outs) on California Street ■ narrower (11-foot) travel lanes ■ 8-foot parking lanes and 10-foot turn lanes	$400,000
California Street Complete Street Pilot between Ortega Avenue and Mariposa Avenue	■ installation of five (5) new midblock crossings including two between Ortega Avenue and Rengstorff Avenue, two between Rengstorff Ave and Escuela Avenue, and one at the Permanente Creek drainage easement between Escuela Avenue and Chiquita Avenue ■ temporary bulbouts at corners and midblock crossings ■ continental crosswalks at intersections ■ wider (8-foot) painted parking protected bicycle lanes with (4-foot) painted buffer ■ temporary protected intersection at Escuela Avenue/California Street ■ 4-to-2 lane reduction pilot ■ bus stop accommodation (de facto bus pull outs) on California Street ■ narrower (11-foot) travel lanes ■ 8-foot parking lanes and 10-foot turn lanes	$1,660,000

FIGURE 84 (CONT'D): ESTIMATED COSTS OF INITIAL PROJECTS

PROJECT SEGMENT	DETAILS	ESTIMATED TOTAL COST (2015 $)
California Street Complete Street Pilot between Mariposa Avenue and Bryant Street	■ temporary bulbouts at corner crossings ■ continental crosswalks at intersections ■ wider (8-foot) painted parking protected bicycle lanes with (4-foot) painted buffer ■ temporary protected intersection at California Street/Shoreline Boulevard ■ 4-to-2 lane reduction pilot ■ bus stop accommodation (de facto bus pull outs) on California Street ■ narrower (11-foot) travel lanes ■ 8-foot parking lanes and 10-foot turn lanes ■ sidewalk improvements between Shoreline Boulevard and Bryant Street	$1,000,000
South Shoreline Boulevard West On/Off Ramp Reconfiguration over Central Expressway	■ heavy civil structural work associated with squaring up expressway on- and off-ramps on the west side of the overpass	$1,420,000
South Shoreline Boulevard East On Ramp Reconfiguration over Central Expressway	■ heavy civil structural work associated with squaring up the expressway on-ramps on the east side of the overpass	$1,764,000
South Shoreline Boulevard East Off Ramp Reconfiguration over Central Expressway	■ heavy civil structural work associated with squaring up expressway off-ramp on the east side of the expressway	$1,764,000
South Shoreline Boulevard Complete Street Pilot between El Camino Real and Villa Street	■ temporary bulbouts at corner crossings ■ continental crosswalks at intersections ■ temporary protected intersections at California Street/Shoreline Boulevard and Villa Street/Shoreline Boulevard ■ 6-to-4 lane reduction ■ wider (8-foot) bike lanes with (5-foot) painted buffer ■ 8-foot parking lane and 11-foot travel lanes	$1,100,000
South Shoreline Boulevard Complete Street Pilot between Villa Street and Montecito Avenue	■ temporary bulbouts at corners ■ continental crosswalks at intersections ■ temporary protected intersections at California Street/Wright Avenue ■ 6-to-4 lane reduction ■ wider (8-foot) bike lanes with painted buffer ■ 11-foot travel lanes	$760,000

APPENDIX A: SURVEY RESPONSES

The following tables present survey data for the study area.

FIGURE 85: SURVEY RESPONSES REGARDING SHORELINE BOULEVARD BETWEEN MONTECITO AVENUE AND VILLA STREET

TOPIC	COMMENT
Accessibility	The sidewalk along the northwest corner of Shoreline and Wright is very narrow due to the street light and covered utility boxes, forcing one to squeeze by when rounding the corner. This would be more problematic to those with walkers, wheelchairs or pushing strollers.
Accessibility	The pedestrian crossway at the overpass has to be improved. This has been documented many times so won't go into detail again.
Accessibility	Not accessible for all
Accessibility	3 crossings required because no crossing exist on the north side of Villa
Accessibility	No accessibility for wheelchairs and walking at Shoreline and Wright (NE corner)
Accessibility	Underpass under Central slippery (pine needles + dust) rough and too steep.
Accessibility	I imagine would be impossible for wheelchairs to cross Central on Shoreline; the overpass is VERY steep.
Accessibility	Bike lane was very narrow for kids who tend to weave
Accessibility	In general, good.
Accessibility	Too steep
Accessibility	Hard to bike with traffic when going uphill
Accessibility	Sidewalk too narrow on Shoreline near Dana/California; Square curb up/down near California/Mariposa- sprained ankle. Auto oriented.
Accessibility	Lots of pine needles near Villa/Shoreline;
Accessibility	On Montecito (facing Stierlin) at Shoreline, there is no safe place for a cyclist to wait for a green light. On Shoreline (facing toward the bay) at Montecito, the slip lane and island are not safe for pedestrians or cyclists. Whoever invented that configuration where vulnerable modes have to cross in front of a slip lane, where cars are encouraged to NOT stop, should be shot. And that person certainly never crossed a street with a young child or dog whose life they cared about. Waiting for a green light on a tiny island surrounded by cars is not a safe place for any wiggly creature to wait! Trying to tell a young child to stand still and not go anywhere is madness. Safer to keep them strapped down in their buggies. No wonder our country has an obesity problem! On Shoreline Blvd at Villa, the slip lane is again dangerous for cyclists and pedestrians. Cars should be encouraged to stop where pedestrians and cyclists are expected to cross. I would love to see a protected intersection here, to give a safe place for cyclists and pedestrians to wait for a green light. The pedestrian path along the side of the Shoreline bridge is out of sight, so feels scary to some. It is super steep, which makes it inaccessible to wheelchairs.
Accessibility	sidewalks too narrow sometimes for walkers and handicapped
Aesthetics	Trees encroaching on bridge blocking part of path.
Aesthetics	I am curious: Did the planting beds between the trees on the Central Expy/Caltrain Overpass once have landscaping? Plants and flowers would make the walk much more pleasant if a time ever returns when water is not an issue.
Aesthetics	More landscaping along Shoreline to buffer the pedestrians from lanes of travel would help tremendously to increase the sense of safety along Shoreline, but narrowing Shoreline Blvd would do the most for safety. I love the landscaping in the median and next to the sidewalks along Shoreline, but more would be better.

TOPIC	COMMENT
Aesthetics	There have been some good tree plantings in the median between the Expressway and Stierlin/Montecito but it feels a bit like putting lipstick on a pig. Further south on Shoreline, the trees are mature and attractive. The ones in the median near the fire station make it more difficult to see pedestrians waiting to cross.
Aesthetics	Overpass! Chinese Pistache trees dying, no other landscaping. How about drought tolerant plants?
Aesthetics	Ugly. Large streets, not any plantings on overpass, except for sad trees.
Aesthetics	Pretty good.
Aesthetics	Bushes and trees need to be trimmed, several sticking out in bike path
Aesthetics	Trees planted in sidewalk, too narrow at Shoreline/Villa
Clarity	A bit confusing at shoreline crossing central
Clarity	Bicyclists coming from/going to the Stevens Creek Trail and crossing Shoreline do so at Montecito/Stierlin Rd or Wright Ave (using a narrow path off Jackson Street) This major east/west and north/south interchange is not clear.
Clarity	Gap where entrance from Central Expressway Clearly marked
Clarity	NO- on overpass descent from high point of overpass to Wright Ave: 3 lanes merge to two lanes, elbowing bike lane
Clarity	Bike lane is continuous except on ramps to Central Expy
Clarity	Good continuity
Clarity	Footpath on Central very much in need of upgrades--slippery!
Clarity	Connection across central on ramp not well marked.
Connectivity	While walking south from Safeway on the east side of Shoreline toward Villa the sidewalk has connectivity. It is also clear there is no pedestrian access over Central Expressway from the corner of Wright and Shoreline if one is walking on the west side of Shoreline and heading south.
Connectivity	Shoreline Boulevard from Wright to El Camino should be reduced to 2 lanes in either direction. Shoreline is too wide in the segment south of Wright Street and causes drivers to speed. It is definitely NOT on the human scale. The scale of Shoreline Blvd in this segment is designed for cars and peds and bikes are a sad afterthought. This roadway acts as a freeway which physically divides the communities west of Shoreline with the wonderful downtown. The population of the Shoreline West community is large, but many are too scared to cross Shoreline on foot or by bike. This causes many of us to drive across Shoreline to feel safe which adds to parking demand in the downtown area and adds cars to the road. If Shoreline were reduced in lanes and wide bike lanes, sidewalks, and landscaping buffers were provided, speeds would decrease, and residents west of Shoreline would feel much safer to cross on foot or by bike with our families and friends.
Connectivity	1. Connectivity where Stierlin Rd, Montecito, and Shoreline come together is difficult because of the triangular piece of land and the odd angle of the streets where they intersect. Many people walk to the Safeway and use that intersection.
Connectivity	Not human scale--this segment is at a car's scale
Connectivity	Very long blocks

TOPIC	COMMENT
Multimodal	Not always good for bikes
Connectivity	I'll tell Google Maps they need to find out which side of Shoreline doesn't have sidewalks
Connectivity	long blocks- loud
Connectivity	Bike lane too narrow
Connectivity	Bike lane too small
Connectivity	Difficult left turn from Montecito to Shoreline; Left turn from Wright to Shoreline an issue; No room for wheelchairs and walkers on Shoreline; Left turn issue from Villa to Shoreline
Connectivity	area at Dana and Villa off of concern and is one intersect resident try to avoid
Connectivity	A big problem here is that there is no safe connection for cyclists who want to get to Central Expressway. Riding on the ramps is the only option, and it's not a good one. One potential solution to this would be to add a short trail through the trees that would connect the northern end of the current Shoreline pedestrian path to Central Expressway (where the new sidewalk just went in!). From there, a cyclist can easily take Central west toward Palo Alto. To go east toward Sunnyvale, a cyclist would need to cross the express-way. There is a light that could be used there, if a push-button were installed on each side for cyclists to get across and back again. Or a two-way protected cycle track could go from the potential Shoreline pedestrian path connector I just proposed to the Central Expressway/Moffett intersection in order to cross there. Also, there is the potential for a great trail connector to Evelyn near the corner of Shoreline and Villa where there is a parking lot on the northwest corner of the intersection. Google offices will be going in there soon, I believe. Google, being super pro-bike, will surely be cooperative if approached about putting a trail at the eastern-most portion of that parking lot. Or it might be possible to squeeze a trail between the parking lot and the side of the Shoreline bridge.
Crossings	Close Crisanto Ave
Crossings	There are several areas where a left turn arrow directing a vehicle to turn and proceed over a crosswalk is timed at the same moment a pedestrian "walk" signal tells them to proceed into the crosswalk, hence making the crosswalk less safe for the pedestrian if the driver does not see them. A delay in the left turn signal when the cross 'button' is pushed may be an option to alleviate this concern without causing unnecessary delay for vehicles when no pedestrians are present.
Crossings	The crossing of Shoreline at Villa is very wide and many times drivers that are driving WB on Villa and turning left to cross Shoreline get impatient and drive through the sidewalk while I'm still in it. Many drivers act threateningly that are driving NB along Shoreline and stop in the middle of the crosswalk. I've been yelled at before by motorists that are parked in the middle of the crosswalk because they're angry that I triggered the walk sign and delayed their trip. This roadway is so wide that it encourages drivers to treat it as a speedway and disregard other modes.
Crossings	The crossings at Montecito/Stierlin at Shoreline and the light at Wright Ave are not safe for pedestrians or bicyclists. The egress from the Jack in Box drive thru makes the intersec-tion even more difficult for bicyclists. The angle of the streets at the self-serve car wash make it hard for people to see when there is a lot of traffic. Others have documented many times the problems with the light at Wright and the danger to pedestrians.
Crossings	Scary where Central Expressway comes into Shoreline
Multimodal	No way to turn left onto Villa
Crossings	No signaled left turns at Villa and Shoreline. This means peds are vulnerable.

TOPIC	COMMENT
Crossings	Need more reflective markings for evening
Crossings	Hard to cross, cars don't want to yield to pedestrians
Safety	Very busy street
Crossings	Grade too steep for below average/beginning cyclist
Crossings	Good
Crossings	Ped crossings at Montecito & Shoreline are very unsafe. Incomplete visibility for drivers.
Multimodal	Montecito- buses. high volume car traffic. Wright.
Crossings	Need crosswalks across Shoreline north of Montecito; Takes forever to get a signal to cross at Shoreline/Wright; Difficult to cross Shoreline/Latham; No crosswalk at California/Palo Alto Ave; no crosswalk near Chiquita/CA
Crossings	Some peds try to cross onto Evelyn, dangerous; peds trying to cross the Central Expy find it difficult; Serious issues here
Crossings	Shoreline Blvd is extremely dangerous to cross at Wright Avenue. Especially coming from the parking lot of the Lakes condo complex at the northeast corner in the morning. My kids and my husband or I have been nearly struck walking to school on numerous occasions here, including this morning! Cars careen through the intersection from Wright Avenue and make a left-hand turn to go up Shoreline to the 101, often almost hitting us pedestrians. It's crazy how common this is. I've done my own research into why this happens so often here. I've videoed the intersection to see if it happens to others. I've sat with a clipboard, noting the number of cyclists and peds going through the intersection between 8:00 and 8:30 am. I've spoken to some of the folks that walk or cycle through the intersection, to get their experience. Finally, I've gotten behind the wheel of my car to see the scene from the perspective of the driver. What I learned through my observations is that the road is so wide, it does not allow good behavior. Let me repeat that - this intersection design PREVENTS good behavior and safe crossing. Let me explain how. A pedestrian or cyclists should always make eye contact with an oncoming motorist before crossing a road, to ensure the motorists sees them and that it is safe to cross. That is not possible here because the road is too wide- the motorist is too far away to see. And because it is such a wide road, if the pedestrian waits until the car is close enough to make eye contact with, they won't make it across the intersection in time, and most likely the motorist will be so far through the intersection, they will be unlikely to stop anyway. Finally, I learned something shocking when I took the perspective of the driver. As my kids entered the intersection from one side and I drove into the intersection from the other side, my kids walked right into my blind spot. As I continued forward, turning slightly as is required through this intersection, and they walked further across, they remained in my blind spot. I had to actually look around that piece of frame that goes between my windshield and door to make sure they were still there. It wasn't until I was almost completely through the intersection and on top of them, when I completed my left turn, that they became fully visible, right in front of my car. I was floored. I finally understood the shocked looks on drivers faces when they almost run us over. From what I understand, this scenario plays out at all the intersections along Shoreline where the road is 6 lanes wide. Possible Solution: give pedestrians a 4- to 5-second lead time to cross before the light turns green for the motorists. This will get vulnerable modes far enough into the intersection that they can be seen by drivers, and be mostly out of harm's way before motorists even enter the intersection. The great thing about this solution is that is shouldn't have any impact whatsoever to cross-traffic flow for cars along Shoreline Boulevard. The crosswalk countdown is about 25 seconds to get across Shoreline. If the light to cross Shoreline turned green for cars at 20 seconds, that will give plenty of time for all cars waiting at the red light to clear the intersection. Cross-traffic cars waiting at the red on Shoreline won't have to wait any extra time.
Crossings	A crosswalk for the pedestrians by the Safeway
Crossings	Too many pedestrians crossing not at crosswalks at Bryant st and Villa.
Environment	Environment is ok
Environment	Underpass drains full with pine needles, overflow
Environment	Drainage issue on footpath/bike path

TOPIC	COMMENT
Environment	Utility pole in sidewalk on Escuela
Multimodal	Villa needs to accommodate cyclists more. Road diet? Sharrows? Not wide enough for bikes and cars to share without bikes being in door zone.
Multimodal	Bus stop was right in bike lane; can't imagine what happens if a bus and bike are there
Multimodal	No
Multimodal	When people don't feel safe biking on the street, they bike on the sidewalk. This is dangerous for pedestrians. My children have almost been hit a few times in front of our house playing on the sidewalk. My dream is that there would be a light rail down El Camino which I think would help take lots of cars off the street as people could move easily to get to local apartments and run local errands.
Multimodal	Would like a bus stop near Ward Park
Multimodal	general Better access to Cal Train
Multimodal	general more shade at bus stops
Safety	Gutter pans uneven. Concrete gutters uneven. Tree branches go into street and block the path on central bridge. Near Safeway the water gutter is half of the lane. Lane seems narrow given speed of vehicles on shoreline.
Safety	The asphalt walkway that gives pedestrians and bicyclists the option to cut over to Jackson Street on the way to Castro Street (and the Farmer's Market) is a blessing, however the condition of that whole stretch of asphalt from Wright to the Central Expy. overpass is very poor with many ruts and temporary patches that are now 'ankle twisters'. In addition, the walkway requires more frequent sweeping as the pine needles and related dust make the pathway very slippery in both wet and dry weather. (Thank you to the crew who conveniently swept it this morning as this project's walking tour was passing by!)
Safety	No, I don't ever feel safe walking through this segment of Shoreline. It's like I'm the frog in the game Frogger, especially at mid-block crossings along Shoreline. The mid-block crossings are so dangerous. I think it's crazy that the street is 6 lanes wide (wider than some of our county's expressways with speed limits of 50 MPH!!) and there are mid-block crossings with no flashing lights or other treatments such as the "speed tables" to protect pedestrians. I think the mid-block crossings give pedestrians a very false sense of security because so many drivers ignore or can't see the mid-block crosswalks until it's too late. My husband and I have been VERY close to being hit at least a dozen times since we bought our house 3 years ago, especially when cars in one lane stop closest to you, but the other cars in the other two lanes ignore the stopped cars and just blow right by. They can't see you because the stopped car is blocking their view of you until it's too late. At night it's especially bad because the crosswalks are so hard to see and VERY poorly lit. You might as well have put crosswalks across an expressway because people see the width of the street and their instinct is to drive 50+ MPH which gives them so little time to react when they finally see a pedestrian in that mid-block cross walk. Just because there are mid-block crossings doesn't mean the pedestrians are safe. They may be in the right, but they're still in danger. Shoreline should be narrowed to slow drivers. Please widen bike lanes, widen sidewalks (no private property takes though, please!), and add landscaping buffers between pedestrians and travel lanes to make Shoreline a much more pleasant street for non-auto modes of travel. It's crazy that Shoreline is 6 lanes between Wright and El Camino Real when north of Wright and south of El Camino they neck down to 4 lanes. I believe the traffic volumes are higher north of Central Expressway, so there's no reason why this segment of Shoreline should be so wide.
Safety	The traffic bottleneck where the four lanes of traffic reduce to two at Wright Avenue through to Monecito/Stierlin make the area very scary for pedestrians. North bound traffic use the bike lane to make right turns onto Stierlin Rd.
Safety	Where the lanes merge the bike lane runs right through it. Cars speed up to make first place. It's a nightmare for everyone. Speed limit should be reduced between Villa and Montecito.
Safety	On ramps are bad because drivers are accelerating into us. Off ramp onto Central encourages speeding on the ramp.
Safety	No. Need better markings or something for cyclists at Central Expy on/off ramps.
Safety	Commuter hours are tough for bikes and pedestrians--cars impatient and honking--unprotected left turns
Safety	No, merge at Central/Shoreline/Wright is scary! Like ped lane separate from Shoreline
Safety	People getting onto Shoreline from Central very fast; could easily hit a biker, esp at night.
Safety	Bike lane width change quite a bit, bikers tend to stray in car lanes
Safety	Have to be alert to southbound ramps, but should be safe and accessible for all modes including autos.

TOPIC	COMMENT
Safety	Feel safe-Saturday am- not sure how safe I'd feel at 5:30p weekdays
Safety	Traffic on Shoreline too fast- shopping center at Montecito + Shoreline has no place to walk into it or through parking lots
Safety	unsafe
Safety	Drivers race; too much mixing at Shoreline/Villa
Safety	Cars turn left whether or not people are in the intersection; Angry man leaving "Lakes Complex" bothers pedestrians; Dangerous merge from Central: lane disappears and it's a nightmare for bikes, cars, and pedestrians; Cars go too fast near Shoreline/Dana
Safety	Central Expy/Shoreline is a dangerous zone.
Safety	Cars speeding past peds; motorists have had to see past wide turn;
Safety	The bridge in this section is not bike friendly. The bike lanes are especially not safe for kids. Going south (towards El Camino), there is an on ramp and an off ramp to the express-way that cyclists have to contend with. Cars go fast here because they are starting to speed up to get to the expressway. Going north (toward the bay), there are two Expressway ramps plus a slip lane at Villa to contend with. On top of that, where the northern-most ramp enters Shoreline Blvd, just before Wright Ave, the road goes from 4 lanes (if you count the ramp) to two, with the bike lane running amongst all of this, on a hill, right before a light which takes people by surprise when red. This is a tangled mess for cars, and not a safe place for a cyclists to be in the middle of. To add to all that, this is a 6-lane road (until it loses a lane or two on each side at Wright). This creates a freeway feel. A police officer with a speed "gun" told me that motorists commonly go 40 mph down this bridge, but he waits for them to go 50 or 55 before pulling them over for speeding. This is a route to school for several schools (Castro's Dual Immersion Program, Stevenson PACT, Mountain View Academy, St Joseph, possibly Graham Middle). Something needs to be done to make this safe for kids. To solve the problem, I would love to see a road diet here to calm traffic. Shoreline is 6 lanes wide for less than a mile. Thre's no reason it needs to be 6 lanes for that small portion of road. The morning congestion on Shoreline does not come this far south. If a lane from each side was removed, the median could be substantially widened, and a linear park could be installed down the median from Wright Ave to El Camino Real, creating a safe, inviting place for cyclists and pedestrians to get across the bridge and further down the road. I would hope to see a cycle path next to (and definitely seperate from) a pedestrian path in the median. I would love to see benches facing west at the top of the bridge. It's one of the best spots in the city to watch the sunset. Other parklet features or art would add to the appeal and encourage people to get out of their cars to use this incredble oasis in the middle of the road. :) A narrower median cycle track could possibly go one block farther, from Wright to Montecito.
Safety	Here is Safe Mountain View's vision of Shoreline Blvd: Writeup: https://drive.google.com/file/d/0B2jblTPvg3NadGtSWnNaY2ZtRmM Video: https://www.youtube.com/watch?v=8dXEgmzaLx4 Intersection at Villa inspired by: http://www.protectedintersection.com/ Resource: Can Median Bike Paths Work in the United States? http://www.dot.ca.gov/hq/LocalPrograms/bike/cbac/2012meetings/dec62010/michelle-derobertis.pdf Thank you so much for considering this option!!! We're excited to see what designs Nelson Nygaard comes up with for all the areas of this study.
Safety	Stop signs for bikers General comment
Safety	General Comment: Community Awareness programs for the community
Safety	Put a fence to prevent pedestrians to cross and keep them safe, by Shoreline
Safety	General: More bike lanes and better separation for bikes from traffic
Safety	general consistent bike lane widths

FIGURE 86: SURVEY RESPONSES REGARDING SHORELINE BOULEVARD BETWEEN VILLA STREET AND EL CAMINO REAL

TOPIC	COMMENT
Accessibility	Accessibility is clearly intended for cars, not pedestrians or bikes. Cars parked on Shoreline are often too wide for a bike to pass without going into vehicle traffic lanes. Bumpouts should be painted red. There is an abundance of commercial truck parking on Shoreline as well between Latham and El Camino making the situation worse as they block all visibility.
Accessibility	Trying to cross 3 lanes of speeders is dangerous
Accessibility	Narrow sidewalk, too many poles, posts, trees, busy intersection Square curbs = sprained ankles, danger for wheel chairs
Accessibility	Crossings have ramps, so that's nice. Don't know about other accessibility issues.
Aesthetics	Trees on nb shoreline block visibility and go into street
Aesthetics	Good to have wide median- Provides a safe zone for crossing street
Aesthetics	Why are you not making Shoreline pleasant? Shoreline is not pleasant to be on. Reducing to 2 lane each way would make Shoreline pleasant.
Aesthetics	One path empty/unused parks on Shoreline. Could be made into a jump tract.
Aesthetics	No real landscaping, all street, cars, sign posts, folks don't even have front yards :(
Aesthetics	I think Shoreline has some great landscaping in places. The sidewalks are decent and maintained in this segment. I love the open areas with trees and the benches. But, I don't stop to watch the world go by because it's not relaxing to watch freeways and Shoreline is similar to a freeway. If Shoreline were reduced to 4 lanes with wide sidewalks, wide bike lanes, bulb-outs for shorter crossing distances, and more landscaping buffers, it could be a great destination for MV residents and the benches would be much more utilized. I would spend much more time walking my neighborhood!
Aesthetics	Looks ok, a bit barren.
Clarity	Green lanes would make thSi route clearer
Clarity	Pedestrian crossings are not clearly marked. Not maintained. In a vehicle they are hard to see. Pavement is light and full of patches. Reflections and the lack of contrast make it more difficult to see.
Clarity	Crossings across cross-streets acceptable because clear sight line & low traffic volume
Clarity	No space for bike lane on Miramonte which is a continuation of route to Bubb camino and Huff.
Clarity	bike lane needs to be painted green

TOPIC	COMMENT
Clarity	Pretty well maintained
Connectivity	California crossing good. Crossings at el Camino poor . Distance between intersections is fine
Connectivity	Today was the first time I walked this route so i will have very few comments compared to Segment 1.
Connectivity	All midblock crossings remain a problem for pedestrians, even with recent improvements. More improvements are pending, and expected among these is solid lane striping ahead of the crossing to discourage drivers from changing lanes to pass cars that are stopped for crossing pedestrians. With traffic-calming measures, many in the community have expressed interest in seeing the speed limit reduced from 35 mph, and for lanes reduced from three to two in each direction. Buffered/protected bike lanes would be ideal, and all measures to move bikes off of sidewalks is encouraged.
Connectivity	Ok most of reach w/exception of place where cars are parked w/engine running
Connectivity	Cut through medians are misaligned
Connectivity	Shoreline median could be used for a protected ped/bike track.
Connectivity	Long blocks, midpoint crosswalks + missing crossing at intersections
Connectivity	Need elevated crosswalk over El Camino Real
Connectivity	Dana and Villa is area of concern for elderly residents
Connectivity	Block size is ok
Connectivity	pedestrian crossing at high school way not visible
Connectivity	Easy to cross unless a speeding vehicle is bearing down on you.
Connectivity	Ok-except for El Camino- just too many lanes to cross
Crossings	Drivers look right and encroach into crosswalks. They are always blocking crosswalk for right-on-red turns.
Crossings	No signals at Mercy

TOPIC	COMMENT
Crossings	Paint bike lanes green to make more visible
Crossings	High school doesn't line up with crosswalk on Shoreline
Crossings	Crosswalk at Villa in median full of slippery pine needles. Poor visibility for cars in all these lanes. Shoreline @ Mercy crossing daunting.
Crossings	Please see my comments on Segment 1. I have the same comments about Segment 2. I live a block away from the intersection of California and Shoreline and my husband and I have learned that it's very dangerous to cross Shoreline because of the high speeds and failure of many drivers to obey traffic laws at the lights or at the mid-block crossings. Shoreline is not on the human scale. It's wider than a large part of Central Expressway with volumes of 50MPH. As long as Shoreline is 6 lanes between Central and El Camino, the Shoreline West neighborhood will always be cut off from the downtown and will be forced to drive downtown to arrive safely. As I said in my comments for Segment 1, the mid-block crossings are so incredibly dangerous. I drive down Shoreline frequently and it is REALLY hard to see the mid-block crosswalks or pedestrians in those crosswalks until almost on top of them. The street is so wide, auto volumes are high, speeds are high, and there is so much activity to pay attention to (cars constantly changing lanes to speed up, turning drivers, lights changing, etc.) that the mid-block crosswalks just disappear into the background, especially at night. Since I know the neighborhood, I know to slow and look for the crosswalks. Even when I'm looking for them they are hard to see. I think the mid-block crossings are a great way to kill people. Put a bunch of speeding autos on a 6 lane boulevard and throw in hard to see crosswalks mid-block and it's a recipe for disaster for peds. Even if one lane stops, the other two will speed around the stopped vehicle. I've lived here for 3 years and I have never see cops enforcing the speed limit or the mid-block crossing requirement to stop if a car stops next to you. If Shoreline is reduced to 4 lanes, it would be much safer to cross. Please remove a lane of traffic in either direction and add wide bike lanes, more landscaping buffer between the sidewalks and the autos, and widen the sidewalks. I would feel so much safer crossing Shoreline and would walk rather than drive downtown.
Crossings	Triangles (slip lanes) are confusing for pedestrians
Crossings	Lights are too fast for children to cross on bike;
Crossings	I think the only place along this entire section of Shoreline that is safe for pedestrians to cross is at California Street, where there is a turn phase for cars, separate from the pedestrian phase to cross. At all other intersections and crosswalks along this portion of road, walking across Shorline is tantamount to risking your life. If an oncoming car is turning over the spot you are crossing an intersection, you don't know if they see you. If you're crossing at a mid-block crossing, you don't know if the second lane of cars sees you once the first lane of cars stops. And you can be sure the third lane of traffic won't see you or stop. Please reduce the crossing width by giving this freeway of a road a road diet!!! Please use the extra lane from each side to install a beautiful, protected linear park down the median with separate, parallel bike and ped paths. We will love you for it!!!!! To make it safe for cyclists to wait for a green light along Shoreline, please install a protected intersection with safety islands at California, and all other intersections, so we don't have to share a turn lane with a car and hope we don't get squished. At Shoreline and Villa, please replace the slip lane with a safety island, giving cyclists and pedestrians a safe place to wait for a green light.
Crossings	At Shoreline and El Camino: protected intersection, please!!! Please replace the slip lane pork chops here with safety islands to give peds and cyclists a safe place to wait. More about protected intersections: www.protectedintersection.com

TOPIC	COMMENT
Crossings	Crossing is not great. Villa crossing: cars turning left often don't look for pedestrians, have been swerved around several times. Avoid like the plague at night. Dana crossing: cars often don't slow or stop. When they do, it's usually a near lane that stops, but the others don't, it's difficult to look around it. Avoid at night. California crossing: slightly better because of street lighting + traffic lights. Cars turning right often don't look for pedestrians. Walk sign sometimes doesn't work in afternoons.
Environment	In fall the leaves block the gutters at Snow and Shoreline. When it rains it causes large ponds making it hard to walk or bike. There is no street leaf removal on Snow Street other than street sweeping and there are a lot of large trees on the street.
Environment	More permeable surfacing to allow storm water to run off. Lighter color surfacing to reflect heat island instead of black, which makes it very hot.
Environment	Not always shaded by trees, which can get very hot in the summer.
Environment	Drain gets stopped up between Chiquita and Meriposa
Multimodal	Didn't see any buses--how often are they used?
Multimodal	Bike lanes in door zone! El Camino Real to Montecito needs road diet. 3 lanes in each direction: encourages speeding, and car drives cannot see bikes + peds.
Multimodal	Need a protected bike lane along Shoreline; California downtown is kind of okay for cyclists;
Multimodal	Not sure on buses. Easy to get to Caltrain.
Safety	Bike lane in door zone. Some wider vehicles parked farther from curb made what lane is left very narrow
Safety	Marking the pedestrian walkways across Shoreline with in-ground flashing lights that activated at both sides of the crosswalk may greatly enhance visibility and safety.
Safety	Only feel safe due to low traffic volume
Safety	Why is Shoreline 3 lanes each direction? We should have a median path to connect safer to ride on sidewalk.
Safety	Cars don't stop when you're in crosswalk at Mercy, crossing Shoreline. Pine needles @ CA Ave are slippery!
Safety	I would always prefer some sort of physical separation between the cars and pedestrians/bikes. For cross traffic, the crosswalks should be widened and raised. We have to get to the right side of the road, e.g. at Shoreline & Mercy going toward Escuela, you wind up on the wrong side of the road, then you have to go against traffic to get to the right side.
Safety	No; too many parked cars, too fast traffic. Refuge island could not handle large group and this is a school crossing where kids will be in groups.
Safety	Raised crosswalks needed for crosswalk areas

TOPIC	COMMENT
Safety	I never feel safe on Shoreline in this segment except for weekend mornings when hardly anyone is on the road. There is no buffer between peds/bikes and auto traffic and the auto speeds and volumes are normally high. Pedestrians are NOT very visible, especially in mid-block crosswalks. Please put bulb-outs for pedestrians using crosswalks on Shoreline and California Street because so many drivers ignore the red light and fly right through turning right from SB Shoreline to WB California Street without looking for pedestrians. Add more lighting to the mid-block crosswalks. Add the flashing lights in the street for both mid-block crosswalks. And, of course, reduce Shoreline to 4 lanes for safer streets for MV residents.
Safety	Drives do not stop on Shoreline/Snow for pedestrian to cross; Narrow cut through at median
Safety	Cars do not stop anywhere along Shoreline for pedestrians and cyclists; You have to merge lanes as a cyclist--difficult as a child cyclist.
Safety	Cars are going really fast; Don't know if they're going to turn or not near Central Expy;
Safety	Cars speed over 50 mph here and don't stop; blind lanes even if the first car stops;
Safety	The bike lanes are nice and wide in portions, but still in the door zone in some portions. For some reason, very large vehicles sometimes park in the wide bike lanes, which forces the cyclist into oncoming traffic. This is not safe.
Safety	Sidewalk is fine, crossing Shoreline is not the best.
Safety	want to see bikes obey traffic laws
Safety	put bike lane on villa to get bikes off of California
Safety	General More Bike lanes

FIGURE 87: SURVEY RESPONSES REGARDING CALIFORNIA STREET BETWEEN BRYANT STREET AND MARIPOSA AVENUE

TOPIC	COMMENT
Accessibility	Bikes allowed on sidewalk everywhere except downtown
Accessibility	No, square curbs are not accessible to wheelchairs, too narrow in many places
Accessibility	Handicap people have huge issues/anything with wheels Sidewalks need repair (too many seams) Seniors have a lot of trouble walking around Bus stop access is a problem as well
Accessibility	sidewalks not always wide enough for 2 people
Accessibility	The neighborhood would be much more /bike-able if California Street were reduced to 2 lanes, the median was widened with more landscaping, the sidewalks widened, street parking removed, street trees planted and a wide bike lane provided instead of street parking. I have a house that fronts California Street with only 1 on-site parking space in the back on the alley and 2 on-street parking spots outside my front door. I would be willing to give up my street parking along California Street if California Street were reduced to 2 lanes and the parking turned into a wide bike lane and landscaping! But, I don‰Ûªt want to lose it if California stays 4 lanes wide because it provides a buffer between cars and pedestrians on the sidewalk. If Shoreline were reduced to 4 lanes and California Street reduced to 2 lanes, I would walk and bike much more and we could much more easily consider giving up our second car.
Accessibility	Sidewalk too narrow / bumpy in places, especially between Shoreline and Bryant.
Accessibility	General Does not like when building construction blocks traffic lanes
Accessibility	General Better wider sidewalks
Aesthetics	Mariposa and CA: overgrown ivy overtaking sidewalk 1675 CA: overgrown hedges 1685 CA: whole section of overgrown hedges
Aesthetics	California from Shoreline to Bryant has iffy sidewalk landscaping (challenges). Both sides.
Aesthetics	I think California Street between Bryant and Oak is lovely. I think California between Shoreline and Mariposa is nice. The landscaped median in both of these segments does wonders for the aesthetics of this street. Please don't remove the landscaped median! I would much prefer California Street west of Shoreline be reduced to 2 lanes just like it is to the east of Shoreline.
Aesthetics	Very large scale
Clarity	Well maintained

TOPIC	COMMENT
Clarity	Mt. Vernon to school: no marked crosswalk
Clarity	The segment between Bryant and Oak does have some narrow sidewalks. This is not an issue for me, but others on the tour seemed to be very concerned about it. Sidewalks in this segment were definitely under 5 feet. I think they're about 2-3 feet wide in this segment with many street trees, light posts, bus stop benches, and other street furniture making the sidewalks very narrow. However, I strongly oppose any additional ROW takes or removal of trees to widen the sidewalks. I would rather see insufficient sidewalk widths than street trees removed or home owners losing more of their incredible small front yards. The segment between Shoreline and Mariposa does have nicer, wider sidewalks. There are a few street trees next to the sidewalk, but not many. They were probably taken to widen California to 4 lanes. The sidewalks are well maintained. The sidewalks are a bit narrow in places, but that doesn't bother me.
Clarity	Sidewalk not well maintained from Mountain View Ave to Oak/Franklin.
Connectivity	This section OK
Connectivity	The sidewalk on the north side of California between Shoreline and Bryant suffers from old design, poor conditions, narrow width, and with a number of posts, poles, and so on blocking the way for pedestrians. For the entire length, crosswalks are lacking in the east/west directions at intersections, and midblock crosswalks are also lacking, which forces pedestrians to walk for unreasonable distances to get to crossing points (which they do not and will not do). While pedesrians must behave responsibly, nonetheless, the infrastructure must well serve their expected needs.
Connectivity	Shoreline too wide to cross without feeling vulnerable
Connectivity	Cut throughs are not present. They do not accommodate double long strollers.
Connectivity	Blocks too long, ppl have to jaywalk, need mid intersection crossings
Connectivity	Lack of crosswalks across California; crosswalks CA @ Mariposa as some driver visibility blocked by parked cars. Cars fast and light low-key
Connectivity	The segment between Bryant Street and Oak Street is so nice because it's only 2 lanes and has landscaping trees in the center median and as a buffer between auto traffic and the sidewalk. This segment between Bryant and Oak is very much on the human scale. The blocks are nice and short. The traffic is calm, slow, and leisurely until it widens near Shoreline, where speeds pick up quickly. Between Shoreline and Mariposa Street, California Street is a different story. I live on this segment of California and the feel of California is much more auto oriented because it is 4 lanes and traffic speeds are 5-10 MPH above the 35 MPH speed limit. The nice part about California Street in this segment is the landscaping in the median. Compared to the median-less segment of California between Mariposa and Rengstorff, this segment is blessed with a center median. However, if the 2 lane design of California between Bryant and Oak Street were continued west to Mariposa, this segment would be much more utilized by neighborhood residents who currently avoid California because of the high volumes and high speeds.
Connectivity	From north of the tracks, I like to go south on Shoreline, turn right on California, left on Mariposa (using a copenhagen left), right on El Camino to get to Cubby Cuts with my kids, or continue along El Camino to El Monte to get to Los Altos.
Connectivity	too far to cross California, need crossing in middle
Crossings	Bike detector in street on California at shoreline in in the car lane but not in the bike lane. Needs to be one in both areas.

TOPIC	COMMENT
Crossings	Crossing to California St Median stripes should be maintained w/walkway landscaping may obscure view
Crossings	Door zone
Crossings	No signals, no crosswalks at many intersections. Bike lane at Escuela/CA narrow, full of potholes
Crossings	Bike lights/bike timing on the roads needs improvement
Crossings	Critical Mass/Bike Pack: 1. Leader should not refer to critical mass (bad bike attitude/behavior) 2. Shouldn't block autos for bike pack (Villa) 3. Bike pack not suitable for Shoreline/El Camino pork chop crosswalk (bikes backed up into right turn lane on ECR).
Crossings	The crossing at Bryant Street is great because you're only crossing 2 lanes (1 in either direction), speeds are slow, and people can see you in the crosswalks (oh, and there is a marked crosswalk!). It would be great to add bulb outs to shorten the crossing distances, but in the segment east of Shoreline, it doesn't seem as necessary as those east of Shoreline. The crossings between Shoreline and Mariposa get more dangerous because there are no painted crosswalks and drivers can't see pedestrians trying to cross at streets without crossings. I personally think the breaks in the median to allow left turns at Palo Alto and Pettis Streets are very dangerous. I've seen many accidents at these intersections because a car stops to turn left and people slam on their brakes and cars speed around and don't see another car turning left in the opposite direction. There have been many accidents at these gaps in the median. I think these gaps should be closed and cars can go to Mariposa or Shoreline to make a left turn. In the commute hours, I frequently see many drivers turn left at Palo Alto Street to avoid the light at Shoreline and cut through the neighborhood at high speeds to get to the light at Villa and Shoreline. Although we local residents to use these openings in the medians, they are very dangerous and allow cut-through traffic to speed through the narrow residential streets. I would love to see all of the corners modified to have bulb-outs (on California at Palo Alto and Pettis especially). But, I think a much higher priority than bulb-outs is to reduce California Street from 4 to 2 lanes between Shoreline and Mariposa. I would LOVE to see California Street reduced from 4 to 2 lanes from Shoreline to Showers!! But, I understand that change needs to come slowly, so I'll settle for phasing of the lane reductions and start from Shoreline and move west. But, by reducing California from 4 to 2 lanes, crossing California Street would be much better/easier/safer.
Crossings	Protected intersections, please!!! Especially at Shoreline and California.
Crossings	Stop signs in every street by Palo Alto
Crossings	Traffic Lights around the Shoreline
Crossings	A traffic light between Shoreline and California

TOPIC	COMMENT
Crossings	Impossible to cross California outside of traffic signs between Shoreline and Mariposa, drivers are too terrible and speedy. Crossing Shoreline itself is ok, drivers are often inattentive.
Crossings	likes flashing crosswalks
Crossings	need a crosswalk between Chiquita and Escuela
Environment	At Senior Center: Bulb out is dangerous for bikes-- forces bikes in with cards that don't want to share the road
Environment	Pedestrian Crossings visible in this section
Environment	Cars parked in bike lane. Bike lane in door zone. All of California! Bike lanes are in door zone! needs road diet.
Environment	Need bus shelter, bike buffer zone at Escuela/CA
Environment	Can't pause next to kid in bike lane @ crossings on Shoreline; Not enough space and in the mornings there are commuters at each intersection; tight bike lane-half is just dash marks; no way to cross Mtn. View Ave on California
Environment	The VTA bus stops near me on California near Mountain View Streets are always well maintained and they are clearly marked.
Multimodal	general: better nighttime public transportation
Multimodal	General: Build elevated train system for better and safer crossings
Safety	bulb out is where bikes stop but are the narrowest part of the bike lanes. Inclusion of water gutter in bike path means the lane frequently has a discontinuity.
Safety	Much of California Street west of Mariposa has lost the sense of a neighborhood street because the roadway is too wide, medians have been replaced with turning lanes and speeding vehicles are much more likely, and prominent.
Safety	Door zone
Safety	Traffic too fast, no median. Parking along street/sidewalk cuts visibility No bike lanes
Safety	should not have parking in front of school- no visibility 426 Escuela- steep driveway, could not see all pedestrians until your car is on sidewalk 1900 CA Ave: Oleador blocking driveway visibility, need to pull onto sidewalk so you can see peds.
Safety	Cars too fast on Shoreline; People still speeding when on California (in downtown blocks) despite stop lights;

TOPIC	COMMENT
Safety	I feel safer on California Street between Bryant and Oak than between Oak and Mariposa because there are more street streets buffering the sidewalk and fewer lanes on California east of Shoreline. Autos are at such high volumes on Shoreline and then they turn onto California continuing at those high speeds. My husband and I don't feel safe on California Street between Shoreline and Mariposa because the speeds are so high. When we walk the dog, we avoid California Street to be safe. I must be honest and say the worst speeders along California Street are police cars. They frequently drive 50 MPH down California. Even if they're going to a crime scene, they are still risking an accident by traveling this fast and so much over the speed limit.
Safety	The bike lane is in the door zone = not safe. I would prefer protected bike lanes all along California, with landscaping and parked cars between cyclists and moving vehicles, like on Rosemead Blvd in Temple City, CA: http://la.streetsblog.org/2014/05/22/sweet-new-protected-bikeway-on-beautiful-rosemead-blvd-in-temple-city/ A path in a linear park down the middle of California might also be a good option, to connect with paths along the linear park down the middle of Shoreline.
Safety	Very unsafe to cross California between Mariposa and Shoreline. Crossing Shoreline, must watch out for cars turning right, they don't look for pedestrians (or bikes) Also feels unsafe to bike with speed of traffic and closeness of lanes / cars parked in lane.
Safety	Speed too fast on California
Safety	bike lane on Villa from shoreline to avoid California
Safety	need traffic light at Lathem and Escuela
Safety	general Buffered bike lanes would be great
Safety	improve the visibility at crossings

FIGURE 88: SURVEY RESPONSES REGARDING CALIFORNIA STREET BETWEEN MARIPOSA AVENUE AND RENGSTORFF AVENUE

TOPIC	COMMENT
Accessibility	accessibility issues for wheelchairs along California; sidewalk too narrow strollers/peds side by side
Accessibility	Underpass ramps are too narrow; Need permanent creek connection
Accessibility	Difficult to walk on sidewalk; too many things on the sidewalk along California closer to downtown;
Accessibility	general sign posts block sidewalks
Aesthetics	Political campaign signs are sight blight
Aesthetics	No front yards;
Aesthetics	by Central Expy and Monkeito put more light in and trim trees for better visability
Aesthetics	Looks pretty run down in the bit between Mariposa and Escuela.
Aesthetics	This segment of California Street is very aesthetically unpleasing. I would love to see a lot more landscaping. I do appreciate center median landscaping, but I think landscaping is much more appropriate and much more appreciated if it's placed in a landscaping buffer along the sidewalk to shade pedestrians and cyclists and separate peds/bikes from through lanes. There is a drastic change in the "pleasantness" of the street environment if you compare California Street just east of Shoreline and just west of Shoreline (lots of street trees) to this segment of California Street. This segment is very unwelcoming to peds and bikes for many reasons, one of which is the lack of landscaping and ped/bike-scaled street amenities and features.
Aesthetics	would like to see a landscaped median
Aesthetics	Residents are throwing garbage into streets along Escuela by school
Aesthetics	clean the(California) street between escuela and castro
Aesthetics	more trash cans
Clarity	Need underpass and pedestrian infrastructure around Caltrain and signage;
Connectivity	Need street side bike button at Mariposa.
Connectivity	Same comments as expressed for Segment 3.
Connectivity	Lack of crosswalks across CA.
Connectivity	No- fast traffic cuts off. no median. sidewalks narrow.

TOPIC	COMMENT
Connectivity	I use the bike path along this stretch of road ALL the time to get from Shoreline Blvd to Target, 24-hour Fitness, Trader Joes, Joanne's Fabrics, Whole Foods, Dittmers, the Milk Pail, Bev Mo, and Ross. I wish the bike lanes were not in the door zone. This is also the way I take to get to get to the Wilkie Way Bridge over into Palo Alto.
Connectivity	Would like to see a one way street between Shorline and Escuela
Connectivity	Make a crosswalk between Escuela and Rengstorff because the access to the park or the senior center is very long
Connectivity	The lights at Regstorff and Central are not working properly
Connectivity	Blocks are short
Connectivity	This segment is awful. There's no way to candy coat it. The block between Escuela and Rengstorff is MASSIVE. It's one of the longest blocks on California Street (possibly the longest) with no legal or safe way for pedestrians or bicyclists to cross it. This block really needs a safe crossing mid-block. The street would be much better if it were narrowed to two lanes (one in either direction) with wide sidewalks, bike lanes, a landscaped center median, and a mid-block crossing with a very short crossing distance for peds and bikes. This segment of California Street has a higher density than the other segments of the street. Many of these residents would benefit from pedestrian and bike improvements to get them safely via non-auto modes to local stores, schools, the senior center, the community center, and to downtown MV. The connectivity is terrible and really needs improvement.
Connectivity	need crosswalk between Escuela and Rengstorff
Crossings	No- very few crossings
Crossings	Hard to cross near Mtn. View Ave--
Crossings	Crossing California is always a bit tricky by bike. Although I am a rather fearless rider in many ways, I will never cross traffic to take a left turn from the left turn lane, where there is a bicycle detection loop. Especially not with my two children in tow. I always employ a copenhagen left. Doing this, it is almost always impossible for me to reach the push button to activate the crossing signal due to the position of the buttons all along California - they're usually on the other side of the sidewalk, far from the street. Please consider putting push buttons on safety islands behind which a cyclist can safely wait for a green light, and where they can easily reach the button. Places I would love to see this: Mariposa, Esquela, Rengstorff, Ortega, Showers.
Crossings	A traffic Light in Rengstorff Ave (and Central?)
Crossings	General Comment I think Mountain View in General should have flashing lights at the street level at all pedestrian crossings
Crossings	Need a Crossing between Escuela and Rengstorff on California
Crossings	Thank goodness Mariposa pedestrian + traffic light was put in a few years ago. Non-traffic light areas are pretty dangerous to cross. Cars speed and don't look out for people.
Crossings	The crossings in this segment are TERRIBLE!!! This segment of California is, in my opinion, the worst segment of California Street for many reasons. One important reason is the lack of mid-block crossings between Escuela and Rengstorff. The density in this neighborhood is higher than in most of the other areas of Mountain View. There are schools, a senior center, and a community center nearby, but this segment is so dangerous to pedestrians and cyclists that folks are wary of walking or cycling anywhere in this neighborhood. I have been to many public meetings at the community center and senior center and it's obvious that everyone drives to these meetings. If California Street were made more ped and bike friendly, I think parking demand would decrease at the senior center and community center. I support reducing California Street to 2 lanes and a mid-block crossing installed with a speed table and flashing lights so that peds and cyclists can cross mid-block much more safely.

TOPIC	COMMENT
Crossings	Needs crossings and reduced speed on California
Crossings	General: like lighted crosswalks
Crossings	Crossings too dangerous for pedestrians along California
Multimodal	Another bike pack issue-bikes huddle together at crosswalk confuses cars (slowing to allow pack to cross)
Multimodal	Parking protected bike lanes and bulbouts at corners would help; auto-oriented driveways everywhere; bus bulb-out at Escuela? decorative? bike lane is not good here at CA/Escuela
Multimodal	No, this segment is not multimodal. The car is king and the recent deaths along this street have proven that point. The pedestrians and bicyclists seem to be an unwelcome afterthought in this segment. The sidewalks along both sides are adequate, but the lack of mid-block crossings in the mega-block between Rengstorff and Escuela is very pedestrian unfriendly. As mentioned before, I strongly support a road diet on Caifornia Street to reduce it to 2 lanes (one lane in either direction) to create a vibrant community with safe and convenient pedestrian and bicycle routes. Please widen the sidewalks and put in wide bike lanes, preferable with a landscaping buffer on both sides of the street. Parking seems to be a premium in this block, so perhaps street parking can be maintained. I would support a center turn lane along this street if lots of landscaping is provided in buffers along both sides of the street between through lanes and the sidewalk/bike lane/parked cars. I live on California Street closer to Shoreline and if this segment of California Street were improved and traffic reduced, my husband and I would be much more willing to bike to the shopping center on Showers to go to Target, TJs, and Whole Foods. I have a bike with plenty of storage for grocery shopping, but I'm too wary of riding my bike through this segment. The residents in this area deserve a much nicer street environment. It's time the local residents were more important than the auto drivers who speed through this segment of California Street and harm and kill pedestrians.
Multimodal	General: more busses from downtown to Escuela
Multimodal	General Faster public transportation similar to Mexico City
Multimodal	stop smoking at bus stops
Multimodal	General: Better Shelters at Bus stops
Safety	Door zone big time!!! Can not see the driveways with all the parked cars.
Safety	Door zone on California. Too many driveways.
Safety	Huge number of parked cars; Sometimes there's onsite parking and sometimes not. Bike lane missing, effectively, near Escuela.
Safety	does not feel safe to cross
Safety	The bike lanes here are in the door zone, so are not ideal to ride in. Please consider giving this road a road diet and using the extra space to create protected bike lanes. It would be the only good east-west cycle connector in the entire city. It leads to lots of shops, and is in the perfect location to connect with Palo Alto.

TOPIC	COMMENT
Safety	Bigger sidewalk in Mount Vernon Ct and Gamel way Traffic Light by Escuela (by school)
Safety	This segment is very unsafe. The death of William Ware is a perfect example. When I first moved to MV (I live on California Street close to Shoreline) I was very excited to walk and bike everywhere. I quickly learned that the neighborhoods west of Shoreline are a completely different world from Old Mountain View. Shoreline, at 6 lanes between Villa and El Camino, encourages speeding, as does California Street between Shoreline and Showers. I do not feel safe cycling through this segment of California because of the high vehicle speeds, very low visibility of cyclists from the dozens of driveways, narrow bike lane, and close proximity of the bike lane to parked cars (the fear of getting doored). As I said earlier, I support reducing California Street to 2 lanes with a center turn lane, wide bike lanes and sidewalk separated from through traffic with a landscaped buffer, and, if possible, some kind of design that provides more safety for cyclists from getting doored by folks exiting their parked cars, and from the driveway conflicts.
Safety	Green lanes for bikes
Safety	more lighting
Safety	need traffic signal between Chiquita and Mariposa
Safety	reduce the speed limit to 25
Safety	put speed bumps along California to slow traffic
Safety	Better public education about safe biking driving and walking practices
Safety	speed too fast on Califronia
Safety	slower speed on California
Safety	better bike lanes

FIGURE 89: SURVEY RESPONSES REGARDING CALIFORNIA STREET BETWEEN RENGSTORFF AVENUE AND SHOWERS DRIVE

TOPIC	COMMENT
Accessibility	Handicap ppl have issues Hard to fit multiple wheelchairs/strollers/bikes on the sidewalk Too many cracks in the sidewalks Bus stops need to accommodate multiple wheeled users
Accessibility	Bus stops need shelters to protect from heat/rain
Accessibility	Large intersections - California (Escuela + CA/Rengstorff) - difficult for seniors + kids; too long, inadequate corner spaces; missing crosswalk paint at side streets on Escuela
Aesthetics	Need more trees, not Junipers; Lots of trash along street
Aesthetics	blocked sidewalks at large tree roots; lack of buffer n. side to showers; lack of parking frontage landscape at large, protected apartments
Aesthetics	Fix the potholes and the sewers
Clarity	Bike lane paint strides faded; poorly visible at intersections
Clarity	There are potholes and raised asphalt in the bike lanes on California in front of Target.
Clarity	The traffic lights in this area are conflicting each other. The space is also limited
Clarity	To Synchronize the traffic lights by Rengstorff
Clarity	Sync the lights by Renegstorff
Connectivity	I would not even use Rengstorff because it is so unsafe to cross Central.
Connectivity	Same comments as expressed for Segment 3.
Connectivity	Calif. between Escuela & Showers- blocks too long w/out crosswalks
Connectivity	General Comment Bike friendly town
Connectivity	To synchronize the traffic lights by Rengstorff
Crossings	put in speed tables on escuala at the pedestrian Crossings.
Crossings	Lack of crosswalks at superblocks; corners too narrow at Escuela, Rengstorff, etc.

TOPIC	COMMENT
Crossings	Coming from Shoreline and cycling down California, making a left turn across California is tricky at Rengstorff, Ortega and Showers. I don't use left turn lanes where there is the detection loop. I prefer making a copenhagen left turn, especially when my kids are with me, but the push buttons are too far away to reach at Rengstorff and Ortega. At California, it is super akward to make a copenhagen left because the push button is at the back of the crosswalk. To get into the correct position with my very long bike (kids in tow, remember), I have to cross showers, essentiall ride the wrong way up Showers (away from the intersection), make a sort of u-turn, then position myself next to the push button. It's silly. Please replace the slip lanes at Showers and California with safety islands. This will make it safer for pedestrians to cross. It will also give cyclists a safe place to wait for green lights. If you put the push button on the inside of the safety island, it will be easy for cyclists to reach. Thank you!
Crossings	more visibility for pedestrians and bikers at intersections especially where there are schools
Crossings	Check Synchronization of lights at Rengstorff and central, cars get stuck
Crossings	We need cross guards on Latham and Escuela and California and Escuela
Environment	Handicap ppl have issues Hard to fit multiple wheelchairs/strollers/bikes on the sidewalk Too many cracks in the sidewalks Bus stops need to accommodate multiple wheeled users
Environment	Bus stops need shelters to protect from heat/rain
Environment	Large intersections - California (Escuela + CA/Rengstorff) - difficult for seniors + kids; too long, inadequate corner spaces; missing crosswalk paint at side streets on Escuela
Multimodal	Too many bikes on the sidewalk; they need their own safe space so that the narrow sidewalks can be used to accommodate seniors, strollers, and wheelchairs
Multimodal	terribly scary; too narrow to bike with kids
Multimodal	bus area narrow @ Rengstorff
Multimodal	People park in the bike lane; Bike lane too small;
Safety	maintenance workers up cones in bike lanes. City planners and city code needs to make sure commercial maintenance work need to know to keep bike lanes clear.
Safety	Peds buffered ok by trees & landscaping @ north side
Safety	Bike lane = door zone. Please give this road a road diet and install protected bike lanes with protected intersections. Thank you!!
Safety	Streets are very dark we need lights More space for bikers
Safety	More lighting on the streets
Safety	Better lighting

TOPIC	COMMENT
Safety	General More police patrolling as cars are being broken into
Safety	General: Safety classes for young drivers

FIGURE 90: SURVEY RESPONSES REGARDING ESCUELA AVENUE BETWEEN CRISANTO AVENUE AND LATHAM STREET

TOPIC	COMMENT
Accessibility	Missing crosswalk point at most side streets; no street light at crosswalk at Galway
Accessibility	Not enough space for pedestrians at corners;
Accessibility	Want a bike and pedestrian bridge between Central and Crisanto over Cal Train
Accessibility	Entrance to senior center too narrow
Aesthetics	Trees encroaching on bridge blocking part of path.
Aesthetics	I am curious: Did the planting beds between the trees on the Central Expy/Caltrain Overpass once have landscaping? Plants and flowers would make the walk much more pleasant if a time ever returns when water is not an issue.
Aesthetics	More landscaping along Shoreline to buffer the pedestrians from lanes of travel would help tremendously to increase the sense of safety along Shoreline, but narrowing Shoreline Blvd would do the most for safety. I love the landscaping in the median and next to the sidewalks along Shoreline, but more would be better.
Aesthetics	There have been some good tree plantings in the median between the Expressway and Stierlin/Montecito but it feels a bit like putting lipstick on a pig. Further south on Shoreline, the trees are mature and attractive. The ones in the median near the fire station make it more difficult to see pedestrians waiting to cross.
Aesthetics	Overpass! Chinese Pistache trees dying, no other landscaping. How about drought tolerant plants?
Aesthetics	Ugly. Large streets, not any plantings on overpass, except for sad trees.
Aesthetics	Pretty good.
Aesthetics	Bushes and trees need to be trimmed, several sticking out in bike path
Aesthetics	Trees planted in sidewalk, too narrow at Shoreline/Villa
Clarity	A bit confusing at shoreline crossing central
Clarity	It is not clear how one would have access to the new sidewalk that runs along the north side of Central Expy. from Castro/Moffett Blvd, but I expect new directional signage will be put in place near Wright and Shoreline as this project moves toward final completion.
Clarity	Bicyclists coming from/going to the Stevens Creek Trail and crossing Shoreline due so at Montecito/Stierlin Rd or Wright Ave (using a narrow path off Jackson Street) This major east/west and north/south interchange is not clear.
Clarity	Gap where entrance from Central Expressway Clearly marked

TOPIC	COMMENT
Clarity	NO- on overpass descent from high point of overpass to Wright Ave: 3 lanes merge to two lanes, elbowing bike lane
Clarity	Bike lane is continuous except on ramps to Central Expy
Clarity	Good continuity
Clarity	Footpath on Central very much in need of upgrades--slippery!
Clarity	There are two large bumps in the bike lane on Shoreline between Montecito and Wright, going south (toward Wright). There are also large seams with bumps in the bike lane on the Shoreline bridge where the bridge connects to the road, perpendicular to the flow of traffic.
Connectivity	connection across central on ramp not well marked.
Connectivity	While walking south from Safeway on the east side of Shoreline toward Villa the sidewalk has connectivity. It is also clear there is no pedestrian access over Central Expressway from the corner of Wright and Shoreline if one is walking on the west side of Shoreline and heading south.
Connectivity	Shoreline Boulevard from Wright to El Camino should be reduced to 2 lanes in either direction. Shoreline is too wide in the segment south of Wright Street and causes drivers to speed. It is definitely NOT on the human scale. The scale of Shoreline Blvd in this segment is designed for cars and peds and bikes are a sad afterthought. This roadway acts as a freeway which physically divides the communities west of Shoreline with the wonderful downtown. The population of the Shoreline West community is large, but many are too scared to cross Shoreline on foot or by bike. This causes many of us to drive across Shoreline to feel safe which adds to parking demand in the downtown area and adds cars to the road. If Shoreline were reduced in lanes and wide bike lanes, sidewalks, and landscaping buffers were provided, speeds would decrease, and residents west of Shoreline would feel much safer to cross on foot or by bike with our families and friends.
Connectivity	1. Connectivity where Stierlin Rd, Montecito, and Shoreline come together is difficult because of the triangular piece of land and the odd angle of the streets where they intersect. Many people walk to the Safeway and use that intersection.
Connectivity	The west side of Shoreline lacks pedestrian facilities, and the way through is physically blocked both north and south of the overpass, even though pedestrians use Evelyn headed west under the underpass and expect passage to Shoreline. Anyone walking on the west side of Shoreline in that area is forced to cross to the east side at one point and back to the west side later on. This requires four signaled crossings. Issues with the east-side ped/bike path have been discussed a great deal in recent months and are certainly worthy of attention. The east/west crossing at Villa is not safe for pedestrians. Many near misses have been observed by the community, and the crowning of Shoreline at this location might have something to do with it.
Connectivity	Not human scale--this segment is at a car's scale
Connectivity	Very long blocks
Connectivity	Not always good for bikes
Connectivity	I'll tell Google Maps they need to find out which side of Shoreline doesn't have sidewalks

TOPIC	COMMENT
Connectivity	long blocks- loud
Connectivity	Bike lane too narrow
Connectivity	Bike lane too small
Connectivity	Difficult left turn from Montecito to Shoreline; Left turn from Wright to Shoreline an issue; No room for wheelchairs and walkers on Shoreline; Left turn issue from Villa to Shoreline
Connectivity	area at Dana and Villa of of concern and is one intersect resident try to avoid
Connectivity	A big problem here is that there is no safe connection for cyclists who want to get to Central Expressway. Riding on the ramps is the only option, and it's not a good one. One potential solution to this would be to add a short trail through the trees that would connect the northern end of the current Shoreline pedestrian path to Central Expressway (where the new sidewalk just went in!). From there, a cyclist can easily take Central west toward Palo Alto. To go east toward Sunnyvale, a cyclists would need to cross the express-way. There is a light that could be used there, if a push-button were installed on each side for cyclists to get across and back again. Or a two-way protected cycle track could go from the potential Shoreline pedestrian path connector I just proposed to the Central Expressway/Moffett intersection in order to cross there. Also, there is the potential for a great trail connector to Evelyn near the corner of Shoreline and Villa where there is a parking lot on the northwest corner of the intersection. Google offices will be going in there soon, I believe. Google, being super pro-bike, will surely be cooperative if approached about putting a trail at the eastern-most portion of that parking lot. Or it might be possible to squeeze a trail between the parking lot and the side of the Shoreline bridge.
Connectivity	Close Crisanto Ave
Crossings	There are several areas where a left turn arrow directing a vehicle to turn and proceed over a crosswalk is timed at the same moment a pedestrian "walk" signal tells them to proceed into the crosswalk, hence making the crosswalk less safe for the pedestrian if the driver does not see them. A delay in the left turn signal when the cross 'button' is pushed may be an option to alleviate this concern without causing unnecessary delay for vehicles when no pedestrians are present.
Crossings	The crossing of Shoreline at Villa is very wide and many times drivers that are driving WB on Villa and turning left to cross Shoreline get impatient and drive through the sidewalk while I'm still in it. Many drivers act threateningly that are driving NB along Shoreline and stop in the middle of the crosswalk. I've been yelled at before by motorists that are parked in the middle of the crosswalk because they're angry that I triggered the walk sign and delayed their trip. This roadway is so wide that it encourages drivers to treat it as a speedway and disregard other modes.
Crossings	The crossings at Montecito/Stierlin at Shoreline and the light at Wright Ave are not safe for pedestrians or bicyclists. The egress from the Jack in Box drive thru makes the intersec-tion even more difficult for bicyclists. The angle of the streets at the self-serve car wash make it hard for people to see when there is a lot of traffic. Others have documented many times the problems with the light at Wright and the danger to pedestrians.
Crossings	Scary where Central Expressway comes into Shoreline
Crossings	No way to turn left onto Villa
Crossings	No signaled left turns at Villa and Shoreline. This means peds are vulnerable.
Crossings	Need more reflective markings for evening

TOPIC	COMMENT
Crossings	Hard to cross, cars don't want to yield to pedestrians
Crossings	Very busy street
Crossings	Grade too steep for below average/beginning cyclist
Crossings	Good
Crossings	Ped crossings at Montecito & Shoreline are very unsafe. Incomplete visibility for drivers.
Crossings	Montecito- buses. high volume car traffic. Wright.
Crossings	Need crosswalks across Shoreline north of Montecito; Takes forever to get a signal to cross at Shoreline/Wright; Difficult to cross Shoreline/Latham; No crosswalk at California/Palo Alto Ave; no crosswalk near Chiquita/CA
Crossings	Some peds try to cross onto Evelyn, dangerous; pedes trying to cross the Central Expy find it difficult; Serious issues here
Crossings	Shoreline Blvd is extremely dangerous to cross at Wright Avenue. Especially coming from the parking lot of the Lakes condo complex at the northeast corner in the morning. My kids and my husband or I have been nearly struck walking to school on numerous occasions here, including this morning! Cars careen through the intersection from Wright Avenue and make a left-hand turn to go up Shoreline to the 101, often almost hitting us pedestrians. It's crazy how common this is. I've done my own research into why this happens so often here. I've videoed the intersection to see if it happens to others. I've sat with a clipboard, noting the number of cyclists and peds going through the intersection between 8:00 and 8:30 am. I've spoken to some of the folks that walk or cycle through the intersection, to get their experience. Finally, I've gotten behind the wheel of my car to see the scene from the perspective of the driver. What I learned through my observations is that the road is so wide, it does not allow good behavior. Let me repeat that - this intersection design PREVENTS good behavior and safe crossing. Let me explain how. A pedestrian or cyclists should always make eye contact with an oncoming motorist before crossing a road, to ensure the motorists sees them and that it is safe to cross. That is not possible here because the road is too wide- the motorist is too far away to see. And because it is such a wide road, if the pedestrian waits until the car is close enough to make eye contact with, they won't make it across the intersection in time, and most likely the motorist will be so far through the intersection, they will be unlikely to stop anyway. Finally, I learned something shocking when I took the perspective of the driver. As my kids entered the intersection from one side and I drove into the intersection from the other side, my kids walked right into my blind spot. As I continued forward, turning slightly as is required through this intersection, and they walked further across, they remained in my blind spot. I had to actually look around that piece of frame that goes between my windshield and door to make sure they were still there. It wasn't until I was almost completely through the intersection and on top of them, when I completed my left turn, that they became fully visible, right in front of my car. I was floored. I finally understood the shocked looks on drivers faces when they almost run us over. From what I understand, this scenario plays out at all the intersections along Shoreline where the road is 6 lanes wide. Possible Solution: give pedestrians a 4- to 5-second lead time to cross before the light turns green for the motorists. This will get vulnerable modes far enough into the intersection that they can be seen by drivers, and be mostly out of harm's way before motorists even enter the intersection. The great thing about this solution is that is shouldn't have any impact whatsoever to cross-traffic flow for cars along Shoreline Boulevard. The crosswalk countdown is about 25 seconds to get across Shoreline. If the light to cross Shoeline turned green for cars at 20 seconds, that will give plenty of time for all cars waiting at the red light to clear the intersection. Cross-traffic cars waiting at the red on Shorline won't have to wait any extra time
Crossings	A crosswalk for the pedestrians by the Safeway
Crossings	Too many pedestrians crossing not at crosswalks at Bryant st and Villa.
Multimodal	Escuela needs to get rid of parking so there's room for bikes

TOPIC	COMMENT
Multimodal	Bikes on sidewalks b/c they feel unsafe on street
Multimodal	Escuela needs to be more bike friendly from Latham to Crisanto; only allow parking on one side to make space for bikes; protected bike lanes for children commuting to Castro School + Rengstorff Park and for seniors to community center;
Multimodal	General: Busses work well Would like more busses from Cal Station to Senior Center
Multimodal	General - more Buses from downtown to Escuela
Multimodal	want Bus 522 from Escuela to Rangstorff
Multimodal	General: Would like to see busses run later on the weekends specifically the "35"
Multimodal	more busses of rout 522 all the way to El Camino
Multimodal	more accessible bus routes at least every 10 min busses 34, 32,35 and 40
Multimodal	more 533 and 22 bus routes
Multimodal	the 522 to stop between Escuela and El camino so I can take 1 bus instead of 3
Safety	Cars speeding in school zone; Highest density of accidents on El Camino Real and Escuela;
Safety	No bike lanes and very scary to make left , especially scary to bike with kids; had to take the lane on Escuela
Safety	People do not yield to peds, even after no median; need 1 week of enforcement in front of Castro School
Safety	The bulb-outs near the senior center are great for pedestrians but terrible for cyclists. They quite suddenly force cyclists to dart into oncoming traffic. Please replace bulb outs with safety islands that cyclists can pass BEHIND.
Safety	Prohibit the parking between California and Latham st on Escuela because it is dangerous for the Children
Safety	Better lights on Higdon ave
Safety	Need better lighting at Castro Elementary
Safety	More crossing guards and police near school
Safety	Bike lanes on Escuela

TOPIC	COMMENT
Safety	Better lighting on Escuela
Safety	Better lighting on Escuela
Safety	Fix fence at end of escuela near Day Worker Center, dangerous because of train
Safety	crosswalk at California and Escuela too dark
Safety	Better Lighting at Escuela and Lathem Also need Stop light at this intersection
Safety	Better lighting all along Escuela
Safety	Traffic too fast
Safety	Concerned about traffic and safety when new teen center opens
Safety	speed limit too high along escuela
Safety	need more lighting on all of Escuela
Safety	Traffic too fast in front of schools
Safety	more crossing guards for the kids
Safety	want a bike lane on Escuela
Safety	stop sign or light at senior center entrance
Safety	reduce speed on Escuela and on California
Safety	better visibility by the Park vista apartments. I ride my bike and I don't see if cars are going in or getting out. Landscaping needs to be thinned
Safety	more lighting at Escuela and Crisanto
Safety	more police to control speed on Escuela
Safety	Better Lighting
Safety	need bike lane for the kids by Castro School

APPENDIX B: B/PAC INPUT

The following tables present survey data for the study area.

FIGURE 91: B/PAC COMMENTS ON DRAFT CONCEPTUAL ALTERNATIVE

RESPONDENT	COMMENTS	RESPONSE
B/PAC Member	Do chicanes work? Where are examples? Would vehicles drifting into bike lanes?	Chicanes removed.
	Need to show more data on community input and population growth.	
	California St and Escuela are the priority. What projects can be addressed quickly?	Data on input and growth provided in Draft Report.
	Beyond the study area, want to examine crossing of ECR to El Monte and future underpass at Rengstorff and Central.	
	Coordinate with Shoreline Corridor Study and Bicycle Transportation Plan because people travel beyond boundaries of study.	BTP routes reflected.
	Heard many issues with crosswalk at Wright/Shoreline – inc sun/shadow problems.	
B/PAC Member	Will bulb-outs be included at the ends of the project limits?	Treatments include entire intersections except ECR
	Show amenities for bike/peds (not just ROW width etc)	
	Account for 4% growth; compare to local precise plans	4% growth used
	Escuela is the priority due to access to public institutions and vulnerable populations.	Priorities incorporated into phasing
	Include crossing of ECR on Escuela.	
	Not interested in road diet for Shoreline	
	Consider changing speed limit	
B/PAC Member	Hard to read diagrams, not clear	Benefits represented.
	Need wider sidewalks on California Street	Squared off on/off ramps.
	Acceptable to increase time for motorists	Costing of multiuse path on California (bike lane at sidewalk level).
	Highlight benefits, what we want to accomplish e.g. improved quality of life, including benefits for motorists, help MV become a welcoming environment.	Alternatives redesigned to allow phased achievement of Alternative 3.
	Supportive of road diet	
	Escuela should include crossing ECR, not supportive of chicanes.	
	Supportive of squaring off on/off ramps to Central Expressway	
	In favor of Alternative 3, but try to do as much as can be done and keep costs down.	
	The alteratives should be presented as phased projects in order to do as much as possible with goal of getting to Alternative 3 for all three streets.	

RESPONDENT	COMMENTS	RESPONSE
Public	Supportive of road diet.	Back up data, key destinations, collision data, VERBS data and General Plan goals are all discussed in the Draft Report.
	There was a bad accident tonight at Shoreline and Dana. Need to slow traffic.	
	Projects are needed especially at dangerous locations, vulnerable populations	
	Questions about stop signs at off-ramps	
	Support for increasing safety and comfort for ped/bicyclists	
	Question about auto LOS: What impacts to motorists at other non-peak times of day?	Standard LOS analysis focuses on the peak
	Include backup data with the presentation	
	Discuss key destination trips e.g. schools, – need for bike/ped amenities	
	Cite VERBS Study; high density population area	
	How will the alternatives impact traffic speed?	
	Do alternatives align with City goals?	
	In favor of road diet.	
	Tighter right turns and tighter intersections are important.	
	Continue project to Middlefield.	
	Diagrams need keys, show parking and bus stops	Drawings include keys, bus stops
	Need connectivity from Escuela to cross ECR.	
	Design should consider Google bus use and their lengths when stopping at intersections and turning.	
	Escuela is the priority due to having a school, senior center, teen center	
	Prefer California St alternative with middle turn lane to allow access	Plans align with Bike Transportation Plan e.g. Permanente Creek crossing, Central Expressway crossing
	California Street is a residential street	
	Support Alternative 3.	
	Crossing ECR is important for connection to Los Altos	On/off ramps have been squared off further
	Square off ramps.	
	Support Alternative 3	
	Report needs more stories and background for support	
	Provide references in report – where does info come from?	
	People are cutting through City streets because of jammed freeways	
	Did not agree with City's ROW width data for California St from Rengstorff to Showers.	
	Believe traffic growth is higher than 4%	
	Need to look at alternatives for cost estimates.	
	Support Alternatives 2/3	
	Need access from Escuela to Los Altos	
	Coordinate with Bicycle Transportation Plan	

APPENDIX C (PART I): CITY COUNTIL MEETING NOTES

Date: Tuesday, 13 October 2015

Location: MV City Hall, Council Chambers

Attendance: City Council, Public

Presentation (10 minutes) - Rey Rodriguez

See powerpoint and meeting audio record

Public Comment

Linda Curtis, Business owner

- Opposed bike lanes on California and ECR (not in project), but supported bike lane and one-way traffic on Latham.[1]
- Visually impaired people dislike bulbouts (and ramps) because they like to feel the curb
- Should apply for funds for bike overpass from Latham-Church over 237 so don't have to merge with El Camino Real

Tracy Chu, Great Streets Mountain View

- Supports phased option with a partial build-out
- Pointed out that this is the densest area in Mountain View with lots of biking and walking.
- Emphasized the other 22 hours of the day and the need to consider all modes.

1 Note: Latham has 40 feet curb to curb width so will not allow for bike lanes without reduction of lane

Theta Cohens, Resident @ Shoreline/Villa

- As a disabled person, she likes traffic calming including bulbouts because they make the street safer.
- This is a civil rights issue. People of all ages and abilities should be able to walk and bike safely on the streets. Neighbor with disability cannot cross Shoreline Blvd in the walk time for 6 lanes.
- Disabled man was killed by speeding motorist at bus stop on California/Escuela.
- Support phase 3.

Jennifer Sumant, Parent on Latham Street

- Not safe for children or others to ride on Shoreline yet it's a route to school.
- Last council meeting decided routes to school should be 15 mph.
- Escuela is a priority and has poor visibility. Traffic calming would help.
- Supports fully phased option. Shoreline is 2 lanes in each direction anyways in CBD.
- California is bad to drive on—get honked at if go at speed limit.

Don Bahl, Resident

- Traffic calming refers to vehicles.
- Opposed to designs. Wants equal rights for motorists and didn't see many people walking and biking when he drove here.

Dan Taak, Resident and Parent

- Supported option 3 the most.
- Shoreline overpass should be prioritized especially merge zones.
- Crossing of California should be prioritized, including a median so kids can stop halfway.
- Consider reconfiguring Shoreline to have parking replaced by bike facilities i.e. no parking and no lane reduction.
- Escuela improvements and bike lane should connect to and through El Camino Real

Cherie Walkowiak, Safe Mountain View

- This is an equal rights issue. Equal rights aren't only for cars

- Recommended including leading pedestrian intervals and pedestrian refuges (protected intersections or modified protected intersections)
- Protected or buffered bike lanes are in code for speed limits >30mph and both California and Shoreline have speed limits above 30mph.

John Scalboro, Resident

- Supports full phase 3 option, will support human rights of those who do not have cars, emphasized healthy lifestyles.
- Study only looks at peak hour and not rest of day, plus traffic analysis does not account for mode shift.
- Supports more protected intersections.
- Prioritize school zones, safe routes to schools, parks, senior center, and teen center

Janet le Fleur, Resident

- Supports project for safety reasons. There were three deaths in three years: Erik Onorato, William Ware, Joshua Baker. All three motorists were speeding. Bothered that full report mentioned speeding, but short report focused on driver delay.

Council Questions

- Asked if mode split was taken into account in traffic model due to bicycling being more viable option- answer is no
- Asked to clarify protected intersection and bike lane with bulbout- explained offset at intersections for better bicycle-motorist visibility, however, some cities prefer to keep cyclists going in straight line. Design details can be sorted out in engineering design.
- Ask about bus stops on California and impact to travel lane- answer is on Shoreline there was a separate bay, but on California the bus stop would stop partially in travel lane[2]
- Asked about growth: explained about compounding from 2015-2020, then to 2030
- Signalization and traffic analysis included a 2 second leading pedestrian interval

2 Correction: On looking at the dimensions of the bus stops after the meeting, the bus stops have been designed to provide space for the bus to pull over and motor vehicles to pass on the left. The lane widens from 11-feet to 19 or 20 feet at bus stops.

- Asked about California left turn access- explained allowing lefts at intersections in phase 2 and then creating the median as needed or desired based on traffic impacts
- Asked about temporary bulbouts and comparable assessment in the city- for Calderon/Mercy there has been positive feedback from pedestrians, some complaints from drivers hitting curb because they need to make more of a 90° turn—learning curve
- Asked about emergency vehicles- explained design vehicles include larger vehicles and that the design will address public safety by making roads safer
- Asked about fastest implementation- answer was that part was CIP funding, and staff workload. If staff resources available, phase 1 can begin very quickly. Traffic calming will require more study & outreach.
- Asked about option to keep 4 lanes on California but increasing safety- said only bulbouts with that option
- Asked about bike boxes and to explain a 2 stage left turn- explained function like peds crossing.
- Asked about more detailed traffic study- explained more queuing, mode shift, timing changes, other details
- Asked about Latham Street- will be done in another study
- Asked about growth numbers- came from general plan (4%) results in increase from 11k to 38k vehicles.
- BRT on El Camino - can incorporate all of these in supplemental traffic study
- BRT discussion- these decisions will affect California
- Concern about two-way left turn lane on California – this is part of the existing street treatment and a standard road design, requires motorists to look for oncoming traffic

Council Comments

ESCUELA

- Support phased approach (McAllister)

- Need to assess parking because of overcrowding in apartments, don't know how autonomous vehicles will reduce traffic (Siegel)
- Need more information on impacts (Inks)
- Urge caution, but everything listed needs to be done (Rosenberg)
- Escuela is the highest priority (McAllister, Kasperzak, Rosenburg, Clark)
- Safety of residents is highest priority, pilot was implemented at Dana Street at Landel School (Showater)

CALIFORNIA

- Nervous about motorists rear-ending right-turning vehicles or having head-on collisions for left turns (Siegel)
- Parking time of day restrictions allow more flexible use e.g. Phyllis Ave (Clark)
- Buses should not stop in the traffic lane (McAllister)

SHORELINE

- Overcrossing at Central is the priority (Clark, McAllister, Siegel)
- Also connect bike facilities to a future Caltrain trail (Siegel)

Summary

- Support for the conceptual design and phased approach
- Allow for buses to pull into stop fully without blocking traffic
- Shoreline overpass and Escuela Ave are priorities
- Need more outreach from residents (the other side)

APPENDIX C (PART II): CITY COUNTIL MEETING MEMO

DATE: October 13, 2015

TO: Honorable Mayor and City Council

FROM: Rey S. Rodriguez, Senior Project Manager
Lisa Au, Principal Civil Engineer
Michael A. Fuller, Public Works Director

VIA: Daniel H. Rich, City Manager

TITLE: California Street, Escuela Avenue, Shoreline Boulevard Complete Streets Feasibility Study Alternatives, Project 14-41

STUDY SESSION MEMO

CITY OF MOUNTAIN VIEW

PURPOSE

The purpose of this item is to provide Council with an update on the California Street/Escuela Avenue/Shoreline Boulevard Complete Streets Feasibility Study and to get input from Council on the alternatives prepared for each street.

BACKGROUND

The objective of the California Street/Escuela Avenue/Shoreline Boulevard Complete Streets Feasibility Study (Study) is to develop alternatives to create a safe, comfortable, and convenient environment for all modes of travel, including pedestrian, bicycle, automobile, and transit on California Street between Showers Drive and Bryant Street, Escuela Avenue between Latham Street and Crisanto Avenue, and Shoreline Boulevard between El Camino Real and Montecito Avenue (see Figure 1). For the purposes of this Study, a Complete Street is defined as a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit riders, and motorists, appropriate to the function and context of the street.

Figure 1—Study Area

Existing Roadway Characteristics

California Street is 90' wide, with two travel lanes in each direction between Showers Drive and Oak Street and one travel lane each direction between Oak Street and Bryant Street. The posted speed limit is 35 miles per hour (mph). Between Showers Drive and Ortega Avenue, a two-way left-turn lane is provided in the center of California Street. Segments between Ortega Avenue and Mariposa Avenue have a double solid yellow line, while segments between Mariposa Avenue and Bryant Street have landscaped medians. Seven intersections along California Street provide left-turn pockets. Bike lanes are mixed with segments having a bike lane between parking and traffic lanes, or adjacent to the curb.

Escuela Avenue is 40' wide between Crisanto Avenue and Latham Street and consists of two lanes. The majority of the street has parking on both sides. The posted speed limit is 25 mph, including a 15 mph school zone. The California Street intersection has a left-turn pocket and is signalized. Escuela Avenue does not currently have bike lanes, though the street is a recommended bike route under the 2015 Draft Bicycle Transportation Plan and the 2008 Bicycle Transportation Plan.

Shoreline Boulevard was studied between El Camino Real to Montecito Avenue. Shoreline Boulevard varies from 83' wide over Central Expressway to 113' wide in other areas. Figure 2 is Shoreline Boulevard at Central Expressway looking south.

Between El Camino Real and Wright Avenue, there are three travel lanes in each direction, and between Wright and Montecito Avenues, there are two travel lanes in each direction. The posted speed limit is 35 mph. Only the segment between Wright Avenue and Villa Street has a concrete nonlandscaped median. The remaining medians on Shoreline Boulevard are landscaped. Six intersections provide left-turn pockets and there are three median breaks for pedestrian crossings. Bike lanes vary with some segments having a bike lane between parking and traffic lanes and others with curbside bike lanes.

Figure 2—Shoreline Boulevard at Central Expressway

In early 2015, pedestrian-activated LED flashing signage was installed on Shoreline Boulevard at High School Way, Mercy Street, and Dana Street. The enhanced signage has improved the visibility of pedestrians and bicyclists crossing Shoreline Boulevard.

The following table summarizes the street characteristics.

Summary of Existing Street Design

	California Street	**Escuela Avenue**	**Shoreline Boulevard**
Public Right-of-Way Width (feet)	90	40	113 Over Central Expressway = 83
Existing Travel Lanes in Each Direction	Showers Drive to Rengstorff Avenue: 2 Rengstorff Avenue to Oak Street: 2 Oak Street to Bryant Street: 1	1	Montecito Avenue to Wright Avenue: 2 Wright Avenue to El Camino Real: 3
Posted Speed Limit (mph)	35	25	35
Bicycle Amenities	Bike Lanes	No Bike Lanes	Bike Lanes

In June 2014, the City retained Nelson\Nygaard Consulting Associates (Nelson\Nygaard) to conduct community outreach and prepare the Study. Outreach has included a community biking and walking tour (September 27, 2014), an on-line survey (October 2014), a community workshop (October 30, 2014), and meetings with over 200 individuals and organizations in the study area (October 6, 2014 through October 17, 2014).

Figure 3—Biking Tour on September 27, 2014

Figure 4—Walking Tour on September 27, 2014

Key observations/comments from the community include:

- Improvements to pedestrian and bicycling facilities on Shoreline Boulevard over Central Expressway are a clear priority.

- The pedestrian environment can/should be improved by providing additional and well-designed street-crossing facilities, reduced street-crossing distances, and traffic-calming measures.

- Improved bicycling facilities (e.g., reducing door zone conflicts, wider bike lanes, left-turn opportunities, better connections to the Citywide bike network) will attract additional bicyclists, including "interested but concerned" bicyclists.

Data Collection

In addition to community input, existing conditions data was collected and reviewed. This data included right-of-way dimensions, striping, pedestrian facilities, bicycle facilities, transit services, multimodal traffic volumes (vehicles, pedestrians, bikes), collision data, and street lighting throughout the study area; traffic speeds along California Street and Shoreline Boulevard; lighting intensity at intersections along California Street; and parking supply and occupancy on Escuela Avenue.

The data collected was evaluated in conjunction with projected growth and traffic data that would impact these three streets. Analyses of the data were used to develop the improvements for the project area (see Attachment 1—Draft Report).

DISCUSSION

Initial Alternatives Development

Three initial alternatives were prepared for each street. Each alternative progressively adds improvements for bicycles and pedestrians. The alternatives were presented to the Bicycle/Pedestrian Advisory Committee (B/PAC) on August 26, 2015 and are described below.

California Street

Initial alternatives were developed for California Street based on three distinct segments between: Showers Drive and Ortega Avenue, Ortega Avenue to Mariposa Avenue, and Mariposa Avenue to Bryant Street.

Initial Alternative 1—Provides wider bike lanes to the west of Chiquita Avenue, shortens pedestrian crossing distances with intersection bulb-outs, and adds high-visibility midblock crosswalks.

Initial Alternative 2—Widens the bike lane and switches the position of the bike lane and the parking lane to provide "parking-protected bike lanes." Design features include Alternative 1 proposed improvements and a lane reduction from four to three lanes, including buffered bike lanes and a two-way left-turn lane between Showers Drive and Chiquita Avenue. A road layout of this alternative from Ortega Avenue to Rengstorff Avenue is shown in Figure 5 below. Note that this figure is provided as a representation of the facility improvements for a segment of Alternative 2. Figures for all alternatives can be found in Attachment 1 (same for all alternatives described in this memo).

Initial Alternative 3—Includes a landscaped median and left-turn pockets at intersections. Design features include Alternative 1 proposed improvements, a lane reduction from four to two lanes, parking-protected bike lanes, and a landscaped median.

Figure 5— California Street Initial Proposal – Alternative 2 Shown

Escuela Avenue

The initial alternatives proposed for Escuela Avenue were divided into segments between Latham Street and California Street, and California Street and Crisanto Avenue.

Initial Alternative 1—Includes bulb-outs at corners between Latham Street and Crisanto Avenue for traffic calming as well as a bike boulevard with sharrow markings.

Initial Alternative 2—Includes Alternative 1 traffic-calming elements, as well as bike lanes on both sides of the street, and parking removal on one side of the street.

Initial Alternative 3—Includes Alternative 1 traffic calming elements, wider sidewalks with landscaping and urban design improvements, bike lanes on both sides of the street, and parking removal from both sides of the street. Parking removal was recommended for alternating sides of the streets (chicanes) to equitably remove parking along these street segments. A layout of this alternative is shown in Figure 6.

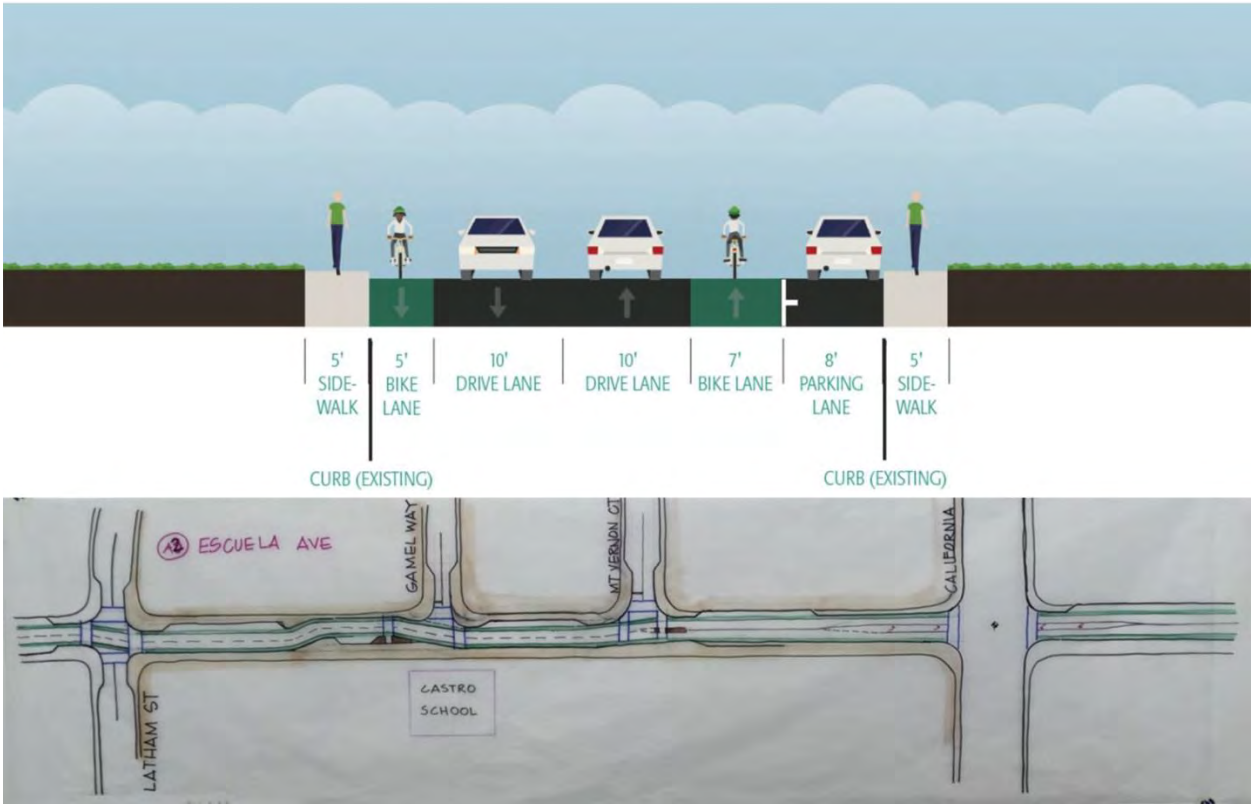


Figure 6—Escuela Avenue Initial Proposal – Alternative 3 Shown

Shoreline Boulevard

The initial alternatives for Shoreline Boulevard were divided into segments between El Camino Real to California Street, Dana Street to Central Expressway, and Central Expressway to Montecito Avenue.

Initial Alternative 1—Includes bulb-outs at corners for traffic calming, buffered bike lanes, dashed green painted bike lanes through intersections and merge zones, and stop signs to be installed at off-ramps from Central Expressway.

Initial Alternative 2—Includes Alternative 1 traffic-calming elements; a lane reduction from six to four lanes; wider, buffered bike lanes; and squared-up on- and off-ramps to and from Central Expressway.

Initial Alternative 3—Includes Alternative 1 traffic-calming elements, a lane reduction from six to four lanes, wider sidewalks between El Camino Real and Villa Street, and parking protected bike lanes with landscaped buffers. Figure 7 shows the road layout for this alternative from El Camino Real to Mercy Street.

Figure 7—Shoreline Boulevard Initial Proposal – Alternative 3 Shown

The table below summarizes the initial alternatives.

Initial Alt.	California Street	Escuela Avenue	Shoreline Boulevard
1	• Traffic calming	• Traffic calming • Bike boulevard	• Traffic calming
2	• Traffic calming • Lane reduction (4→3 lanes) • Median turn lane • Parking protected bike lanes	• Traffic calming • Bike lanes • Parking removal on one side	• Traffic calming • Lane reduction (6→4 lanes) • Buffered bike lanes
3	• Traffic calming • Lane reduction (4→2 lanes) • Parking protected bike lanes • Landscaped median	• Traffic calming • Bike lanes • Wide sidewalks • Urban design • No on-street parking	• Traffic calming • Lane reduction (6→4 lanes) • Protected bike lanes and protected intersections

Traffic Impacts of Lane Reductions

To gain a preliminary assessment of the traffic impacts associated with reducing lanes on California Street and Shoreline Boulevard, travel times were estimated based on current conditions as well as future conditions with growth anticipated in the General Plan. Travel times are expected to increase significantly even without lane reductions due to growth-induced traffic volume increases.

Travel time increases due to the lane reductions are small under current conditions, but increase significantly as a percentage of baseline travel times with increased volume. This is a high-level assessment only, and additional analysis is warranted if lane reductions are proposed.

Year	California Street (between Showers Drive and Bryant Street)			
	No Project/Alternative 1		Alternative 2/3	
	AM Peak Hour (WB)	PM Peak Hour (EB)	AM Peak Hour (WB)	PM Peak Hour (EB)
2015	5.5 minutes	5.2 minutes	+0.8 minute 6.3 minutes	+ 1.6 minutes 6.8 minutes
2020	5.9 minutes	5.8 minutes	+ 3.2 minutes 9.1 minutes	+ 7.1 minutes 12.9 minutes
2030	7.0 minutes	7.4 minutes	+ 4.5 minutes 11.5 minutes	+ 7.0 minutes 14.4 minutes

Year	Shoreline Boulevard (between Montecito Avenue and El Camino Real)			
	No Project/Alternative 1		Alternative 2/3	
	AM Peak Hour (NB)	PM Peak Hour (SB)	AM Peak Hour (NB)	PM Peak Hour (SB)
2015	3.3 minutes	5.3 minutes	+ 0.4 minute 3.7 minutes	+ 0.5 minute 6.3 minutes
2020	3.9 minutes	6.4 minutes	+ 1.2 minutes 5.1 minutes	+ 3.4 minutes 9.8 minutes
2030	8.6 minutes	14.0 minutes	+ 3.7 minutes 12.3 minutes	+ 7.5 minutes 21.5 minutes

WB/EB designates westbound/eastbound
NB/SB designates northbound/southbound

B/PAC Input

The B/PAC addressed the following three specific questions regarding the draft alternatives:

1. Has input from the community been addressed?

2. What are considered priority elements/features?

3. Consider phasing by street.

4. What locations should be addressed (e.g., Castro School vicinity, Villa Street, Central Expressway, etc.)?

The B/PAC concurred that community input has been addressed and preferred Alternative 3 for all the streets, but understood that the City would not be able to fund all the improvements immediately. In general, B/PAC recommended refining alternatives that can accomplish the most with potential funding and to consider phasing that does not prohibit future implementation of additional elements.

B/PAC would also like the study to explore more areas that would provide connectivity from the current project scope areas to other areas of town such as crossing of El Camino Real to connect with the City of Los Altos. In particular, B/PAC suggested the alternatives align with the City's Pedestrian Master Plan goals and Bicycle Transportation Plan objectives.

The 2015 Final Draft Bicycle Transportation Plan Update identifies California Street and Shoreline Boulevard as Class II Bike Routes and Escuela Avenue as a Class III Bike Route. The bicycle amenities proposed from this Study align with those objectives. The Pedestrian Master Plan sets pedestrian-related policies and guidelines for the City and these goals will be incorporated into the proposed projects whenever possible.

Based on limited funding now and in the future, B/PAC made specific recommendations regarding each street which are described below.

<u>California Street</u>

- Prefer Alternative 2 from the four to three lane design that includes a center turn lane.

- Favor addressing locations that could be improved based on recent accident and collision incidents.

- Favor wider sidewalks on segments leading into Downtown.

<u>Escuela Avenue</u>

- The whole Escuela Avenue is a high-priority area due to density of housing and local institutions, including schools, senior center, teen center, and churches serving vulnerable population.

- Favor removing parking on one side of street for bike lane.

Shoreline Boulevard

- Favor addressing intersection improvements at Wright Avenue and on and off-ramp intersections with Central Expressway.

RECOMMENDATION

Based on B/PAC and community input, staff has modified the initial alternatives into a Refined Alternative for each street along with a phased implementation approach. **Staff is seeking Council input on the Refined Alternatives and implementation plan described below.**

California Street

For California Street, the community input received thus far is in favor of lane reductions, a landscaped median that provides traffic-calming benefits but allows left-turn access along limited segments via a two-way left-turn lane, and parking-protected bike lanes.

The Refined Alternative for California Street combines Initial Alternatives 2 and 3 and provides for phased implementation. Design features include:

- Corner bulb-outs with green street treatments;
- High-visibility crosswalks;
- Increased lighting where appropriate at pedestrian crossing locations;
- Midblock crosswalks between Rengstorff Avenue and Mariposa Avenue;
- Lane reduction from four to two lanes and parking-protected bike lanes; and
- A landscaped median and limited two-way left-turn lanes between crossing locations.

California Street is curved between Showers Drive and Rengstorff Avenue and not ideal for midblock crosswalks, though these can be considered further during the design phase.

Suggested phasing for this alternative is as follows:

- Phase 1: Includes corner bulb-outs with green street treatments, high-visibility crosswalks, and increased lighting at pedestrian crossing locations.

  Phase 1 could also include additional study of the traffic impacts associated with lane reductions. This study would include a more refined analysis of travel time impacts, evaluation of level of service impacts and queuing, and consideration of diversion of traffic onto parallel routes.

- Phase 2: Includes evaluation and possible implementation of lane reductions. If not included in Phase 1, additional traffic analysis would be performed. If the project proceeds, a pilot lane reduction from four to three lanes would be implemented to test the concept and gain public feedback. The pilot could be implemented with striping and temporary (rubber) curbs and would include parking-protected bike lanes with painted buffers and new midblock crossings between Showers Drive and Chiquita Avenue.

- Phase 3: If the pilot is successful, Phase 3 includes implementation of permanent improvements.

Figures 8 through 13 show roadway cross-sections of the existing and the proposed alternative as well as roadway layout.

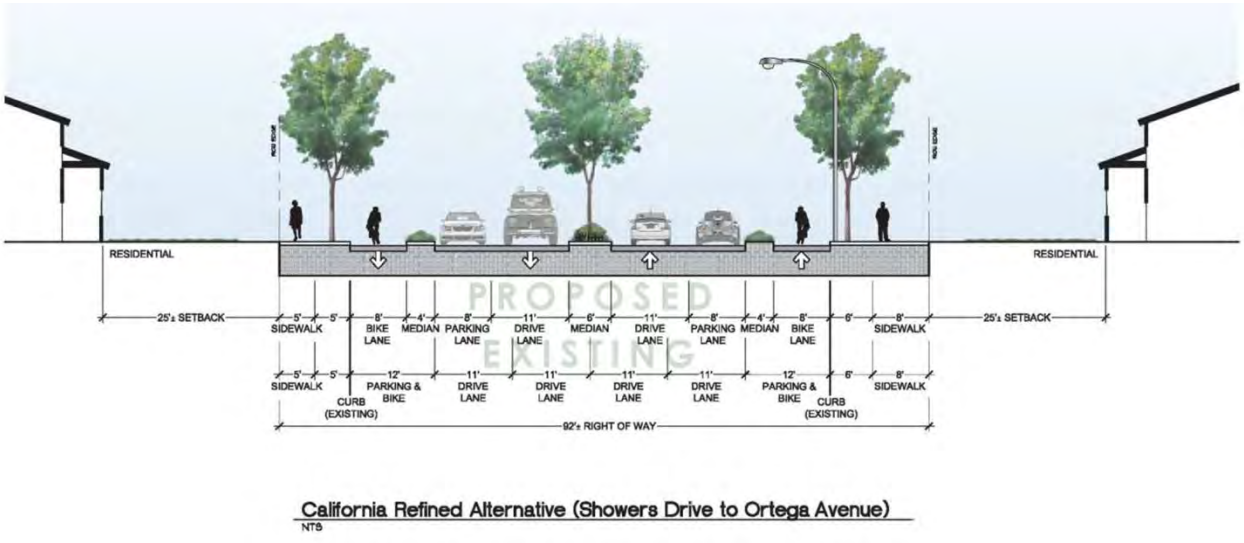


Figure 8—Refined California Street from Showers Drive to Ortega Avenue

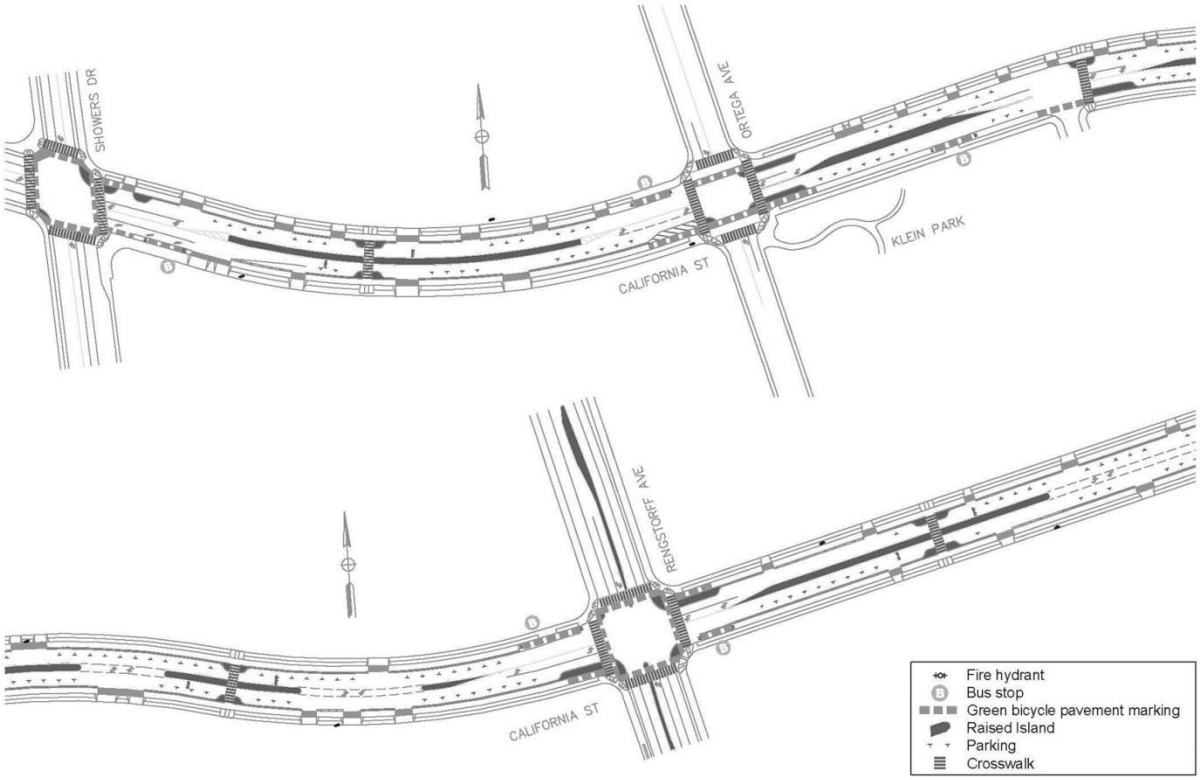
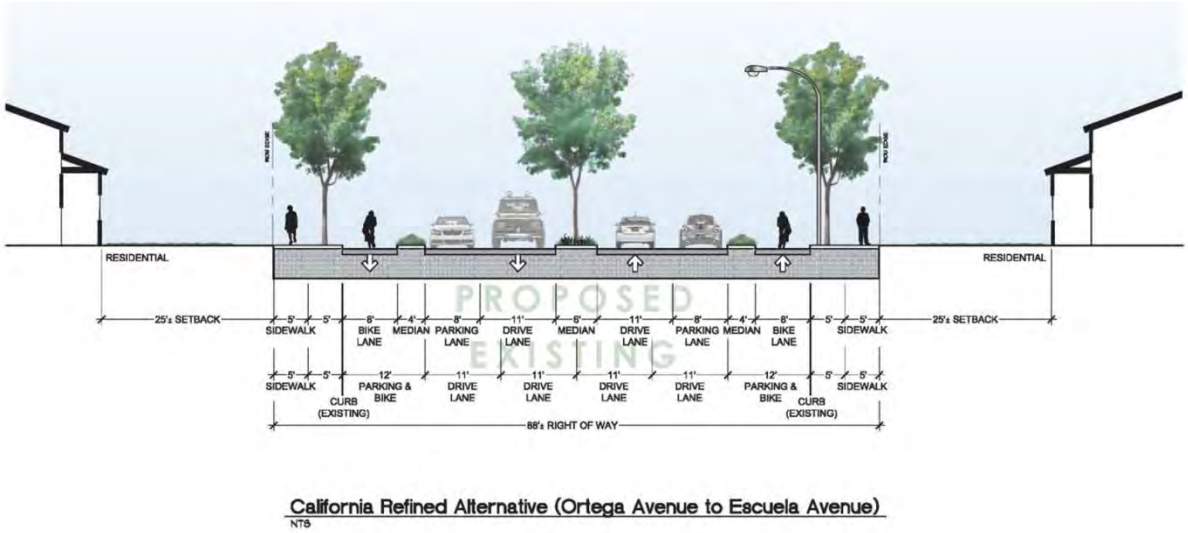


Figure 9—Refined California Street from Showers Drive to Rengstorff Avenue



California Refined Alternative (Ortega Avenue to Escuela Avenue)
NTS

Figure 10—Refined California Street from Ortega Avenue to Escuela Avenue

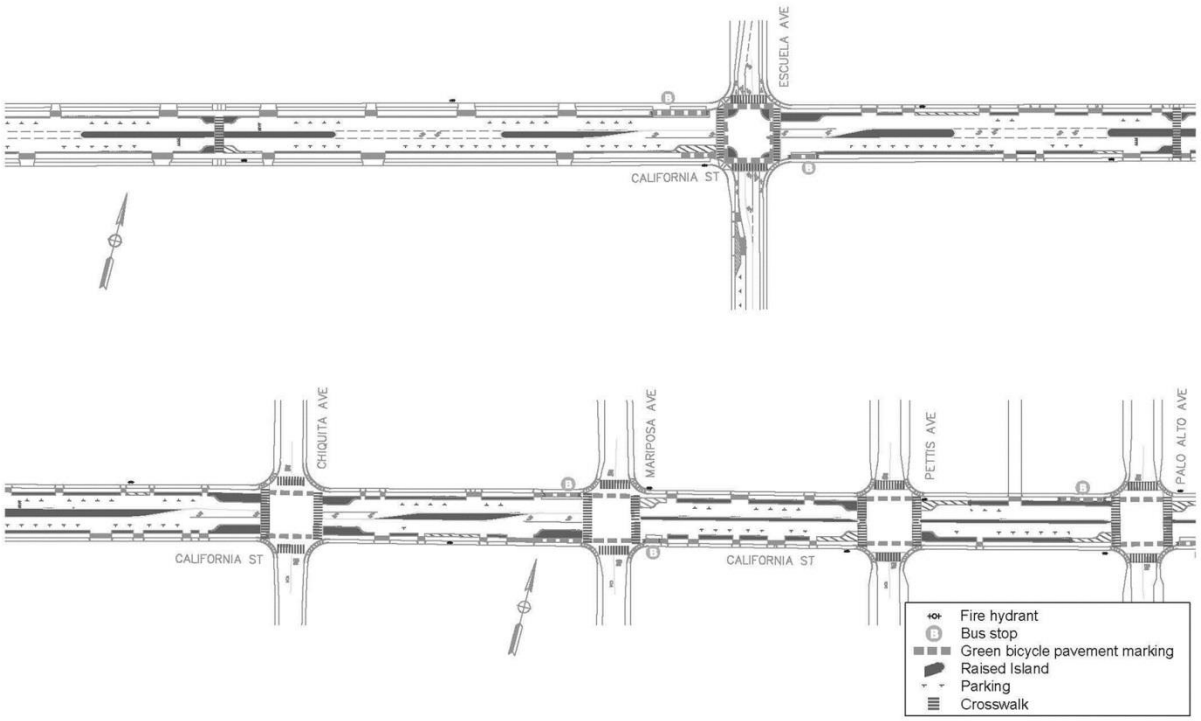
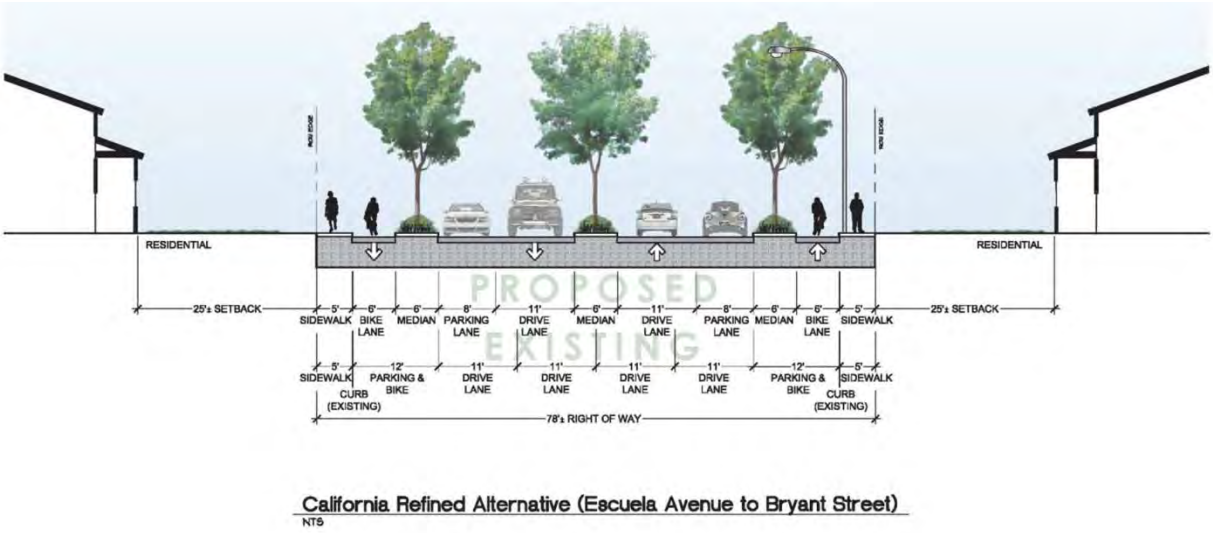


Figure 11—Refined California Street from Escuela Avenue to Palo Alto Avenue



California Refined Alternative (Escuela Avenue to Bryant Street)
NTS

Figure 12—Refined California Street from Escuela Avenue to Bryant Avenue

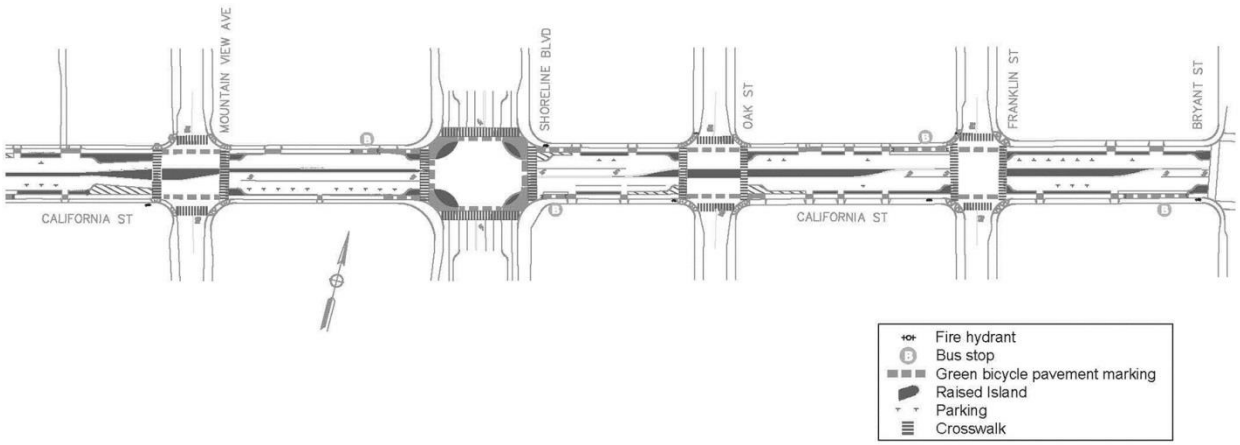


Figure 13—Refined California Street from Mountain View Avenue to Bryant Avenue

Escuela Avenue

Escuela Avenue is B/PAC's highest priority project area. The community was in favor of traffic calming and installation of bike lanes on Escuela Avenue. Consensus at the B/PAC meeting suggested removal of parking along one side of the street from Latham Avenue to Crisanto Avenue.

The Refined Alternative includes:

Bulb-outs and high-visibility crosswalks at intersections, raised crosswalks at Castro Elementary School and the Senior Center, installation of Class II bike lanes that connect to other bike facilities (beyond the study area), and removal of parking on the west side of the street.

Suggested phasing for this alternative is as follows:

- Phase 1: Includes corner bulb-outs (on the west side of the street), improved crossings, and raised crosswalks at Castro Elementary School and the Senior Center/Teen Center for traffic calming. Implementation of these elements may require removal of one to two on-street parking spaces as most of the areas currently have red curbs. See Figures 14 and 15 below.

- Phase 2: A secondary priority element for Escuela Avenue is removal of parking on the west side to accommodate bike lanes on both sides of the street. Parking

removal would eliminate approximately 45 of 95 parking spaces on the street. **Prior to implementation of parking removal, staff recommends additional, focused outreach to Escuela Avenue residents.**

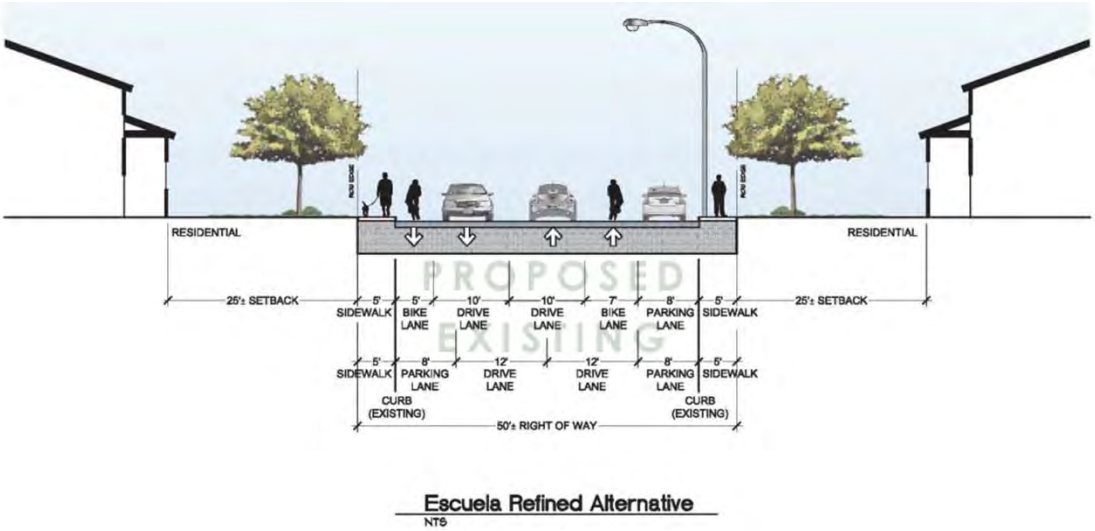


Figure 14—Refined Escuela Avenue from Latham Street to Crisanto Avenue

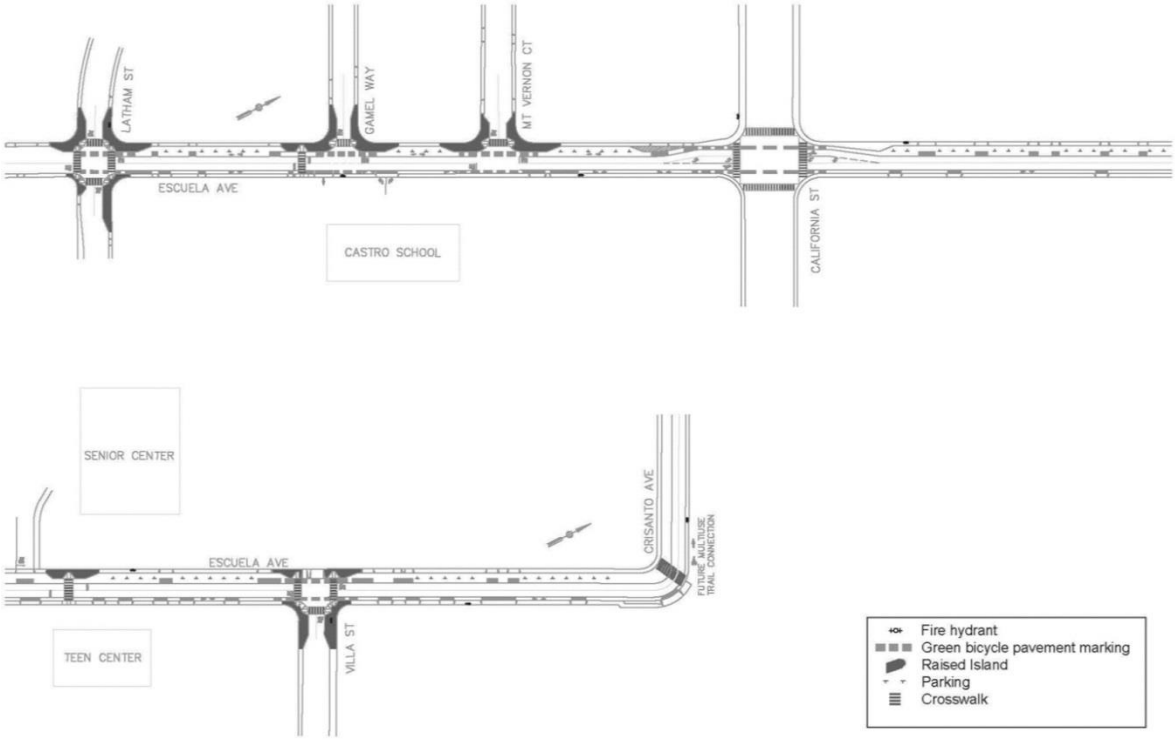


Figure 15—Refined Escuela Avenue from Latham Street to Crisanto Avenue

Shoreline Boulevard

The Refined Alternative includes:

Phase 1:

- Intersection improvements at the intersection of Villa Street to eliminate pedestrian conflict with turning vehicles and reduce crossing distance;

- Narrowing northbound lanes over Central Expressway to accommodate a buffered bike lane, and installation of a buffered bike lane;

- A new sidewalk on the west side of the Central Expressway overpass;

- As with California Street, Phase 1 could include additional traffic analysis to assess the impacts of lane reduction.

Phase 2:

- If not included in Phase 1, additional traffic analysis would be performed. If the project proceeds, a pilot lane reduction from six to four lanes would be implemented to test the concept and gain public feedback. The pilot could be implemented with striping and temporary (rubber) curbs and would include parking protected bike lanes.

Phase 3:

- If the pilot is successful, Phase 3 includes implementation of permanent reduction improvements.

- Squaring up of the on- and off-ramps involves coordination with the County of Santa Clara.

Figures 16 through 19 show the roadway cross-section from the existing to the proposed alternative and the roadway layout.

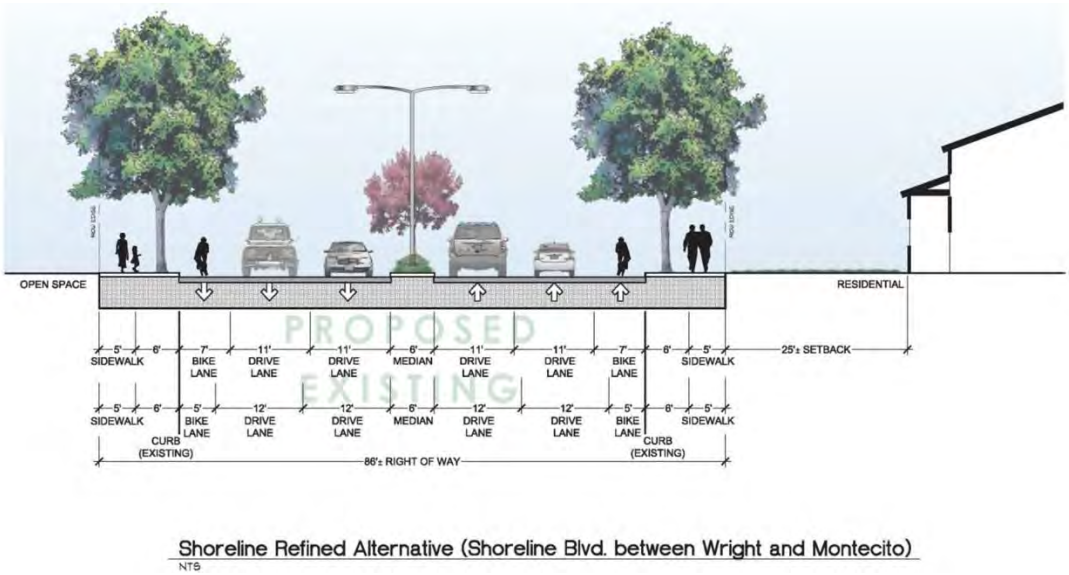


Figure 16—Shoreline Boulevard from Wright Avenue to Montecito Avenue

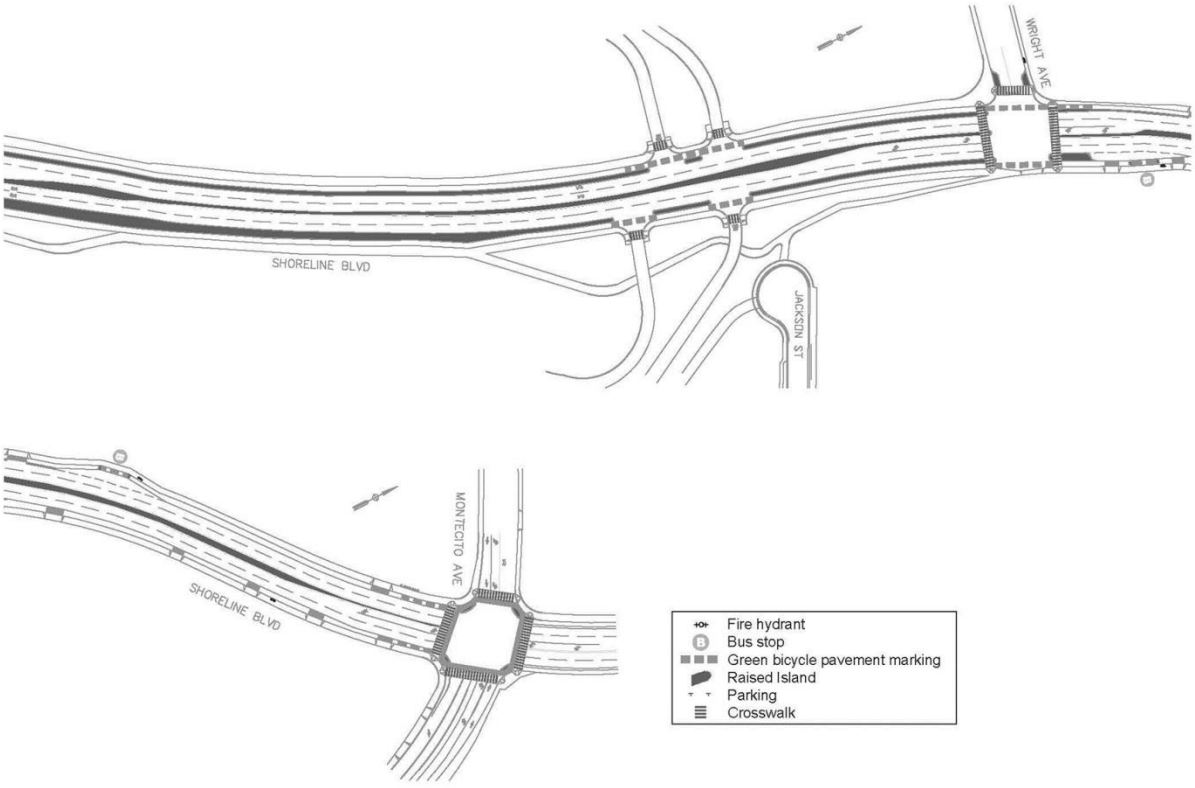
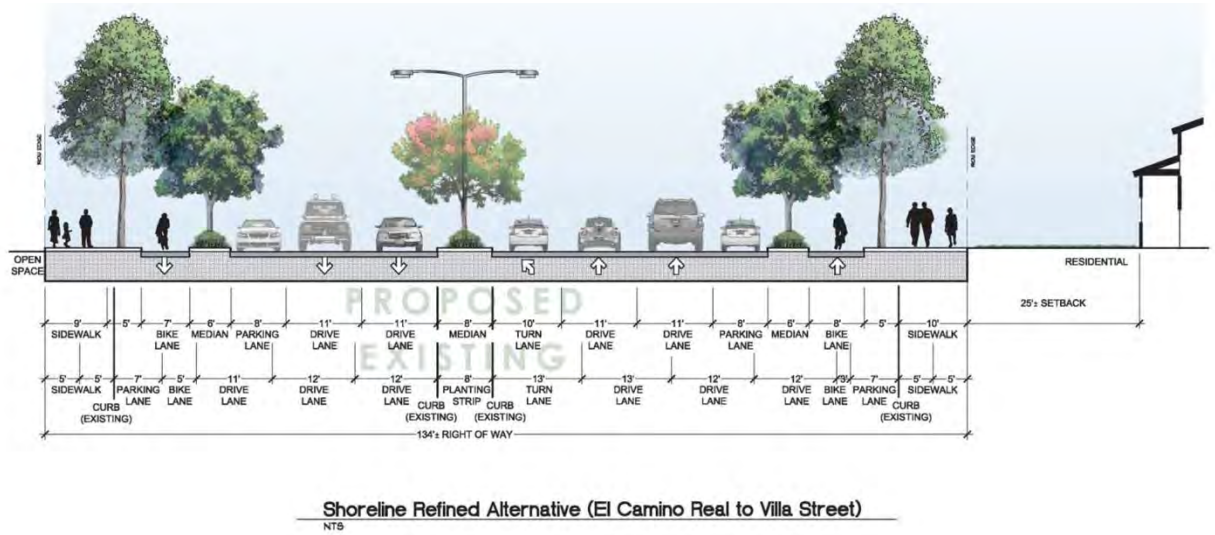


Figure 17—Shoreline Boulevard from Villa Street to Montecito Avenue



Shoreline Refined Alternative (El Camino Real to Villa Street)
NTS

Figure 18—Refined Shoreline Boulevard from El Camino Real to Villa Street

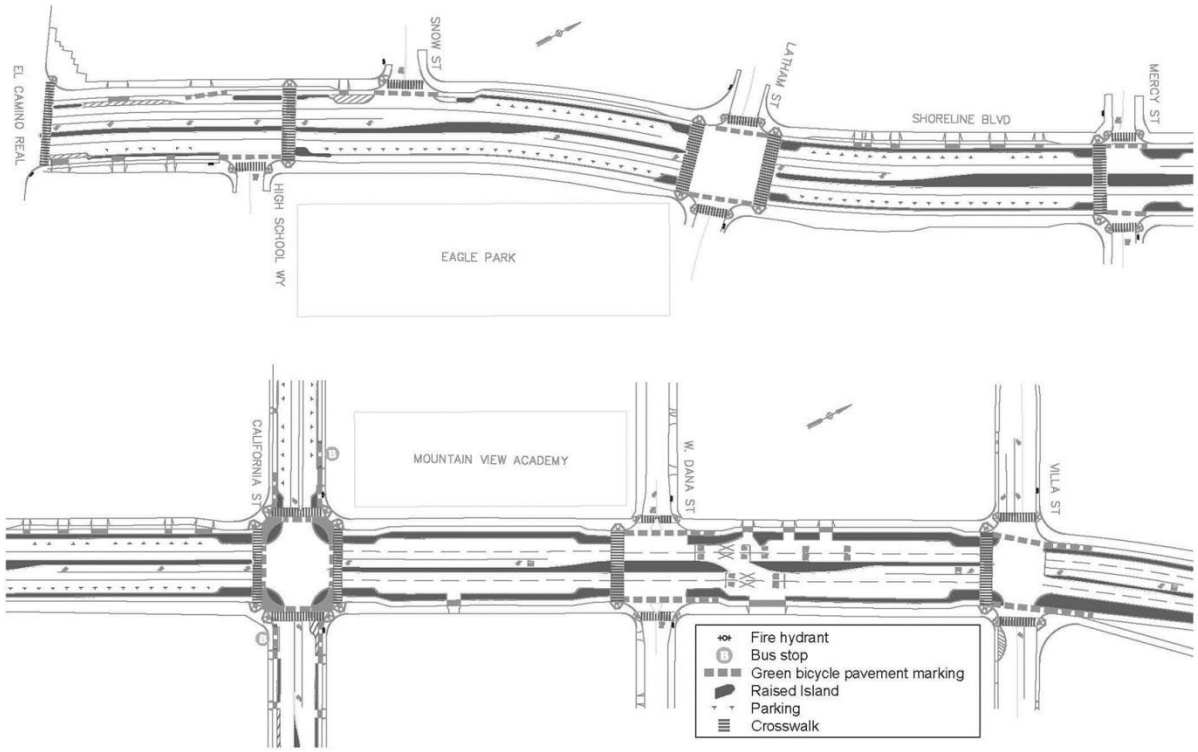


Figure 19—Refined Shoreline Boulevard from El Camino Real to Villa Street

The following table summarizes the Refined Alternative for each street and corresponding preliminary project cost estimates including cost escalation through the year 2020.

Project Segment	ESTIMATED COST (millions)					
	PHASE 1 RANGE		PHASE 2 RANGE		PHASE 3 RANGE	
	Low	High	Low	High	Low	High
California Street: From Showers Drive to Ortega Avenue	$0.25	$0.49	$1.76	$2.55	$1.70	$2.48
California Street: From Ortega Avenue to Mariposa Avenue	$0.97	$2.00	$9.04	$12.92	$4.71	$7.40
California Street: From Mariposa Avenue to Bryant Street	$0.60	$1.22	$4.41	$6.35	$1.11	$1.44
Escuela Avenue: From Crisanto Avenue to El Camino Real	$2.70	$4.50	$1.60	$1.70		
Shoreline Boulevard: From Villa Street to El Camino Real	$0.66	$1.37	$2.82	$4.13	$2.25	$3.17
Shoreline Boulevard: From Montecito Road to Villa Street	$0.45	$0.94	$9.39	$13.78	$4.16	$6.24
TOTAL	$5.63	$10.52	$29.02	$41.43	$13.93	$20.73

Staff seeks Council comments on the recommendations regarding the proposed phasing of improvements along Escuela Avenue, California Street, and Shoreline Boulevard.

NEXT STEPS

With Council input, staff will work with Nelson\Nygaard to finalize the Complete Streets Study. Input from Council on the proposed alternatives for each of the three roadways will be presented for implementation in the upcoming Capital Improvement Program (CIP) budget process.

PUBLIC NOTICING

Noticing for this meeting include advertisements in the *Mountain View Voice*, announcements on the City's website, signage on City streets, and e-mails sent to all participants of the past public outreach processes and City neighborhood associations.

RSR-LA-MAF/TS/2/CAM
999-10-13-15SS-E

Attachment: 1. California/Escuela/Shoreline Complete Streets Feasibility Study Draft Report (October 2015)

APPENDIX D: CIP PROPOSAL FORMS

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: Escuela Avenue (South) Traffic Calming

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along Escuela Avenue between Latham Street and California Street including: * bulbouts at corners on west side of street as well as at Latham Street * west-side bulbout and raised crosswalk next to Castro Elementary School * continental crosswalks at intersections and the school crossing * green street treatments in bulbouts
JUSTIFICATION/ NEED	Complete Street improvements such as bulbouts and crosswalks address safety challenges raised by community members in response to traffic collisions in the area Multimodal improvements are also needed to achieve development and mode shift goals called for in the General Plan.
ALTERNATIVES	1. No project. 2. Traffic calming treatments (corner bulbouts, new crosswalks, lane narrowing, and green street treatments).

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$1,270,000		$
Design Contingency	$127,000		
Construction Contingency	$127,000		
Subtotal Construction	**$1,524,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$183,000		
Other	$46,000		
Other Services (City staff)			
Project Management	$122,000		
Design Engineering	$61,000		
Construction Admin /Inspection	$61,000		
Other	$77,000		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$46,000		
Other: City Bidding	$61,000		
Subtotal	**$656,000**		
City Administration	$142,000		
TOTAL PROJECT COST (2015)	**$2,330,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: Escuela Avenue (North) Traffic Calming

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along Escuela Avenue between California Street and Crisanto Street including: * bulbouts at Villa Street and near the Senior Center * bulbout and raised crosswalk next to Mountain View Senior Center * continental crosswalks at intersections and the midblock crossing * green street treatments in bulbouts
JUSTIFICATION/ NEED	Complete Street improvements such as bulbouts and crosswalks address safety challenges raised by community members in response to traffic collisions in the area Multimodal improvements are also needed to achieve development and mode shift goals called for in the General Plan.
ALTERNATIVES	1. No project. 2. Traffic calming treatments (corner bulbouts, new crosswalks, lane narrowing, and green street treatments).

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$746,000		$
Design Contingency	$75,000		
Construction Contingency	$75,000		
Subtotal Construction	**$895,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$108,000		
Other	$27,000		
Other Services (City staff)			
Project Management	$72,000		
Design Engineering	$36,000		
Construction Admin /Inspection	$36,000		
Other	$45,000		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$27,000		
Other: City Bidding	$36,000		
Subtotal	**$385,000**		
City Administration	$84,000		
TOTAL PROJECT COST (2015)	**$1,370,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: Escuela Avenue Bicycle Improvement

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along Escuela Avenue between Latham Street and Crisanto Avenue including: * parking removal on the east side of the street * installation of bike lanes as well as green zones
JUSTIFICATION/ NEED	Multimodal improvements such as bike lanes are needed to achieve development and mode shift goals called for in the General Plan. Complete Street improvements also address safety challenges raised by community members in response to various traffic collisions within the project area. This corridor is a designated bicycle route under the City's Bicycle Transportation Plan. Given local land uses (school, teen center, senior center), separated bicycle facilities are recommended.
ALTERNATIVES	1. No project. 2. Bike boulevard treatment with sharrows markings 3. Bike lanes and parking removal on one side 4. Buffered bike lanes and parking removal on both sides

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$791,000		$
Design Contingency	$80,000		
Construction Contingency	$80,000		
Subtotal Construction	**$949,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$114,000		
Other	$29,000		
Other Services (City staff)			
Project Management	$76,000		
Design Engineering	$38,000		
Construction Admin /Inspection	$38,000		
Other	$0		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$29,000		
Other: City Bidding	$38,000		
Subtotal	**$361,000**		
City Administration	$86,000		
TOTAL PROJECT COST (2015)	**$1,400,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: California Street (West) Complete Street Pilot

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along California Street between Showers Drive and Ortega Avenue including: * installation of a new midblock crossing between Showers Drive and Ortega Ave * temporary bulbouts at corners and midblock crossings * continental crosswalks at intersections * wider (8-foot) painted parking protected bicycle lanes with (4-foot) painted buffer * temporary modified protected intersections at Showers Drive/California Street and Ortega Avenue/California Street * 4-to-2 lane reduction pilot, with transition at Showers Drive * bus stop accommodation (de facto bus pull outs) on California Street * narrower (11-foot) travel lanes * 8-foot parking lanes and 10-foot turn lanes
JUSTIFICATION/ NEED	Multimodal improvements such as parking protected bike lanes and bus stops are needed to achieve development and mode shift goals called for in the General Plan. Complete Street improvements such as bulbouts, midblock crossings, lane narrowing and lane reduction also address safety challenges raised by community members in response to various traffic collisions within the project area
ALTERNATIVES	1. No project. 2. Traffic calming treatments only including permanent corner bulbouts, new crosswalks, lane narrowing, and green street treatments. 3. Pilot implementation of lane reduction 4. Full implementation of lane reduction

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$216,000		$
Design Contingency	$22,000		
Construction Contingency	$22,000		
Subtotal Construction	**$259,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$32,000		
Other	$8,000		
Other Services (City staff)			
Project Management	$21,000		
Design Engineering	$11,000		
Construction Admin /Inspection	$11,000		
Other	$13,000		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$8,000		
Other: City Bidding	$11,000		
Subtotal	**$112,000**		
City Administration	$25,000		
TOTAL PROJECT COST (2015)	**$400,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: California Street (Central) Complete Street Pilot

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along California Street between Ortega Avenue and Mariposa Avenue including: * installation of five (5) new midblock crossings including two between Ortega Avenue and Rengstorff Avenue, two between Rengstorff Ave and Escuela Avenue, and one at the Permanente Creek drainage easement between Escuela Avenue and Chiquita Avenue * temporary bulbouts at corners and midblock crossings * continental crosswalks at intersections * wider (8-foot) painted parking protected bicycle lanes with (4-foot) painted buffer * temporary protected intersection at Escuela Avenue/California Street * 4-to-2 lane reduction pilot * bus stop accommodation (de facto bus pull outs) on California Street * narrower (11-foot) travel lanes * 8-foot parking lanes and 10-foot turn lanes
JUSTIFICATION/ NEED	Multimodal improvements such as parking protected bike lanes and bus stops are needed to achieve development and mode shift goals called for in the General Plan. Complete Street improvements including midblock crossings, lane narrowing and lane reduction also address safety challenges raised by community members in response to various traffic collisions within the project area. Protected bicycle facilities are recommended give the high population density along this corridor.
ALTERNATIVES	1. No project. 2. Traffic calming treatments only including permanent corner bulbouts, new crosswalks, lane narrowing, and green street treatments. 3. Pilot implementation of lane reduction 4. Full implementation of lane reduction

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$907,000		$
Design Contingency	$91,000		
Construction Contingency	$91,000		
Subtotal Construction	**$1,089,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$131,000		
Other	$33,000		
Other Services (City staff)			
Project Management	$88,000		
Design Engineering	$44,000		
Construction Admin /Inspection	$44,000		
Other	$55,000		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$33,000		
Other: City Bidding	$44,000		
Subtotal	**$468,000**		
City Administration	$102,000		
TOTAL PROJECT COST (2015)	**$1,660,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: California Street (East) Complete Street Pilot

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along California Street between Mariposa Avenue and Bryant Street including: * temporary bulbouts at corners crossings * continental crosswalks at intersections * wider (8-foot) painted parking protected bicycle lanes with (4-foot) painted buffer * temporary protected intersection at California Street/Shoreline Boulevard * 4-to-2 lane reduction pilot * bus stop accommodation (de facto bus pull outs) on California Street * narrower (11-foot) travel lanes * 8-foot parking lanes and 10-foot turn lanes * sidewalk improvements between Shoreline Boulevard and Bryant Street
JUSTIFICATION/ NEED	Multimodal improvements such as parking protected bike lanes and bus stop are needed to achieve development and mode shift goals called for in the General Plan. Complete Street improvements such as bulbouts, lane narrowing also address safety challenges raised by community members in response to various traffic collisions within the project area. Sidewalk improvements are needed to address accessibility concerns.
ALTERNATIVES	1. No project. 2. Traffic calming treatments only including permanent corner bulbouts, new crosswalks, lane narrowing, and green street treatments. 3. Pilot implementation of lane reduction 4. Full implementation of lane reduction

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$543,000		$
Design Contingency	$55,000		
Construction Contingency	$55,000		
Subtotal Construction	**$652,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$79,000		
Other	$20,000		
Other Services (City staff)			
Project Management	$53,000		
Design Engineering	$27,000		
Construction Admin /Inspection	$27,000		
Other	$33,000		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$20,000		
Other: City Bidding	$27,000		
Subtotal	**$281,000**		
City Administration	$61,000		
TOTAL PROJECT COST (2015)	**$1,000,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: South Shoreline Boulevard West On/Off Ramp Reconfiguration

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along Shoreline Boulevard overpass over Central Expressway and the Caltrain right-of-way including: * heavy civil structural work associated with squaring up expressway on- and off-ramps on the west side of the overpass
JUSTIFICATION/ NEED	Multimodal improvements including bicycle access across the Central Expressway are needed to achieve development and mode shift goals called for in the General Plan. Complete Street improvements that reduce traffic speed and improve bicycle accommodation also address safety challenges raised by community members in response to various traffic collisions within the project area. This location is a high speed location that poses a significant barrier to bicycle access in the City.
ALTERNATIVES	1. No project. 2. On/off-ramp reconfiguration

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$800,000		$
Design Contingency	$80,000		
Construction Contingency	$80,000		
Subtotal Construction	**$960,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$116,000		
Other	$29,000		
Other Services (City staff)			
Project Management	$77,000		
Design Engineering	$39,000		
Construction Admin /Inspection	$39,000		
Other	$0		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$29,000		
Other: City Bidding	$39,000		
Subtotal	**$365,000**		
City Administration	$87,000		
TOTAL PROJECT COST (2015)	**$1,420,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: South Shoreline Boulevard East On Ramp Reconfiguration

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along Shoreline Boulevard overpass over Central Expressway and the Caltrain right-of-way including: * heavy civil structural work associated with squaring up the expressway on-ramps on the east side of the overpass
JUSTIFICATION/ NEED	Multimodal improvements including bicycle access across the Central Expressway are needed to achieve development and mode shift goals called for in the General Plan. Complete Street improvements that reduce traffic speed and improve bicycle accommodation also address safety challenges raised by community members in response to various traffic collisions within the project area. This location is a high speed location that poses a significant barrier to bicycle access in the City.
ALTERNATIVES	1. No project. 2. On-ramp reconfiguration

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$1,000,000		$
Design Contingency	$100,000		
Construction Contingency	$100,000		
Subtotal Construction	**$1,200,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$144,000		
Other	$36,000		
Other Services (City staff)			
Project Management	$96,000		
Design Engineering	$48,000		
Construction Admin /Inspection	$48,000		
Other	$0		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$36,000		
Other: City Bidding	$48,000		
Subtotal	**$456,000**		
City Administration	$108,000		
TOTAL PROJECT COST (2015)	**$1,764,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: South Shoreline Boulevard East Off Ramp Reconfiguration

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along Shoreline Boulevard overpass over Central Expressway and the Caltrain right-of-way including: * heavy civil structural work associated with squaring up expressway off-ramp on the east side of the expressway
JUSTIFICATION/ NEED	Multimodal improvements including bicycle access across the Central Expressway are needed to achieve development and mode shift goals called for in the General Plan. Complete Street improvements that reduce traffic speed and improve bicycle accommodation also address safety challenges raised by community members in response to various traffic collisions within the project area. This location is a high speed location that poses a significant barrier to bicycle access in the City.
ALTERNATIVES	1. No project. 2. Off-ramp reconfiguration

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$1,000,000		$
Design Contingency	$100,000		
Construction Contingency	$100,000		
Subtotal Construction	**$1,200,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$144,000		
Other	$36,000		
Other Services (City staff)			
Project Management	$96,000		
Design Engineering	$48,000		
Construction Admin /Inspection	$48,000		
Other	$0		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$36,000		
Other: City Bidding	$48,000		
Subtotal	**$456,000**		
City Administration	$108,000		
TOTAL PROJECT COST (2015)	**$1,764,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: South Shoreline Boulevard (Downtown) Complete Street Pilot

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along Shoreline Boulevard between El Camino Real and Villa Street including: * temporary bulbouts at corners crossings * continental crosswalks at intersections * temporary protected intersections at California Street/Shoreline Boulevard and Villa Street/Shoreline Boulevard * 6-to-4 lane reduction * wider (8-foot) bike lanes with (5-foot) painted buffer * 8-foot parking lane and 11-foot travel lanes
JUSTIFICATION/ NEED	Multimodal improvements including protected bicycle facilities are needed to achieve development and mode shift goals called for in the General Plan. Complete Street improvements that reduce traffic speed and enhance crossing safety also address safety challenges raised by community members in response to various traffic collisions within the project area. This location is a high speed location that poses a significant barrier to bicycle and pedestrian access in the City.
ALTERNATIVES	1. No project. 2. Traffic calming treatments including lane narrowing, wider bike lanes, small bulbouts and green street treatments 3. Pilot implementation of lane reduction 4. Full implementation of lane reduction including lane narrowing, wider bike lanes, landscaped buffers, protected intersections, and green street treatments

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$601,000		$
Design Contingency	$61,000		
Construction Contingency	$61,000		
Subtotal Construction	**$722,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$87,000		
Other	$22,000		
Other Services (City staff)			
Project Management	$58,000		
Design Engineering	$29,000		
Construction Admin /Inspection	$29,000		
Other	$37,000		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$22,000		
Other: City Bidding	$29,000		
Subtotal	**$311,000**		
City Administration	$68,000		
TOTAL PROJECT COST (2015)	**$1,100,000**		

CIP PROPOSAL

PROJECT TYPE (check one): New ☒ Annual ☐ Amended ☐

PROJECT TITLE: South Shoreline Boulevard (Rex Manor) Complete Street Pilot

SPONSORING DEPARTMENT: Public Works

CONTACT PERSON*:* Rey Rodriguez

PHONE EXTENSION: 6527

Please provide a complete description and justification for the proposed project, as well as alternatives to the proposed project, in the table below:

PROJECT DESCRIPTION	Complete Streets improvements along Shoreline Boulevard between Villa Street and Montecito Avenue including: * temporary bulbouts at corners * continental crosswalks at intersections * temporary protected intersections at California Street/Wright Avenue * 6-to-4 lane reduction * wider (8-foot) bike lanes with painted buffer * 11-foot travel lanes
JUSTIFICATION/ NEED	Multimodal improvements including protected bicycle facilities are needed to achieve development and mode shift goals called for in the General Plan. Complete Street improvements that reduce traffic speed and enhance crossing safety also address safety challenges raised by community members in response to various traffic collisions within the project area. This location is a high speed location that poses a significant barrier to bicycle and pedestrian access in the City.
ALTERNATIVES	1. No project. 2. Traffic calming treatments including lane narrowing, wider bike lanes, small bulbouts and green street treatments 3. Pilot implementation of lane reduction 4. Full implementation of lane reduction including lane narrowing, wider bike lanes, landscaped buffers, protected intersections, and green street treatments

BUDGET SUMMARY

NEW, ANNUAL OR AMENDED PROJECT

		IF AMENDMENT	
COST ESTIMATE:	**FUNDING REQUEST**	**ORIGINAL BUDGET**	**AMENDED BUDGET**
Construction (inc. Utilities, Traffic Handling, Mobilization)	$413,000		$
Design Contingency	$42,000		
Construction Contingency	$42,000		
Subtotal Construction	**$496,000**		
Interiors/Equipment/Furnishings	$0		
Artwork	$0		
Professional Services (non-City)			
Design	$60,000		
Other	$15,000		
Other Services (City staff)			
Project Management	$40,000		
Design Engineering	$20,000		
Construction Admin /Inspection	$20,000		
Other	$25,000		
Moving / Activation	$0		
Project Contingency	$0		
Site Acquisition / Right of Way	$0		
Permits	$15,000		
Other: City Bidding	$20,000		
Subtotal	**$214,000**		
City Administration	$47,000		
TOTAL PROJECT COST (2015)	**$760,000**		

APPENDIX E: PLANT PALETTE

		DESCRIPTION			PLANTING & MAINTENANCE				LANDSCAPE INTEREST	SUITABLE AREAS		
Scientific Name	**Common Name**	Evergreen (E) or Deciduous (D)	Height (Feet)	Spread (Feet)	Water Needs: Very Low (VL), Low (L), Moderate (M)	Solar Needs: Full-Sun (FS), Part-Shade (PS), Shade (S)	Maintenance Needs: Low (L), Moderate (M)	CA Native		Street Corridors	Good for Use Under Utility Lines	Bioretention/Stormwater
TREES												
Acer rubrum	red maple	D	60	40	M	FS to PS	M		brilliant scarlet fall color	●		
Aesculus californica	California buckeye	D	10-20	30	VL	FS to PS	M	●	cream colored bloom; attractive branching; loses all its leaves in summer; seeds are toxic	●		●
Alnus rubra	red alder	D	40-50	20-30	M	FS to PS	M	●	attractive bark; dark green leaves	●		●
Arbutus menziesii	madrone	E	20-100	20-40	L	FS	M	●	attractive, smooth, reddish-brown bark that peels in thin flakes; use multi-trunk when possible; pink fall flowers	●		
Celtis reticulata	western hackberry	D	30-60	30-60	L	FS to PS	L	●	yellow leaves in fall	●		●
Cercis occidentalis	western redbud	D	10-18	10-18	L	FS	M	●	use multi-trunk where possible; short lived; brilliant magenta pea-shaped flowers in early spring followed by lovely heart-shaped leaves that turn red and orange in the fall	●	●	●
Geijara parviflora	Australian willow	E	25-30	20	L	FS	L		creamy white flowers in early spring and early fall	●		●
Pinus canariensis	Canary Island pine	E	50-80	20-35	L	FS	L		conifer; reddish bark; vertical form	●		
Platanus x acerifolia	London plane tree	D	70-100	60-70	L/M	FS	M		yellow fall color; 'Yarrow' is a smaller cultivar with foliage that holds up better than most plane trees in late summer	●		●
Pyrus calleryana 'Chanticleer'	Chanticleer pear	D	35-40	15-20	M	FS	M		white bloom; orange to reddish purple fall color	●		
Quercus agrifolia	coast live oak	E	20-70	70	VL	FS	M	●	attractive bark; attracts birds and butterflies	●		
Quercus coccinea	scarlet oak		70-80	40-50	L/M	FS	L		foliage is a glossy green in summer turning to scarlet in fall	●		●

** During tree selection, refer to the City Street Tree Master List: <http://www.mountainview.gov/civicax/filebank/blobdload.aspx?blobid=10803>. The document designates tree species for each street corridor within the City of Mountain View. In example, red maples are assigned to California Street and Australian willows are assigned to Escuela Avenue, while a variety of tree species are to be planted along Shoreline Boulevard.*

Scientific Name	Common Name	DESCRIPTION: Height (Feet)	DESCRIPTION: Spread (Feet)	PLANTING & MAINTENANCE: Water Needs: Very Low (VL), Low (L), Moderate (M)	PLANTING & MAINTENANCE: Solar Needs: Full-Sun (FS), Part-Shade (PS), Shade (S)	PLANTING & MAINTENANCE: Maintenance Needs	PLANTING & MAINTENANCE: CA Native	SOIL NEEDS	LANDSCAPE INTEREST/USES	SUITABLE AREAS: Street Corridors	SUITABLE AREAS: Bioretention/Stormwater
SHRUBS											
Arctostaphylos densiflora 'Howard'	mazanita	5-7	6-10	L	FS to PS	L	●	decomposed granite, sand	fine textured bright green foliage and red bark		
Cistus hybridus	rockrose	2-4	4-5	L	FS	M		adaptable	evergreen with bight white flowers with thin green branches	●	
Dietes iridioides	fortnight lily	2-3	2-3	L	FS	L		clay-tolerant	use as accent or massing, orchid-like flowers	●	
Epilobium canum	California fuchsia	varies	1.5-3	L	FS	L	●	well-drained	gray foliage; showy summer flowers; height varies by cultivar	●	●
Grevillea spp.	grevillea	varies		L	FS to PS	L		tolerant of poor soils	very heat tolerant; attracts hummingbirds	●	
Hesperaloe parviflora	red yucca	3-4	3-4	L	FS	L		well-drained	attracts hummingbirds; succulent/cacti; heat tolerant; locate away from pedestrians	●	
Lantana camara	common lantana	2-3	up to 6	L	FS	L		adaptable	prune back in spring to prevent woodiness	●	
Mimulus aurantiacus	sticky monkey flower	3-4	3-4	L	FS to PS	L	●	well-drained	well adapted to heat, sun, summer drought		●
Penstemon heterophyllus	foothill penstemon	1.5-2	2-3	L	PS	M	●	well-drained	luminous almost turquoise flowers; tolerates no water once established		●
Phormium spp.	New Zealand flax	varies		L	FS to PS	L		clay-tolerant	colorful foliage; size varies greatly by species	●	
Rhamnus californica	coffeeberry	8	10	L/M	FS to PS	M	●	adaptable	grey-green leaves, red bark, and showy berries in fall	●	
Rosa californica	California wild rose	3-5	4-8	L	FS	M	●	adaptable	fragrant pink rose flowers; excellent wildlife value		●
Salvia apiana	California white sage	3-5	3-5	L	FS	L	●	clay-tolerant	wooly, silver-grey leaves; large shrub/small tree	●	
Stachys byzantina	lamb's ear	1	2-3	L	FS	M		adaptable	white flowers; fuzzy leaves are reminiscent of lamb's ear; leaves are fragrant	●	
Teucrium fruticans 'Compactum'	bush germander	3	3	L	FS	L		well-drained, clay-tolerant	tolerates heat, frost, and drought	●	

		DESCRIPTION		PLANTING & MAINTENANCE				SOIL NEEDS	LANDSCAPE INTEREST/USES	SUITABLE AREAS	
Scientific Name	**Common Name**	Height (Feet)	Spread (Feet)	Water Needs: Very Low (VL), Low (L), Moderate (M)	Solar Needs: Full-Sun (FS), Part-Shade (PS), Shade (S)	Maintenance Needs	CA Native			Street Corridors	Bioretention/Stormwater
GRASSES											
Aristida purpurea	purple three-awn	2-3	2	VL	FS	L	●	well-draining	purple seed heads that wave gracefully in the wind; recommended for erosion control on slopes, hillsides, and in canyons		●
Calamagrostis x acutiflora 'Karl Foerster'	feather reed grass	2-3	2-3	L	PS		●	well-draining	background plant		
Carex barbarae	Santa Barbara sedge	1-3	1	L	FS	M		damp soil	rich green leaves; good for erosion control; little or no summer water		●
Carex tumulicola	Berkeley sedge	2-3	2-3	L	FS to PS	M	●	clay-tolerant; tolerates damp soil	greenish flowers age to brown in winter and spring	●	●
Chondropetalum tectorum	small cape rush	3-4	3-4	L	FS	L		accepts both dry and wet conditions	small, unique plant forms broad clumps of thin erect jointed stems; evergreen; good for erosion control	●	●
Deschampsia caespitosa	tufted hairgrass	1-2	2	L	FS to PS	L	●	tolerates most soils	green to greenish gold, turning straw color in the winter; they generally maintain good color through the summer, but won't grow much when it is hot	●	●
Festuca glauca 'Elijah Blue'	blue fescue	>1	>1	L	PS	L		well-drained	forms clumps of silver-blue leaves; long lived; use as edging		●
Helictotrichon sempervirens	blue oat grass	1-2	1-2	L	PS	L		well-drained	attractive symmetrical form and bue color with straw-colored flower	●	
Muhlenbergia rigens	deer grass	4	4-6	L	FS	L	●	adaptable	clean, dependable form; very rugged	●	●
Muhlenbergia capillaris	pink muhly grass	4	3-4	L	PS	L		well-drained	shows pink panicles in late summer	●	

Scientific Name	Common Name	DESCRIPTION: Height (Feet)	DESCRIPTION: Spread (Feet)	PLANTING & MAINTENANCE: Water Needs: Very Low (VL), Low (L), Moderate (M)	PLANTING & MAINTENANCE: Solar Needs: Full-Sun (FS), Part-Shade (PS), Shade (S)	PLANTING & MAINTENANCE: Maintenance Needs	PLANTING & MAINTENANCE: CA Native	SOIL NEEDS	LANDSCAPE INTEREST/USES	SUITABLE AREAS: Street Corridors	SUITABLE AREAS: Bioretention/Stormwater
PERENNIALS											
Achillea filipendulina	fern-leaf yarrow	3-4	2-3	L	FS	M		tolerates most soils	deeply-dissected, fern-like, aromatic, grayish-green to green foliage and tiny, long-lasting, bright golden flowers		
Artemesia californica	California sage	3-4	4	L	FS	M	●	adaptable	fine, silver-gray leaf texture offers a nice complement to a hedge or background planting; can get scraggly		●
Eschscholzia californica	California poppy	1.5	1.5-2	VL	FS	L	●	well-draining	reseeds easily; summer dormant		●
Heuchera micrantha	coral bells	1	1-2	L	PS to S		●	clay-tolerant	needs shade; good edging plant		
Iris douglasiana	Douglas iris	1.5	1.5	L	PS	L	●	well-draining			●
GROUNDCOVERS											
Arctostaphylos 'Emerald Carpet'	Emerald Carpet manzanita	1-1.5	3-6	L	FS	L	●	well-drained; adaptable	neat, green, spreader	●	●
Arctostaphylos uva-ursi	bearberry, kinnikinnick	1.25	1.25	L	FS	L	●	well-drained	set out plants 2' apart for solid cover	●	
Rosmarinus officinalis 'Huntington Carpet'	Huntington Carpet rosemary	1-2	8	L	FS	M		adaptable	a beautiful carpet of deep blue flowers backed by fragrant foliage forms an attractive spreading groundcover	●	
Salvia sonomensis	creeping sage	2	6-8	L	FS	M	●	adaptable	lavender-blue flowers; fragrant leaves, especially in summer	●	
Verbena peruviana	Peruvian verbena	>1	2-3	L	FS	M		well-drained; adaptable	set out plants 2' apart for solid cover; offers super vibrant red flowers with small white centers	●	
TURF ALTERNATIVES											
Bouteloua gracilis	blue grama	1.5-2	1	L	FS	L	●		reddish white; irrigate to 1ft to establish; after established needs no irrigation; nice as border planting; okay to mow down to 1.5in	●	●
Buchloe dactyloides	buffalograss	<1	<1	VL	FS	L			requires little or no mowing; grows to 4" tall; start from sod;		
Cynodon dactylon	hybrid Bermuda grass	<1	<1	M	FS	L			tolerates heat		
DeltaBlue Grass Biofiltration Sod	purple needle grass, CA barley, meadow barley			VL			●		1 plant per 2.25 SF		●